



Rendering, composting, incineration, or landfilling, in accordance with Chapter 269, RSMo, shall be considered acceptable options and do not require prior approval.

AUTHORITY: section 640.710, RSMo 2000, and section 644.026, RSMo Supp. 2014. Original rule filed July 14, 2011, effective April 30, 2012. Amended: Filed Jan. 26, 2016, effective Oct. 30, 2016.*

**Original authority: 640.710, RSMo 1996 and 644.026, RSMo 1972, amended 1973, 1987, 1993, 1995, 2000, 2012, 2014.*

10 CSR 20-8.500 Design Requirements for Agrichemical Facilities

PURPOSE: The following criteria serve as a guide for the design, construction, and operation of primary, secondary, and operational containment structures at bulk agrichemical facilities.

(1) Definitions. Definitions as set forth in the Clean Water Law and 10 CSR 20-2.010 shall apply to those terms when used in this rule, unless the context clearly requires otherwise. Where the terms shall and must are used, they are to mean a mandatory requirement insofar as approval by the agency is concerned, unless justification is presented for deviation from the requirements. Other terms such as should, recommend, preferred and the like, indicate discretionary requirements on the part of the agency and deviations are subject to individual consideration.

(2) General. A facility need only to comply with these rules when they come within the definition of an agrichemical facility. Any construction after the effective date of this rule shall be in compliance with all of these rules before the commencement of any operational activities or any storage or use of agrichemicals. Any existing agrichemical facility that has a discharge of agrichemicals or process generated wastewater is required to take immediate steps to implement the secondary and operational containment requirements contained in this rule in addition to any other remedy required. All new operations shall be designed to be no discharge.

(3) Exceptions. The following exceptions shall apply to agrichemical facilities:

(A) This rule shall not apply to agrichemical facilities storing or handling less than the regulated quantities of agrichemicals unless an on-site evaluation by the department determines that compliance with the regulations is necessary to protect the environment.

(B) Liquid fertilizer storage tanks that were in use prior to January 13, 1992, having a storage capacity greater than forty thousand (40,000) gallons shall be exempt from the requirement of installing a liner underneath the tank itself. Spill containment diking is required around these tanks. These facilities shall submit to the department for approval a program outlining the monitoring, tank testing, and record keeping that will be done at the facility to document that a release of agrichemicals from these tanks has not occurred either to surface or subsurface waters of the state.

(C) The prohibition of storing bulk liquid fertilizer in a mobile container for more than thirty (30) days shall not apply to barges and rail cars used solely for transporting liquid fertilizer from chemical production facilities to retail or wholesale facilities.

(D) The prohibition of burying pipes used for transferring full strength agrichemicals shall not apply to piping used solely for the loading and unloading of liquid fertilizer from barges and rail cars. These pipes shall be pressure tested on a yearly basis to certify the integrity of the pipes. Records of the pressure testing shall be kept on file at the facility and made available to department personnel upon request.

(4) Deviations. The department may require a construction permit with a substantial deviation from these requirements as addressed in 10 CSR 20-6.010. Deviations from these rules may be approved by the department when engineering justification satisfactory to the department is provided. Justification must substantially demonstrate in writing and through calculations that a variation(s) from the design rules will result in either at least equivalent or improved effectiveness. Deviations are subject to case-by-case review with individual project consideration. Containment structures for agrichemical facilities that are not addressed or covered in this design guide are considered deviations. A written request for any deviation must include a certification that indicates compliance with all other design guide requirements.

(5) Engineering Report. An engineering report is required for all facilities required to submit an application for a construction permit and is recommended for all facilities. The engineering report assembles basic information, presents design criteria and assumptions, examines alternate projects with preliminary layouts and cost estimates, offers a conclusion with a proposed project for client consideration, and outlines official actions and procedures to implement the project. Engineering reports

shall contain the following information and other pertinent information and may be combined with other engineering documentation:

(A) Title of project, agrichemical facility name and address, name and address of firm preparing the report, seal and signature of the professional engineer in charge of project;

(B) Introduction. Reasons for the report and circumstances leading up to the report;

(C) Existing conditions at the agrichemical facility and proposed construction at the facility shall be discussed;

(D) Design criteria—

1. Design and sizing of secondary and operational containment structures should be discussed;

2. Process diagrams. A process configuration showing the interconnection of all pumps, piping, and storage tanks associated with the operation of the agrichemical facility should be shown;

(E) The process by which bulk chemicals are received, unloaded, and transferred within the facility should be discussed. The mixing, loading, and unloading of spreading or spraying equipment should be discussed. All cleaning of chemical handling equipment, spraying or spreading vehicles, nurse vehicles, and containment areas should be discussed. Collection, storage and disposal of rinsates, process generated wastewaters, and collected precipitation should be discussed. Collection, treatment, and disposal of all domestic wastewater flows associated with the facility should be discussed;

(F) Method of operation, estimation of the number of cropping programs for which agrichemical services will be provided, sources of wastewater, proposed disposal or treatment practices, and the project recommended to client for construction shall be included; and

(G) Antidegradation must be implemented according to the procedures in 10 CSR 20-7.031(3)(D).

(6) Primary Containment for Bulk Agrichemicals for new construction. Containers and appurtenances used as the primary containment in the storage and handling of bulk agrichemicals shall be constructed, installed, and maintained to prevent a discharge and shall be of materials and construction compatible with the specifications of the product stored.

(A) In the event of a discharge or accumulation of storm water in the secondary containment area storage containers subject to flotation shall be anchored or placed on a raised stand to prevent flotation of the container in the event of a discharge or accumulation of storm water in the secondary containment area. The anchoring devices used to secure the storage container as well as any support structure for the storage container



shall not compromise the structural integrity of the containment area or the ability of the containment area to adequately contain liquids that have accumulated in the containment area.

(B) All containers and appurtenances shall be designed to handle all operating stresses, taking into account hydrostatic head, pressure buildup from pumps and compressors and any other mechanical stresses to which the containers and appurtenances may be subject to in the foreseeable course of operation.

(C) External sight gauges shall not be used with bulk pesticide storage containers.

(D) External sight gauges may be used for bulk liquid fertilizer containers, but the gauge shall have a lockable valve located between the sight gauge and the storage container so that if the sight gauge is damaged, the contents of the storage container will not leak out.

(E) The main discharge valve from the storage container shall be lockable.

(F) All appurtenances shall be protected against damage from operating personnel and moving vehicles. All appurtenances shall be located within the secondary containment or operational containment area.

(G) Storage of bulk liquid pesticides or bulk liquid fertilizers in an underground storage tank as defined by 10 CSR 20-10.010 is prohibited. This prohibition does not apply to a water-tight catch basin used for the temporary collection of runoff or rinsate from transfer and loading areas.

(H) All filling of containers acting as the primary containment vessel shall be done in a manner that the individual handling the transfer hose has both feet on the floor of the containment structure or a working platform adjacent to the container. The transfer hose used in the filling process shall be securely connected to the storage container by appropriate plumbing connections.

(7) Secondary Containment for Bulk Agrichemicals for new construction. Secondary containment for nonmobile bulk pesticides and nonmobile bulk fertilizers shall be designed to contain any spilled product to prevent a discharge.

(A) Nonmobile Bulk Liquid Pesticides.

1. The volume of the secondary containment area when not protected from precipitation shall have a minimum volume of one hundred twenty-five percent (125%) of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area.

2. The volume of the secondary containment when protected from precipitation shall have a minimum volume of one hundred ten percent (110%) of the volume of the largest

storage container located within the containment area plus the space occupied by any other tanks located within the containment area.

3. The secondary containment structure shall not have a discharge outlet or gravity drain through the wall or floor of the containment structure.

4. The walls and floors of the secondary containment structure for nonmobile bulk liquid pesticide containers shall be constructed of suitable material that is compatible with the specifications of the product being stored. The walls and floors shall be resistant to penetration by moisture and agrichemicals. The walls and floors shall be designed to support the gravity load of the storage containers and any hydrostatic loads that would result from a massive spill within the containment structure.

5. For concrete floors and walls, expansion joints shall be spaced to prevent cracks from forming. The joints shall be sealed with a material resistant to agrichemicals. Water stops shall be installed between the containment walls and floor.

6. A collection sump may be included in the secondary containment area. The structure shall not be more than two feet (2') deep or hold more than one hundred fifty (150) gallons of liquid. The sump shall be constructed of materials that resist penetration by moisture and agrichemicals. The connection point between the containment area floor and the sump shall be sealed to prevent leakage of liquids from the containment area. The secondary containment structure floor should be sloped to the collection sump to allow for removal of liquids accumulating in the containment area.

7. No piping shall be installed through the walls or floor of the secondary containment structure except for interconnecting more than one (1) bulk liquid pesticide containment structure to another having a common wall. All piping entering and leaving the secondary containment structure shall go up and over the containment walls.

8. Piping used for transferring full strength agrichemicals, process wastewaters, and rinsates shall not be buried underground.

9. Secondary containment for bulk liquid pesticides and bulk liquid fertilizers shall be separated at a minimum with a common wall. There shall be no interconnection of piping through a common wall between a bulk liquid pesticide secondary containment structure and a bulk liquid fertilizer secondary containment structure.

10. Auxiliary tanks for storage of rinsate or precipitation collected in the secondary or operational containment area shall be located

within a secondary containment structure.

(B) Nonmobile Bulk Liquid Fertilizer.

1. The volume of the secondary containment area when not protected from precipitation shall have a minimum volume of one hundred twenty-five percent (125%) of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area.

2. The volume of secondary containment area when protected from precipitation shall have a minimum volume of one hundred ten percent (110%) of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area.

3. The secondary containment structure shall not have a discharge outlet or gravity drain through the wall or floor of the containment structure.

4. The walls and floors of the secondary containment area for nonmobile bulk liquid fertilizer containers shall be constructed of suitable material compatible with the specifications of the product being stored. The walls and floors shall be designed to support the gravity load of the storage tanks and the hydrostatic loads of a massive spill within the containment structure.

A. Floors and walls may be covered by a synthetic liner installed according to the manufacturer's written directions and repaired and maintained according to the manufacturer's recommendations. The liner shall have an in-place permeability of 1×10^{-7} cm/sec. or less. The liner material shall be compatible with the chemicals being stored and the liner shall be resistant to punctures, abrasion, cracking, and weathering.

B. Floors and walls may be constructed of suitable soil so that the finished compacted permeability rate of the floor and berm walls shall be 1×10^{-7} cm/sec. or less.

C. Soils used in the construction of the walls and floors of the secondary containment structure may be treated with bentonite clay so that the finished compacted permeability rate of the floor and berm walls shall be 1×10^{-7} cm/sec. or less.

D. The inner and outer slope and floors of an earthen secondary containment structure should be protected against erosion (for example, top soil placed over the seal with sodding or seeding, a compacted layer of washed river gravel or riprap material of a suitable size). If the inner side slope and floors of the containment structure are seeded or sodded, a six inch (6")-layer of top soil shall be placed over the floor and side slope prior to seeding or sodding to prevent the



roots of the cover material from penetrating the earthen liner. Long rooted grasses shall not be used for seeding the side slopes and floors. If gravel or riprap is used inside the containment structure, the depth of the gravel or riprap layer shall be at least six inches (6") in depth. Side slopes of the earthen containment structure should not be steeper than a three to one (3:1) ratio of horizontal to vertical. The top width of earthen walls should not be less than two and one-half feet (2 1/2').

E. Floors and walls may be constructed of concrete or steel provided the material is protected from corrosion or deterioration from the materials being stored.

5. For concrete floors and walls, expansion joints shall be spaced to prevent cracks from forming. The joints shall be sealed with a material resistant to agrichemicals. Water stops shall be installed between the containment walls and floor.

6. A collection sump may be included in the secondary containment area. The structure shall not be more than two feet (2') deep or hold more than one hundred fifty (150) gallons of liquid. The sump shall be constructed of materials that resist penetration by moisture and agrichemicals. The connection point between the containment area floor and the sump shall be sealed to prevent leakage of liquids from the containment area. The secondary containment structure floor should be sloped to the collection sump to allow for removal of liquids accumulating in the containment area.

7. No piping shall be installed through the walls or floor of the secondary containment structure except for interconnecting more than one (1) bulk liquid fertilizer containment structure to another and piping exempted in subsection (3)(D). All piping entering and leaving the secondary containment structure shall go up and over the containment walls.

8. Piping used for transferring full strength agrichemicals, process wastewaters and rinsates shall not be buried.

9. Auxiliary tanks to hold rinsate or precipitation collected in the secondary or operational containment area shall be located within a secondary containment area.

(C) Nonmobile Bulk Dry Fertilizer Storage.

1. Dry fertilizer shall be stored inside a sound structure to prevent contact with precipitation. All surface water runoff shall be diverted away from the storage structure.

2. All unloading, loading, mixing, and handling of dry bulk fertilizers should be done on an operational containment area.

3. Pesticide impregnation of dry fertiliz-

er shall take place within an operational containment area adequate in size to hold the volume of pesticides used and impregnation equipment.

4. Daily cleanup of the dry fertilizer loading, unloading, mixing, and handling areas shall take place.

5. Whenever feasible, dry fertilizer spreading equipment should be cleaned in the field to minimize containment and disposal requirements at the operational containment area.

6. The floors of the bulk dry fertilizer storage area shall be paved with concrete or other approved materials that will prevent the downward movement of fertilizer materials and moisture through the floor. For concrete floors and walls, expansion joints shall be placed on a close enough spacing to prevent cracks from forming. The expansion joints shall be sealed with a material resistant to agrichemicals. Cracks that occur in the floors and walls shall be sealed to prevent the downward or lateral movement of fertilizer materials and moisture.

7. A mixing and loading pad shall be constructed under any exterior transfer area of a conveyance system.

(D) Nonmobile Bulk Dry Pesticide Storage.

1. Dry pesticides shall be stored inside a sound structure to prevent contact with precipitation. All surface water runoff shall be diverted away from the storage structure.

2. All loading, mixing, and handling of bulk dry pesticides should be done on an operational containment area.

3. Daily cleanup of the bulk dry pesticide loading, unloading, mixing, and handling areas shall take place.

4. Whenever feasible, bulk dry pesticide spreading equipment should be cleaned in the field to minimize containment and disposal requirements at the operational containment area.

5. The floors of the bulk dry pesticide storage area shall be paved with concrete or other approved materials that will prevent the downward movement of pesticide materials and moisture through the floor. For concrete floors and walls, expansion joints shall be placed on a close enough spacing to prevent cracks from forming. The expansion joints shall be sealed with a material resistant to agrichemicals. Cracks that occur in the floors and walls shall be sealed to prevent the downward or lateral movement of pesticide materials and moisture.

6. A mixing and loading pad shall be constructed under any exterior transfer area of a conveyance system.

(8) Operational Containment for bulk liquid pesticides and bulk liquid fertilizers for new construction. The operational containment area for bulk liquid pesticides and bulk liquid fertilizers shall be designed to contain any product discharged or collected precipitation for the amount of time required for proper cleanup and recovery.

(A) Wherever feasible, application equipment should be rinsed in the field to minimize containment and disposal requirements at the operational containment area.

(B) Precipitation should be diverted away from the operational containment area.

(C) The volume of the operational containment area shall be one hundred ten percent (110%) of the volume of the largest vehicle that will be loaded or unloaded in the operational containment area. This volume may be achieved through the use of above ground tank(s) located within the secondary containment area connected to an automatic sump pump in the operational containment area.

(D) A sediment trap and sump may be designed in the operational containment area. The structure shall not be more than two feet (2') deep or hold more than one hundred fifty (150) gallons of liquid. The sump shall be constructed of materials that resist penetration by moisture and agrichemicals. The connection point between the operational containment area floor and the sump shall be sealed to prevent leakage of liquids from the containment area.

(E) The operational containment area shall extend beneath any pump, appurtenance, or plumbing connection not located within the secondary containment area and that is used to transfer liquid fertilizer or pesticide.

(F) Bulk repackaging containment of agrichemicals may be satisfied by the operational containment area.

(9) Operational Containment Area for bulk dry pesticides and bulk dry fertilizers for new construction. The operational containment area for bulk dry pesticides and bulk dry fertilizers shall be sized and designed to contain any spillage or leakage of dry materials that occurs from the loading and unloading of hauling or spreading equipment and from the mixing and blending equipment or precipitation that comes in contact with the operational containment area for the amount of time required for proper cleanup and recovery.

(A) Wherever feasible, spreading equipment should be cleaned in the field to minimize containment and disposal requirements at the operational containment area.

(B) Precipitation should be diverted away from the operational containment area.



(C) Individual catchment basins or portable pans/containers may be used to satisfy the requirement for operational containment. The individual basins or portable containers shall be placed to catch or recover spillage and leakage from transfer connections and conveyors.

(D) For unloading dry pesticides and dry fertilizers from rail cars, a catchment basin or concrete pad that can effectively contain the dry fertilizer or pesticide that may be discharged during the unloading process shall be used.

(10) Connection to Water Supplies. An air gap separation or reduced pressure principle backflow prevention assembly shall be installed in the water supply line that serves an agrichemical facility. The air gap or backflow prevention assembly shall be constructed, installed, and inspected in accordance with 10 CSR 60-11.010 Prevention of Backflow.

(11) Protection from Flooding. All agrichemical facilities shall be located so that the agrichemicals being stored are protected from a one hundred- (100-) year flood event.

(12) Operation and Management of Agrichemical Facilities. Bulk agrichemicals shall be stored, handled, transported, loaded, and unloaded in a manner to prevent discharge that may result in unreasonable adverse effects to humans or the environment. All applicable hazards of the pesticide shall be considered in the handling and loading practices to ensure proper protection of facility personnel and the environment.

(A) Spills occurring within the secondary containment and operational containment area shall be recovered promptly. All waste and wastewater associated with the recovery process shall be disposed of in accordance with the permit for the facility and the product labeling.

(B) Precipitation collected in the secondary containment and operational containment area shall be disposed of in accordance with the permit for the facility.

(C) Field application of rinsate and collected precipitation is acceptable and recommended.

(D) Appropriate security measures at the agrichemical facility, such as lighting or security fencing to discourage ready access by unauthorized personnel to the facility when unattended, are encouraged.

(E) Agrichemical rinsates or collected precipitation shall not be disposed through storm sewers, sanitary sewer systems, or waters of the state without an approved permit.

(F) Prior to repackaging or refilling mobile

containers, the containers must be thoroughly cleaned and inspected except when a dedicated pesticide container is refilled and the tamper indicator is otherwise intact.

(13) Emergency and Discharge Response Plan. The operator of a bulk agrichemical facility shall prepare a written emergency and discharge response plan for the storage facility. The plan shall comply with Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requirements.

(14) Plans.

(A) General. All plans for primary, secondary, and operational containment structures for new construction at agrichemical facilities shall bear the name of the agrichemical facility and shall show the scale in feet, a graphic scale, the north point, date, and the name of the engineer, certificate number and imprint of his/her registration seal. The plans shall be clear and legible. They shall be drawn to a scale which will permit all necessary information to be plainly shown. The size of the plans generally should not be larger than thirty inches by forty-two inches (30" × 42") (76 cm × 107 cm). Datum used should be indicated. Locations and logs of test borings and when made shall be shown on the plans. Detail plans shall consist of plan views, elevations, sections, and supplementary views which, together with the specifications and general layouts, provide the working information for the contract and construction of the containment facilities. Plans shall include dimensions and relative elevations of structures, the location and outline form of equipment, storage tanks, location and size of piping, and ground elevations.

(B) Plans for new construction.

1. Location plan. A plan shall show the location of the agrichemical facility in relation to streams, roads, water supply systems, property lines, and any dwellings or structures not owned by the agrichemical facility in the immediate area of the facility.

2. General layout. Layouts of the proposed agrichemical containment facility shall show topography of the site, size, and location of storage tanks and containment structures, schematic flow diagram showing the flow through the various agrichemical mixing and handling systems, piping including any arrangements for bypassing individual systems, agrichemical handled and direction of flow through pipes, pumps and valves used for handling agrichemicals, storage areas for waste materials that cannot be reused (mud and sediment from sumps, dry fertilizer, and pesticide materials accumulated during clean

up processes, etc.), any test borings showing soil and rock elevations and composition at the proposed site, and information showing existing groundwater elevations in relation to proposed liner installation and containment area floors shall be provided.

3. Detail plans. Unless otherwise covered by the specifications or engineer's report, detail plans shall show location, dimensions, and elevations of all existing and proposed facilities; elevations of high and low groundwater level; size, pertinent features, and operating capacity of all pumps, tanks, containment areas, and other mechanical devices associated with the operation of the agrichemical facility and adequate description of any other features pertinent to the design and operation of the agrichemical containment facility.

(15) Specifications. Complete technical specifications for new construction shall be included with the plans. The specifications included with construction drawings shall include, but not be limited to, all construction information not shown on the drawings which is necessary to inform the builder in detail of the design requirements as to the quality of materials and workmanship and fabrication of the project and type, size, strength, operating characteristics, and rating of equipment; the complete requirements for all mechanical and electrical equipment, including machinery, valves, piping and jointing of pipe; electrical apparatus, wiring, and instrumentation; operating tools; construction materials; special construction materials such as clay, sand, concrete, or steel; miscellaneous appurtenances; instructions for testing materials and equipment as necessary to meet design standards and performance tests for the completed works and component units. It is suggested that these performance tests be conducted at the design conditions for the operation of the agrichemical facility whenever practical.

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**Original authority: 644.026, RSMo 1972, amended 1973, 1987, 1993, 1995, 2000, 2012, 2014 and 644.036, RSMo 1972, amended 1973, 2000, 2002, 2006, 2009, 2011.*