

MICHIGAN DEPARTMENT OF AGRICULTURE

PESTICIDE AND PLANT PEST MANAGEMENT DIVISION

REGULATION NO. 642. ON FARM FERTILIZER BULK STORAGE

(By authority conferred on the director of the department of agriculture by section 8513 of 1994 PA 451, MCL 324.8513.)

R 285.642.1 Definitions.

Rule 1. (1) As used in these rules:

(a) "Approved" means approval by the director of the department or his or her representative.

(b) "Appurtenances" mean any of the following which are connected to a bulk fertilizer container or which are used for transferring bulk fertilizer between containers:

- (i) Valves.
- (ii) Gauges.
- (iii) Portable manufacturing units.
- (iv) Pumps.
- (v) Fittings.
- (vi) Hoses.
- (vii) Mixing containers.
- (viii) Plumbing.
- (ix) Metering devices.

(c) "Aqua ammonia" means an aqueous solution of anhydrous ammonia which generally contains 18% to 30% of ammonia (NH₃) by weight and which has a vapor pressure that usually varies from 0 to 10 pounds per square inch gauge (psig) at 104 degrees Fahrenheit.

(d) "Bulk fertilizer" means fluid fertilizer in a single container that has a capacity of more than 2,500 United States gallons, or a combined total capacity for all storage containers or tanks located at a single site or location greater than 7,500 United States gallons. For purposes of this rule, use solutions and rinsates are bulk fertilizers if they are in containers that meet the capacities specified in this subdivision.

(e) "Department" means the Michigan department of agriculture.

(f) "Discharge" means an uncontained release to the environment in a quantity that is more than 55 United States gallons of bulk fertilizer. "Discharge" does not include a fully contained transfer of bulk fertilizer that is made pursuant to storage, distribution, or intended agronomic use.

(g) "Elephant ring" means a storage container which has an open top and which serves as a secondary containment vessel into which a primary storage container with a smaller volume is placed.

(h) "Existing bulk storage facility" means a facility that on the effective date of this rule, is being used to store or hold bulk fertilizers where the location of bulk

containers remains the same whether bulk containers are replaced, added to, or reorganized.

(i) "Farm" means the land, plants, animals, buildings, structures, including ponds used for agricultural or aquacultural activities, machinery, equipment, and other appurtenances used in the commercial production of farm products.

(j) "Farm fertilizer bulk storage" means the storage of bulk fertilizer by an agricultural producer for use in an agricultural operation that is owned, operated, or controlled by that producer.

(k) "Farm storage facility" means a facility which is used to store or hold bulk fertilizer and which is owned, operated, controlled, or leased as part of the farm operation or by a person who uses bulk fertilizer for his or her own agricultural use.

(l) "Fertilizer" means a substance containing 1 or more recognized plant nutrients, which substance is used for its plant nutrient content and which is designed for use, or claimed to have value, in promoting plant growth. Fertilizer does not include unmanipulated animal and vegetable manures, marl, lime, limestone, wood ashes, and other materials exempted by rules promulgated under this part.

(m) "Field operations" means the application of fertilizer to soil or plants in the course of normal agricultural or horticultural practice.

(n) "Floodplain", for the purpose of this rule, means any land area that is subject to a 1% or greater chance of flooding. This is equivalent to a 100-year flood.

(o) "Fluid fertilizer" means fertilizer in fluid form and includes solutions, emulsions, suspensions, and slurries. "Fluid fertilizer" does not include anhydrous ammonia.

(p) "Groundwater" means underground water within the zone of saturation.

(q) "Mobile container" means a container designed or used for transporting fertilizer.

(r) "New bulk storage facility" means a storage facility as designated by the director or a storage facility that locates new, used, or refurbished bulk containers where, before the effective date of this rule, bulk storage was not conducted.

(s) "Operational area" means an area or areas at a farm storage facility where bulk fertilizers are transferred, loaded, unloaded, mixed, or refilled.

(t) "Operational area containment" means any structure or system that is designed and constructed to effectively intercept and contain spills, container or equipment washwater, and precipitation to prevent the runoff or leaching of fertilizer from an operational area.

(u) "Primary containment" means the storage of bulk fertilizer in storage containers at a storage facility.

(v) "Rinsate" means the liquid that is generated from the rinsing of the interior surface of any fertilizer application equipment or fertilizer container that has come in direct contact with any fertilizer. "Rinsate" includes the liquid that is generated by cleaning a containment area in accordance with the provisions of R 285.642.10(2).

(w) "Secondary containment" means any structure, including dikes, that is effectively designed and constructed to contain spills or leaks and to prevent escapes, runoff, and leaching of fertilizer from bulk storage containers and appurtenances.

(x) "Spill" means a contained release, within a containment area or operational pad, in a quantity that is more than 55 United States gallons of bulk fertilizer. "Spill" does not include a fully contained transfer of bulk fertilizer that is made pursuant to storage, distribution, or intended agronomic use.

(y) "Storage container" means a container, rail car, nurse tank, or mobile container that is used for the storage of bulk fertilizer. "Storage container" does not include any of the following:

(i) A mobile container that stores bulk fertilizer at a farm storage facility for less than 30 consecutive days.

(ii) A mobile container that is located other than on property which is owned, operated, or controlled by an owner or operator of a farm storage facility for less than 30 consecutive days.

(iii) A container which is 2,500 gallons or less and which is used solely as emergency storage for leaking fertilizer containers.

(z) "Sump" means any catch basin, pit, or reservoir, and those trenches and troughs connected to them, that serve to collect liquid.

(aa) "Surface water", for the purposes of this rule, means a body of water that has its top surface exposed to the atmosphere and includes lakes, ponds, or water holes that cover an area greater than 0.25 acres and streams, rivers, or waterways that maintain a flow year-round. "Surface water" does not include waterways with intermittent flow.

(bb) "Washwater" means the liquid that is generated from rinsing the exterior surfaces of application, handling, storage, transportation, or nurse equipment. "Washwater" does not include the liquid that is generated by cleaning a containment area in accordance with the provisions of R 285.642.10(2).

History: 2003 AACS.

R 285.642.2 General department authority and compliance periods.

Rule 2. (1) Farm storage facilities that are placed in service after the effective date of this rule shall immediately comply with this rule. Facilities that are in service before the effective date of this rule shall have 5 years to comply with all portions of this rule.

(2) After the compliance period has been reached, a person shall not operate a farm storage facility in Michigan unless it has met all of the requirements of these rules, or has a plan approved by the department, which includes a specified time frame.

(3) The department may exempt any person from a requirement under these rules if compliance is not technically feasible, as determined by the department, and the department finds that alternative measures provide substantially similar protection against a discharge to the environment. All information which is required to prove that substantially similar protection is possible shall be provided to the department by the person who requests the exemption.

History: 2003 AACS.

R 285.642.3 Siting of farm storage facilities.

Rule 3. (1) The siting of a farm storage facility shall comply with applicable local, state, and federal regulations.

(2) New bulk storage facilities and their respective containment areas shall be located as follows:

(a) Above a floodplain as defined in R 285.642.1(1).

(b) A minimum of 200 feet from surface water.

(c) A minimum of 2,000 feet from type I and type IIa public water supply wells, as defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(d) A minimum of 800 feet from type IIb and type III public water supply wells, as defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(e) A minimum of 150 feet from all other drinking water supply wells that are not defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(3) Existing bulk storage facilities that have approved containment shall have the outside base of the containment areas located as follows:

(a) A minimum of 200 feet from type I and type IIa public water supply wells, as defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(b) A minimum of 75 feet from type IIb and type III public water supply wells, as defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(c) A minimum of 50 feet from all other drinking water supply wells that are not defined by the provisions of 1976 PA 399, MCL 325.1001 et seq.

(4) All farm storage facilities shall utilize appropriate engineering safeguards as approved by the department to prevent groundwater or surface water contamination if the floodplain, surface water, or water supply setback requirements in subrules (2) and (3) of this rule cannot be met.

(5) Bulk storage construction standards for primary and secondary containment facilities that are constructed after the effective date of this rule shall be of a type recommended by any of the following entities:

(a) Michigan state university.

(b) Midwest plan service.

(c) Tennessee valley authority.

(d) United States department of agriculture natural resources conservation service.

(e) A state licensed professional engineer.

(f) Other sources recommending facilities based on standard engineering design, as approved by the department.

(6) The department is not liable for the structural integrity of a department-approved storage facility.

History: 2003 AACCS.

R 285.642.4 Primary containment of bulk liquid fertilizer.

Rule 4. (1) Storage containers and appurtenances shall be constructed, installed, and maintained to prevent the unintentional discharge of fluid fertilizer.

(2) Storage containers and appurtenances shall be constructed of materials that are resistant to corrosion, puncture, or cracking.

(3) Metals that are used for valves, fittings, and repairs on metal containers shall be compatible with the metals that are used in the construction of the storage container so that the combination of metals does not cause or increase corrosion which may weaken the storage container or its appurtenances or create a risk of discharge.

(4) Storage containers and appurtenances shall be designed to handle all operating stresses, taking into account static head, pressure buildup from pumps and compressors, and any other mechanical stresses to which the storage containers and appurtenances may be subject in the course of operations.

(5) Storage containers and appurtenances, including pipes, shall be protected against reasonably foreseeable risks of damage by trucks and other moving vehicles that are engaged in the handling of bulk fertilizers.

(6) Storage containers and appurtenances shall be constructed of materials that are compatible with the product or products being stored and handled.

(7) Storage containers shall not be filled beyond the capacity for which they are designed, taking into account the physical characteristics of the fluid that is being stored.

(8) Flexible connections and properly supported appurtenances shall be utilized as dictated by standard engineering practices to reduce vibrational and stress-related deterioration.

(9) Backflow protection or a fixed air gap shall be utilized to protect water lines as required by standard engineering and plumbing practices.

(10) Primary containment piping shall be located above the ground and within secondary containment. The end of primary containment piping or any manifold device shall remain within secondary containment.

(11) Storage containers shall be anchored, elevated, or secured by some other means as necessary to prevent flotation or instability.

(12) Mobile storage containers that contain liquid fertilizer shall be stored not less than 100 feet from a water well or surface water.

(13) A person shall not store liquid fertilizer in a container that is located underground.

(14) An adequate distance to allow for inspection and maintenance shall be maintained between storage containers and between storage containers and the secondary containment wall.

(15) Facilities that have existing secondary containment areas on the effective date of this rule which do not provide adequate distance to allow for inspection and maintenance, shall provide this distance at the time any physical changes to storage containers or the secondary containment takes place.

(16) Storage containers shall be labeled as fertilizer in order to identify the contents within. The storage container labeling shall be in a prominent location with lettering that is a minimum of 4 inches in height.

History: 2003 AACCS.

R 285.642.5 Liquid level gauging devices.

Rule 5. (1) All storage containers shall have the capability to have the liquid level within the storage container measured readily and safely.

Liquid level gauging may be accomplished using any of the following:

- (a) Tank markings.
 - (b) See-through gradations.
 - (c) Dip sticks.
 - (d) Site gauge tubes.
 - (e) Other means for accurately measuring the contents as approved by the department.
- (2) Exterior liquid level gauging devices shall be secured to protect against breakage or vandalism.
- (3) Storage containers with external sight gauges shall have a lockable bottom valve.

History: 2003 AACCS.

R 285.642.6 Security requirements.

Rule 6. (1) Storage containers and appurtenances shall be secured to provide reasonable protection from wildlife, vandalism, and unauthorized access at all times. The container and appurtenance may be secured using any of the following:

- (a) Fencing.
 - (b) Lighting.
 - (c) Locks.
 - (d) Other means to prevent tampering as approved by the department.
- (2) For non-application season storage, all appurtenances and valves on storage containers or mobile containers shall be locked or otherwise secured.
- (3) All storage containers shall be equipped with a shutoff valve that is located on the storage container or at a distance from the storage container dictated by standard engineering practice.
- (4) For multiple valves that are located on a single line, the valve closest to its storage container shall be securable.
- (5) Valves on empty containers shall be closed.

History: 2003 AACCS.

R 285.642.7 Secondary containment of bulk liquid fertilizer.

Rule 7. (1) Primary storage containers of bulk fertilizer shall be located within a diked containment area. Construction of a containment area with a discharge valve or drain is not permitted after the effective date of this rule.

(2) Capacity for secondary containment areas shall meet all of the requirements, as applicable:

- (a) Secondary containment areas not protected from rainfall shall contain a minimum of 110% of the volume of the largest storage container within the diked area, plus the volume that is occupied by all other tanks within and below the height of the dike, plus the volume of a 6-inch rainfall.

(b) Secondary containment areas protected from rainfall shall contain a minimum of 110% of the volume of the largest storage container within the diked area, plus the volume that is occupied by all other tanks within and below the height of the dike.

(c) Secondary containment areas constructed before the effective date of this rule and not having a capacity that includes the 6-inch rainfall are in compliance with this rule. Any such storage facility shall, upon alteration of the secondary containment area or increases in storage container volume, be brought into full compliance within 1 year of the alteration or increase.

(d) Secondary containment areas not protected from rainfall shall provide for a complete separation between bulk fertilizers and bulk pesticides while maintaining the capacity requirements specified in subdivisions (a) to (c) of this subrule.

(e) Tile drainage that underlies areas which are contained by earthen dikes shall be eliminated.

(3) Construction for secondary containment areas shall meet all of the following requirements:

(a) The walls and floors of a secondary containment area shall be constructed of any of the following materials and shall be designed to withstand a full hydrostatic head of any discharged liquid and weight load of material:

(i) Earth.

(ii) Steel.

(iii) Poured reinforced concrete.

(iv) Precast concrete modules.

(v) Solid masonry.

(vi) Other materials designed to withstand a liquid discharge, as approved by the department.

(b) All joints, seams, and cracking shall be sealed to prevent leakage.

(c) Walls shall not be more than 6 feet in height above interior grade unless provision is made for safe access and exiting.

(d) Earthen walls shall have a horizontal-to-vertical slope consistent with standard engineering practice, shall be packed and protected from erosion, and the top shall not be less than 2.5 feet wide.

(e) Piping shall not be installed through the secondary containment wall, except for interconnections between multiple secondary containment structures. This prohibition does not apply to existing bulk storage facilities with properly engineered, monitored, and maintained through-wall piping, as determined by the department.

(f) The floor of a secondary containment area may slope to a watertight catch basin or sump.

(g) Secondary containment areas that are constructed of permeable materials shall be lined with concrete, steel, synthetic liners, or a clay liner to achieve water tightness.

(h) When steel plates are used as a liner, they shall be protected against corrosion and joined in a manner to provide watertight joints.

(i) Synthetic liners shall have a minimum thickness of 30 mils (0.8 millimeters) and be compatible with the materials being stored within the secondary containment area.

(j) Synthetic liners shall be installed under the supervision of a qualified representative of the manufacturer and all field-constructed seams shall be tested and repaired, if necessary, in accordance with the manufacturer's recommendations.

(k) Soil or earthen liners may be used for fertilizer bulk storage secondary containment structures and shall meet all of the following requirements:

(i) Soil liners shall be maintained free of major cracking and vegetation.

(ii) The surface soil shall be sealed, including the berm of an earthen dike with a sealing agent, such as sodium bentonite, attapulgite, or a similar clay material.

(iii) The soil liner shall be constructed in accordance with standard engineering recommendations to achieve a coefficient of permeability not more than 1.0×10^{-6} cm/sec at construction and which is maintained at 1.0×10^{-5} cm/sec.

(l) Sump construction shall be of the same thickness on all sides including the base of the sump, as for the remainder of the containment area base and shall be watertight.

(m) Design and construction specifications for the sump shall address sediment accumulation, sediment removal, and freeze-thaw cycles.

(n) The department may, based on generally accepted methodology, approve the use of experimental materials upon written confirmation from the manufacturer regarding the pertinent specifications of the material for use in fertilizer containment.

(4) Farm storage facilities utilizing an individual storage container with a capacity of 100,000 gallons or more, shall follow the requirements for secondary containment in the provisions of R 285.641.7(4), commercial fertilizer bulk storage.

History: 2003 AACCS.

R 285.642.8 Alternative to diking for storage containers.

Rule 8. (1) An individual storage container that has a capacity of less than 3,000 gallons may be contained within an elephant ring instead of a diked containment area.

(2) Both the primary storage container and the elephant ring shall be fabricated of material that is compatible with each other and with the fertilizer that is being stored.

(3) The height of the elephant ring wall shall not be more than 4 feet.

(4) The volume that is contained within the secondary storage walls up to the working height of the elephant ring shall be sufficient to contain 110% of the volume that is contained in the primary storage container plus the volume that is displaced by the footings of any equipment which is placed within the secondary containment vessel.

(5) The elephant ring shall be free of leaks and structural defects. The base shall be protected from corrosion, both from inside and outside, and shall be underlaid with a concrete pad or with 8 inches of compacted gravel beneath 4 inches of compacted sand or clay, or shall be protected as recommended by the manufacturer of the elephant ring.

(6) All piping connections to the primary storage container shall be made over the wall of the elephant ring and shall be adequately supported and braced. Pumps and other fixtures, if located within the elephant ring containment structure, shall be placed on an elevated platform or otherwise protected from water accumulation.

(7) Accumulations of storm water and other material shall be pumped over the wall of the elephant ring and shall be disposed of in accordance with the provisions of R 285.642.10(1).

History: 2003 AACCS.

R 285.642.9 Operational area containment of liquid fertilizer.

Rule 9. (1) Loading and unloading operations shall be supervised at all times by an attendant who is familiar with the operation of the mechanical appurtenances in use at the farm storage facility and who is familiar with the procedures that are used for the control and recovery of discharges.

(2) Operational areas shall be utilized for transferring, loading, unloading, and mixing fertilizers at farm storage facilities.

(3) A farm storage facility shall comply with one or more of the following operational area containment system options (a), (b), and (c):

(a) An operational area designed and constructed of an impermeable material to effectively intercept and contain bulk fertilizer spills and leaks, preventing runoff or leaching.

(i) The operational area containment shall be constructed and reinforced to handle at least the foreseeable maximum gross load that may be on the pad. Cracks and seams shall be kept sealed.

(ii) The operational area containment shall have a minimum width of 10 feet and a minimum length of 20 feet. Any fill or unloading point of the mobile container shall be positioned over the containment area during loading or unloading to assure retention of any discharge.

(iii) The operational area containments shall provide the capacity to hold at least 750 gallons or the volume of the largest application equipment tank, whichever is less.

(b) A portable operational area containment system which meets the requirements of subdivision (a)(ii) and (iii) of this subrule.

(c) A closed transfer system shall be used for all liquid fertilizer operations.

(i) The closed transfer system shall be designed to have dry couplers on every connection related to fertilizer operational activities. All hoses used in this system shall follow the manufacturer warranty.

(ii) An anti-overflow device shall be utilized during loading and unloading operational activities. An anti-overflow device includes, but is not limited to, any of the following:

(A) An alarm.

(B) An automatic shut-off valve such as a float.

(C) An inline flow meter with a shut-off sensor.

(iii) The facility shall have an empty container with at least a 150-gallon capacity under the point of transfer.

(4) Operational area containment does not apply to mobile containers that are used to nurse field operations when at a field unloading site.

History: 2003 AACCS.

R 285.642.10 Containment area management and operation.

Rule 10. (1) When a secondary containment area is in use, accumulated precipitation, spills, or leaks within the containment area shall be managed as follows:

(a) Accumulated liquids shall be removed by a manually activated pump. Automatic pumps with float switches are prohibited.

(b) Accumulated liquids, discharges, or spills shall be promptly recovered from containment areas.

(c) For accumulated liquids that do not contain any fertilizer, liquids may be discharged from containment areas as surface runoff but shall not be discharged directly into any surface water, waterway, storm drain, or field tile.

(d) For accumulated liquids that may contain fertilizer, liquids shall be removed from containment areas and may be applied at agronomic rates to sites where the fertilizer can be utilized as intended.

(e) If a spill occurs within a containment area and following collection and recovery of the fertilizer containing liquids, the area shall be cleaned in accordance with the provisions of subrule (2) of this rule before resuming the management practice of discharging non-fertilizer containing accumulated liquids as surface runoff.

(2) For cleaning containment areas, all of the following requirements apply:

(a) Wash the area using a biodegradable cleaner.

(b) Double rinse the area using clean water.

(c) Remove all rinsate that is generated by the containment area cleaning process.

(3) Earthen dikes shall be promptly remediated if there is a spill or leak, which may require the removal of the soil in the containment area. Soil remediation shall be carried out under the direction of the department based on soil type and concentration levels.

History: 2003 AACCS.

R 285.642.11 Site closure and discontinuation of operation.

Rule 11. (1) If a farm storage facility is closed or operations are discontinued, then both of the following provisions shall be complied with:

(a) All fertilizers, rinsates, washwaters, and other materials that contain fertilizers shall be removed from the facility site and utilized for the original intended purpose of the product or disposed of in a manner that is approved by the department.

(b) The storage containers at the facility shall be thoroughly cleaned by double rinsing or the equivalent.

History: 2003 AACCS.

R 285.642.12 Discharge response plan.

Rule 12. (1) An operator of a farm storage facility shall prepare a site specific written discharge response plan for the storage facility. At a minimum, the plan shall include all of the following information:

(a) Site plan depicting all structures, on-site wells, nearby sensitive areas and wells, surface water, runoff routes, and ditches.

(b) Location of storage and handling areas including containers and their general contents.

(c) Identities and telephone numbers of the persons or agencies that are to be contacted in the event of a discharge, including the persons who are responsible for the stored fertilizer.

(2) An operator shall keep the plan current and readily available at the farm storage facility.

(3) The operator of the farm storage facility shall inform the local fire and police departments of the existence of the plan.

(4) Every farm storage facility shall have an appropriate spill kit readily available in the event of a discharge or spill. The spill kit may include equipment, pumps, containers, and absorbent materials.

(5) Any discharges to the environment shall be immediately reported to the department, 1-800-405-0101, available 24 hours a day.

History: 2003 AACS.

R 285.642.13 Inspection and maintenance requirements.

Rule 13. (1) An operator of a farm storage facility shall maintain the facility to minimize the risk of a discharge.

(2) An operator of a farm storage facility shall visually inspect the facility on a regular basis while the facility is being utilized for the storage of bulk fertilizer.

(3) All secondary containment and operational areas shall be maintained free of debris and foreign matter.

History: 2003 AACS.

R 285.642.14 Remediation actions.

Rule 14. (1) If a discharge to the environment is reported or it is determined that a discharge to the environment has occurred, then an operator shall comply with all of the following provisions:

(a) Remove contaminated materials from the site, determine the concentration of fertilizer, and field-apply at or below agronomic rates or properly dispose of the contaminated material under the direction of the department based on the type of contamination and concentration levels.

(b) If the facility operator decides to close the facility as a result of a contamination notification, the facility shall be closed in accordance with the provisions of R 285.642.11.

History: 2003 AACS.