

## Chapter Ag 162

### FERTILIZER BULK STORAGE

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Note: See ch. Ag 163 for rules on pesticide bulk storage.

#### Ag 162.01 Definitions. As used in this chapter:

(1) "Appurtenances" means all valves, pumps, fittings, pipes, hoses, metering devices, mixing containers and dispensing devices which are connected to a storage container, or which are used to transfer liquid bulk fertilizer into or out of a storage container.

(2) "Bulk fertilizer" means fertilizer distributed in a nonpackaged form. It does not include fertilizer distributed in bags, bottles, or any other container having a capacity of not more than 55 gallons (208 liters) or 500 pounds (226 kilograms).

(3) "Discharge" means a spill, leak, accidental or intentional release, or other emission of liquid bulk fertilizer from a container or appurtenance, and includes a discharge into secondary containment. It does not include a fully contained transfer of liquid bulk fertilizer which is made pursuant to sale, storage or distribution.

(4) "Distribute" means to import, consign, sell, offer for sale, solicit orders for sale or otherwise supply fertilizer for sale or use in this state.

(5) "Fertilizer" has the meaning specified under s. 94.64 (1) (e), Stats., except that it does not include anhydrous ammonia.

(6) "Groundwater" means any of the waters of the state, as defined in s. 144.01 (19), Stats., occurring in a saturated subsurface geological formation of rock or soil.

(7) "Inorganic soil" means a soil composed of less than 30% organic matter, measured as less than 15% organic carbon by weight.

(8) "Liquid fertilizer" means a fertilizer in fluid form, and includes solutions, suspensions and slurries.

(9) "Manufacture" means to process, granulate, compound, produce, mix, blend or alter the composition of fertilizer.

(10) "Person" has the meaning specified under s. 144.01 (9m), Stats.

(11) "Storage" means storage of bulk fertilizer by a person who manufactures or distributes bulk fertilizer.

(12) "Storage container" means a container used for the fixed storage of liquid bulk fertilizer. It includes a rail car, nurse tank, or other mobile container which is used for the fixed storage of liquid bulk fertilizer for more than 15 consecutive days.

(13) "Storage facility" means a location at which bulk fertilizer is held in storage.

(14) "Waters of the state" has the meaning specified under s. 144.01 (19), Stats.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.02 Storage containers and appurtenances; liquid fertilizer. (1) GENERAL REQUIREMENTS.** Storage containers and appurtenances shall be constructed, installed and maintained so as to prevent the discharge of liquid bulk fertilizer. Storage containers and appurtenances shall be constructed of materials which are resistant to corrosion, puncture or cracking. Materials used in the construction or repair of storage containers and appurtenances may not be of a type which reacts chemically or electrolytically with stored bulk fertilizer in a way which may weaken the storage container or appurtenance, or create a risk of discharge. Metals used for valves, fittings and storage container repair on metal containers shall be compatible with the metals 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. 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 foreseeable course of operations.

(2) **APPURTENANCES.** (a) Every storage container connection, except a safety relief connection, shall be equipped with a shut-off valve located on the storage container or at a distance from the storage container dictated by standard engineering practice. Valves shall be secured to protect against vandalism or accidental valve openings which may result in a discharge.

(b) Pipes and fittings shall be adequately supported to prevent sagging and possible breakage because of gravity and other forces which may be encountered in the ordinary course of operations.

(3) **LIQUID LEVEL GAUGING DEVICE.** Every storage container shall be equipped with a liquid level gauging device by which the level of liquid in the storage container can be readily and safely determined. A liquid level gauging device is not required if the level of liquid in a storage container can be readily and reliably measured by other means. Liquid level gauging devices shall be secured, in a safe manner, to protect against breakage or vandalism which may result in a discharge.

(4) **PROHIBITED MATERIALS.** (a) Storage containers and appurtenances used for the storage of nitrogen solutions may not be constructed of copper, brass, zinc, or copper base alloys.

(b) Storage containers and appurtenances used for the storage of liquid fertilizers containing phosphates or chlorides may not be constructed of aluminum or aluminum alloys.

(c) Storage containers and appurtenances used for the storage of low pH liquid fertilizers may not be constructed of ferrous materials other than stainless steel unless the materials are coated or treated with protective substances which are adequate to inhibit corrosion.

(d) Storage containers and appurtenances used for the storage of phosphoric acid may not be constructed of ferrous materials other than 316 or 317 stainless steel unless the container is lined with a suitable substance to prevent corrosion.

(e) Storage containers and appurtenances used for the storage of liquid fertilizers containing potassium chloride (potash) may not be constructed of ferrous materials other than stainless steel, unless:

1. The containers and appurtenances are coated or treated with protective substances which are adequate to inhibit corrosion; or

2. The container or appurtenance is used for storage periods of not more than 3 months each, and is completely emptied between storage periods. Empty containers and appurtenances shall be cleaned and inspected for leaks prior to being refilled for any subsequent storage period.

(5) ANCHORING OF STORAGE CONTAINERS. Storage containers shall be anchored, as necessary, to prevent flotation or instability which might occur as a result of liquid accumulations within a secondary containment facility under s. Ag 162.04.

(6) SECURITY. Storage containers and appurtenances shall be fenced or otherwise secured to provide reasonable protection against vandalism or unauthorized access which may result in a discharge. Valves on storage containers shall be locked or otherwise secured except when persons responsible for facility security are present at the facility. Valves on rail cars, nurse tanks, and other mobile fertilizer containers parked overnight at a storage facility shall be locked or secured except when persons responsible for facility security are present at the facility. Valves on empty containers need not be secured.

(7) CAPACITY. Storage containers may not be filled beyond the capacity for which they are designed, taking into account the density of the liquid being stored and thermal expansion during storage.

(8) INSPECTION AND MAINTENANCE. The operator of a storage facility shall routinely inspect and maintain storage facilities, storage containers and appurtenances to minimize the risk of a discharge. The operator shall inspect valves and other appurtenances for leakage at least weekly, and shall measure and record the liquid fertilizer level in each storage container at least weekly.

During the months of April and May, the liquid fertilizer level in a storage container need not be measured and recorded weekly, provided that liquid fertilizer is being transferred into or out of the storage container on a regular basis, the storage container is inspected twice weekly, and the liquid fertilizer level is measured and recorded at the end of each month. A written record of all inspections and maintenance shall be made on the day of the inspection or maintenance. Inspection and maintenance records shall be kept at the storage site, or at the nearest local office from which the storage site is administered.

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(9) LABELING OF STORAGE CONTAINERS. Every storage container shall be clearly and conspicuously labeled to identify its fertilizer contents, as provided in s. 94.64 (2) (d), Stats.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.03 Loading areas; liquid fertilizer.** (1) CURBED AND PAVED SURFACE; CATCH BASIN. (a) Areas used for loading liquid bulk fertilizer into storage containers, or for unloading liquid bulk fertilizer from storage containers into mobile containers, shall be curbed and paved with asphalt, concrete or other department approved material. The curbed and paved surface shall form or drain into a liquid-tight catch basin. If the curbed and paved surface drains to a sump, the catch basin may include the sump and an above-ground container, providing a pump is installed which automatically transfers the contents of the sump into an above-ground container. Except as provided in par. (b), curbed surfaces and catch basins shall be of adequate size and design to contain a combined total of at least 1,500 gallons (5,680 liters) of discharged liquid.

Note: The department will maintain a list of approved paving materials for given fertilizer materials, and provide the current list to interested persons upon request. Additional materials may be approved and added to this list upon submission and review of chemical compatibility and permeability information provided to the department by the product manufacturer.

(b) If no storage container used at the storage facility has a capacity of more than 1,000 gallons (3,780 liters), and if no mobile container used to transfer liquid bulk fertilizer to or from storage containers has a capacity of more than 1,000 gallons, the curbed surface and catch basin shall be of adequate size and design to contain 1.25 times the capacity of the largest storage container or mobile container used, whichever is larger.

(2) PROTECTION AGAINST DAMAGE BY MOVING VEHICLES. Storage containers and appurtenances, including pipes, shall be protected against reasonably foreseeable risks of damage by trucks and other moving vehicles engaged in the loading or unloading of bulk fertilizer.

(3) RECOVERY OF DISCHARGES; LOADING AREAS. Discharges incident to loading or unloading shall be promptly recovered from the paved surface and catch basin, such that the capacity required under sub. (1) is available at all times.

History: Cr. Register, September, 1985, No. 357, eff. 1-1-88.

**Ag 162.04 Secondary containment; liquid fertilizer.** (1) GENERAL REQUIREMENTS. Except as provided in sub. (9), storage containers shall be enclosed in a secondary containment facility which is adequate, in the event of a discharge, to prevent the movement of liquid fertilizer to waters of the state including groundwater. A secondary containment facility shall consist of:

- (a) A wall and liner as provided under subs. (3) and (4);
- (b) A prefabricated facility as provided under sub. (5); or
- (c) A drainage and basin facility as provided under sub. (6).

(2) CAPACITY. The capacity of a secondary containment facility shall be at least equal to the sum of all of the following:

(a) The greatest volume of liquid which could be discharged from the largest storage container located within the secondary containment facility;

(b) Twenty-five percent of the capacity of the largest storage container located within the secondary containment facility; and

(c) The total volume of discharged liquid which would be displaced by the submerged portions of all other storage containers, fixtures and materials located within the secondary containment facility, if the facility were filled to capacity with discharge liquid.

(3) **WALLS.** The walls of a secondary containment facility shall be constructed of earth, steel, concrete or solid masonry, and be designed to withstand a full hydrostatic head of any discharged liquid. Cracks and seams shall be sealed to prevent leakage. Walls constructed of earth or other permeable materials shall be lined as provided under sub. (4). Earthen walls shall have a horizontal-to-vertical slope of at least 3 to one, unless a steeper slope is consistent with good engineering practice, and shall be protected from erosion. Walls may not exceed 6 feet (1.8 meters) in height above interior grade unless provisions are made for normal access and necessary emergency access to tanks, valves and other equipment, and for safe exit from the secondary containment facility.

(4) **LINING.** (a) *General requirement.* The base of a secondary containment facility, and any earthen walls of the facility shall be lined with asphalt, concrete, an approved synthetic liner, or a clay soil liner designed to limit the permeability of the base and walls. Liners shall meet the requirements of this subsection.

(b) *Asphalt or concrete liners.* Asphalt or concrete liners shall be designed according to good engineering practices to withstand any foreseeable loading conditions, including a full hydrostatic head of discharged liquid. Cracks and seams shall be sealed to prevent leakage.

(c) *Synthetic liners.* Synthetic liners shall be approved by the department. Synthetic liners shall have a minimum thickness of 30 mils (0.8 millimeters), and be chemically compatible with the materials being stored within the facility. A synthetic liner may not be approved by the department until the manufacturer of the liner provides the department with a written confirmation of compatibility, and a written estimate of the life of the liner. The synthetic liner shall be protected by a 6 inch (15 centimeter) soil layer below the liner, and a 12 inch (30 centimeter) soil layer above the liner. Both soil layers shall be free of large rocks, angular stones, sticks or other materials which may puncture the liner. 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.

*Note:* The department will maintain a list of approved synthetic liners for given fertilizer materials, and provide the current list to interested persons upon request. Additional liners may be approved and added to the list upon submission and review of chemical compatibility information provided to the department by the liner manufacturer.

(d) *Soil liners.* 1. A liner may be constructed of natural soil, or of natural soil treated with bentonite clay, provided that the liner meets the requirements of this paragraph. The liner shall be designed and constructed according to good engineering practices, to achieve a coefficient

of permeability not to exceed  $1 \times 10^{-6}$  cm/sec, with a thickness of not less than 6 inches (15 centimeters). The liner shall be covered by an inorganic soil layer not less than 6 inches (15 centimeters) thick, and shall be maintained, as necessary, to prevent cracking. Liners may not be constructed of frost-susceptible soils, which include silts and silty sand.

2. A natural soil may not be used in a soil liner if less than 50% by weight of the natural soil passes a No. 200 sieve, or if more than 5% by weight of the natural soil is retained on a No. 4 sieve. Natural soil liners shall contain less than 2% organic material and shall have a plasticity index of at least 15.

3. Bentonite treated liners shall consist of a uniform mixture of natural soil and bentonite. The natural soil used in the mixture shall have a plasticity index of at least 12. At least 30% by weight of the natural soil shall pass a No. 200 sieve, and less than 5% by weight of the natural soil shall be retained on a No. 4 sieve. Ninety percent of the bentonite by weight shall pass a No. 80 sieve, and the soil-bentonite mixture shall contain at least 5% bentonite by weight.

(5) **PREFABRICATED FACILITIES.** A prefabricated facility shall be composed of a rigid prefabricated basin having both a base and walls constructed of steel or synthetic materials which are resistant to corrosion, puncture or cracking. Materials used in the facility shall be chemically compatible with the products being stored within the secondary containment facility. A written confirmation of compatibility from the basin manufacturer shall be kept on file at the storage facility or at the nearest local office from which the storage facility is administered. The prefabricated facility shall be designed and installed to withstand all foreseeable loading conditions, including the tank load and a full hydrostatic head of any discharged liquid. If multiple basins are connected to provide the capacity required under sub. (2), the basins shall be connected in a manner which assures an unrestricted transfer of discharge liquid between basins.

(6) **DRAINAGE AND BASIN FACILITY.** (a) A drainage and basin facility consists of a curbed and lined base which diverts upslope runoff and drains completely into a lined holding basin having the capacity specified in sub. (2). The base and the drainage path shall be lined in compliance with sub. (4). The holding basin shall be lined in compliance with sub. (4) (c) or (4) (d), except that if a soil liner is used, the soil liner shall be at least 12 inches (30 centimeters) thick and be constructed in lifts not to exceed 6 inches (15 centimeters) in thickness.

(b) A drainage and basin facility may be used for secondary containment purposes upon written approval by the department. Proposed drainage and basin facilities shall be individually reviewed by the department, and may be approved if the department finds that the proposed facility, when compared to other possible methods of secondary containment, provides substantially similar protection for the waters of the state. Persons seeking approval for a proposed drainage and basin facility shall submit a written proposal to the department. The proposal shall include:

1. The proposed site plan. The site plan shall specify the size, type and location of each storage container. It shall also indicate the size, shape and location of the lined base, drainage path and holding basin.

2. A topographic survey of the site showing the relief at 2 foot intervals, the intended flow pattern of liquid on and around the drainage and basin system, and the method of upslope diversion to be used.

3. A subsurface investigation report based on a minimum of 3 soil borings to a depth of 25 feet (7.6 meters), or to the water table. The report shall indicate soil classifications and locations of major geological features including bedrock and water table.

4. Specifications for the lined base and drainage path to the holding basin.

5. Specifications for the holding basin, including the capacity of the holding basin and the type and thickness of the basin liner.

6. A monitoring plan specifying the intended timing and frequency of groundwater and holding basin monitoring.

7. A management plan for the disposal of liquid and solid accumulations within the drainage and basin system.

8. Any other information which the department may require, if the information has a reasonable bearing on the request for approval of the drainage and basin facility.

(7) **INSPECTION AND MAINTENANCE.** (a) *General.* Every secondary containment facility shall be inspected at intervals of not more than 12 months, and be maintained as necessary to assure compliance with this section. A written record of all inspections and maintenance shall be made on the day of the inspection or maintenance, and be kept at the storage facility or at the nearest local office from which the storage facility is administered.

(b) *Precipitation accumulation.* Precipitation may not be permitted to accumulate in a secondary containment facility to the point where the accumulation may tend to:

1. Impair the adequacy of the facility for discharge containment purposes;

2. Increase the corrosion or storage containers or appurtenances; or

3. Impair the stability of storage containers.

(8) **RECOVERY OF DISCHARGES.** Discharges at a storage facility shall be promptly recovered, to the maximum extent feasible. Pumps and recovery containers for this purpose shall be readily available, as provided in s. Ag 162.07 (2).

(9) **EXEMPTIONS.** (a) *Large storage containers; exemption from liner requirements.* A liner need not be installed directly under a storage container having a capacity of 100,000 gallons (378,000 liters) or more which has been constructed on site and put into use prior to July 1, 1985, provided that all of the following conditions are met:

1. A second bottom made of steel shall be constructed for the storage container. The second bottom shall be placed over the original bottom on a layer of course sand having a minimum thickness of 6 inches (15 centimeters).

2. The original bottom of the storage container shall be tested for leaks before the sand layer or second bottom are installed. A record of the test shall be kept on file at the storage facility.

3. The newly constructed steel bottom shall be tested for leaks before any liquid fertilizer is stored on the newly constructed bottom. A record of the test shall be kept on file at the storage facility, or at the nearest local office from which the storage facility is administered.

4. There shall be a method by which leaks from the newly constructed steel bottom into the sand layer may be readily detected.

5. The newly constructed steel bottom shall be tested at least once every 2 years for leaks. A record of the tests shall be kept at the storage facility.

(b) *Exemption for rail cars and underground storage containers.* The secondary containment requirements under this section do not apply to:

1. Rail cars which are periodically moved from the storage facility.

2. Underground storage containers authorized by s. Ag 162.05, if applicable requirements under that section are met.

History: Cr. Register, September, 1985, No. 357, eff. 1-1-88.

**Ag 162.05 Underground liquid storage prohibited; exemptions.** No person may store liquid bulk fertilizer in an underground or lined pit storage container. This prohibition does not apply to:

(1) Storage in a 316 or 317 stainless steel storage container, or in another container specifically approved by the department, if:

(a) The storage container is enclosed within a suitable liner conforming to the standards set forth under s. Ag 162.04 (4); and

(b) A department-approved program of groundwater monitoring is established at the storage site.

(2) A water-tight catch basin used for the temporary collection of runoff or rinsate from transfer and loading areas, pursuant to s. Ag 162.03.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.06 Abandoned containers.** (1) **GENERAL.** Storage containers and other containers used at a storage facility to hold bulk fertilizer or fertilizer rinsate are considered abandoned containers under this section if they have been out of service for more than six months because of a weakness or leak, or have been out of service for more than 2 years. A secondary containment facility is not considered abandoned merely because there have been no discharges into the secondary containment facility.

(2) **UNDERGROUND CONTAINERS.** An underground container, catch basin or lined pit storage container which has been abandoned shall be:

(a) Thoroughly cleaned and removed from the ground; or

(b) Thoroughly cleaned and filled with an inert solid. All connections and vents shall be disconnected and sealed. A record of the container size, location and method of closing shall be maintained for each abandoned container at the storage facility.

(3) **ABOVE-GROUND CONTAINERS.** Above-ground containers which have been abandoned shall be thoroughly cleaned. All hatches on the containers shall be left open, and all valves or connections shall be severed and sealed.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.07 Preparations for control and recovery of liquid fertilizer discharges.** (1) **DISCHARGE RESPONSE PLAN.** The operator of a storage facility shall prepare a written discharge response plan for the storage facility. The operator shall keep the plan current at all times. A copy of the plan shall be kept readily available at the storage facility and at the nearest local office from which the storage facility is administered, and shall be available for inspection and copying by the department. The plan shall include:

(a) The identity and telephone number of the persons or agencies who are to be contacted in the event of a discharge, including persons responsible for the stored fertilizer.

(b) An identification of each type of liquid bulk fertilizer stored at the storage facility.

(c) An identification, by location, of every storage container located at the storage facility, and the type of liquid bulk fertilizer stored in each storage container.

(d) For each type of liquid bulk fertilizer stored at the facility, the procedures to be used in controlling and recovering, or otherwise responding to a discharge.

(e) Procedures to be used in disposing of a recovered discharge.

(2) **EQUIPMENT AND SUPPLIES.** (a) Every storage facility shall have access to pumps and recovery containers which can be used to control and recover discharges. Pumps, recovery containers, and persons capable of deploying and operating them, shall be readily available in an emergency. Pumps and recovery containers may include pumps and recovery containers operated by a local fire department or other persons, provided that the use and availability of the pumps and recovery containers is arranged in advance as part of a discharge response plan.

(b) Absorbent materials suitable for the control and cleanup of smaller discharges shall be readily available to every storage facility.

(3) **TRAINING.** Persons employed at storage facilities shall be trained in discharge response procedures, pursuant to the discharge response plan.

Note: The department of natural resources must be promptly informed of the discharge of any hazardous material pursuant to s. 144.76, Stats. Under most circumstances, this requirement would apply to a fertilizer discharge.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.08 Recordkeeping; liquid fertilizer storage.** (1) The following records shall be prepared and maintained on file at every storage facility, or at the nearest local office from which the storage facility is administered:

(a) A record of all discharges at the storage facility, including the date and time of discharge, the type of liquid bulk fertilizer discharged, the volume of the discharge, the cause of the discharge, any action taken to

control or recover the discharge, and the method of disposal of any recovered discharge. The discharge record shall be completed on the day the discharge is discovered and shall be promptly updated to show measures taken to control, recover, use or dispose of the discharge.

(b) A regular record of the liquid fertilizer levels in each storage container. The level in each storage container shall be measured and recorded as provided in s. Ag 162.02 (8).

(c) A semi-annual inventory reconciliation, showing the amount of liquid bulk fertilizer which is lost or unaccounted for at the end of each semi-annual period. The department may require that the inventory reconciliation be made specific to individual storage containers, if the department determines that a container-by-container reconciliation is necessary for a particular storage facility.

(d) Inspection and maintenance records pertaining to storage containers, appurtenances, and secondary containment facilities, as provided under ss. Ag 162.02 (8) and Ag 162.04 (7).

(e) A record of manufacturer's compatibility statements as provided under ss. Ag 162.04 (4) (c) and (5).

(f) A record of underground abandoned containers as provided under s. Ag 162.06 (1) (b).

(2) Records under this section shall be maintained for at least 3 years. Discharge records under sub. (1) (a) shall be maintained for at least 5 years. Records under sub. (1) (e) and (f) shall be kept as permanent records. Records shall be available for inspection and copying by the department.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.09 Storage of non-liquid fertilizer.** (1) Muriate of potash and other non-liquid fertilizer, if stored outdoors, shall be covered with a tarpaulin or other suitable covering to prevent seepage or runoff to waters of the state including groundwater.

(2) Non-liquid fertilizer which is spilled while being loaded or unloaded to or from storage shall be promptly recovered, so as to prevent possible seepage or runoff to waters of the state including groundwater.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.10 Exemptions.** The department may exempt any person from a requirement under this chapter if compliance is not technically feasible, but only if the department finds that alternative measures provide substantially similar protection for the waters of the state. A person requesting an exemption shall provide the department with adequate information to show that alternative measures provide substantially similar protection for the waters of the state.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.

**Ag 162.11 Effective dates.** This chapter shall take effect 90 days after publication in the Wisconsin Administrative Register, except that ss. Ag 162.03 and 162.04 shall take effect on January 1, 1988.

History: Cr. Register, September, 1985, No. 357, eff. 12-29-85.