

**ARTICLE 7-15
FERTILIZER REGULATION**

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**CHAPTER 7-15-01
INVESTIGATIONAL ALLOWANCES**

- Section
 7-15-01-01 Fertilizer Investigational Allowances
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7-15-01-01. Fertilizer Investigational Allowances. A fertilizer shall be deemed deficient if the analysis of any nutrient is below the guarantee by an amount exceeding the values in the following schedule, or if the overall index value of the fertilizer is below 98 percent.

Guarantee, percent	Nitrogen (N)	Avail. Phosphate (P ₂ O ₅)	Sol. Potash (K ₂ O)
Investigational Allowance, percent			
04 or less	0.49	0.67	0.41
05	0.51	0.67	0.43
06	0.52	0.67	0.47
07	0.54	0.68	0.53
08	0.55	0.68	0.60
09	0.57	0.68	0.65
10	0.58	0.69	0.70
12	0.61	0.69	0.79
14	0.63	0.70	0.87
16	0.67	0.70	0.94
18	0.70	0.71	1.01
20	0.73	0.72	1.08
22	0.75	0.72	1.15
24	0.78	0.73	1.21
26	0.81	0.73	1.27
28	0.83	0.74	1.33
30	0.86	0.75	1.39
32	0.88	0.76	1.44
34	0.88	0.79	1.46

Guarantee, percent	Nitrogen (N)	Avail. Phosphate (P ₂ O ₅)	Sol. Potash (K ₂ O)
36	0.88	0.83	1.49
38	0.88	0.86	1.51
40	0.88	0.90	1.54
42	0.88	0.93	1.56
44	0.88	0.96	1.58
46	0.88	1.00	1.61
48	0.88	1.03	1.63
50	0.88	1.07	1.66
52	0.88	1.10	1.68
54	0.88	1.10	1.70
56	0.88	1.10	1.73
58	0.88	1.10	1.75
60	0.88	1.10	1.78
62	0.88	1.10	1.80

The investigational allowance for triple superphosphate, also known as calcium dihydrogen phosphate or monocalcium phosphate, shall be 1.53 percent.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-01-02. Micronutrient investigational allowances. Micronutrients shall be deemed deficient if the analysis of any element is below the guarantee by an amount exceeding the values calculated according to the following schedule:

Element	Investigational Allowance
Calcium	0.2 unit + 5% of guarantee
Magnesium	0.2 unit + 5% of guarantee
Sulfur	0.2 unit + 5% of guarantee
Boron	0.003 unit + 15% of guarantee
Cobalt	0.0001 unit + 30% of guarantee
Chlorine	0.005 unit + 10% of guarantee
Copper	0.005 unit + 10% of guarantee
Iron	0.005 unit + 10% of guarantee

Element	Investigational Allowance
Manganese	0.005 unit + 10% of guarantee
Molybdenum	0.0001 unit + 30% of guarantee
Sodium	0.005 unit + 10% of guarantee
Zinc	0.005 unit + 10% of guarantee
The maximum allowance when calculated in accordance to the above shall be 1 unit (One percentage point).	

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

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**CHAPTER 7-15-02
MICRONUTRIENT GUARANTEED ANALYSIS**

Section

7-15-02-01 Accepted Micronutrients Minimum Concentrations

7-15-02-02 Warning Statements

7-15-02-01. Accepted micronutrient minimum concentrations. Micronutrients when mentioned in any form or manner shall be registered and guaranteed. Guarantees shall be made on the elemental basis. Sources of the elements guaranteed and proof of availability shall be provided to the agriculture commissioner upon request. Except guarantees for those water soluble nutrients labeled for ready to use foliar fertilizers, ready to use specialty liquid fertilizers, hydroponic or continuous liquid feed programs and guarantees for potting, garden and lawn soils, the minimum percentages which will be accepted for registration are as follows:

Element	Minimum Conc., %
Calcium (Ca)	1.0000
Magnesium (Mg)	0.5000
Sulfur (S)	1.0000
Boron (B)	0.0200
Chlorine (Cl)	0.1000
Cobalt (Co)	0.0005
Copper (Cu)	0.0500
Iron (Fe)	0.1000
Manganese (Mn)	0.0500
Molybdenum (Mo)	0.0005
Nickel (Ni)	0.0010
Sodium (Na)	0.1000
Zinc (Zn)	0.0500

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-02-02. Warning Statements. A warning or caution statement may be required for any product which contains a micronutrient in water soluble form when there is evidence that the micronutrient in excess of a certain percentage or concentration

may be harmful to certain crops or where there are unusual environmental conditions.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

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**CHAPTER 7-15-03
LIQUID FERTILIZER CONTAINMENT**

Section

- 7-15-03-01 Definitions
- 7-15-03-02 Liquid Bulk Fertilizer General Requirements
- 7-15-03-03 Secondary Containment
- 7-15-03-04 Operational Containment
- 7-15-03-05 Inspection and Recordkeeping Requirements
- 7-15-03-06 Accidental Release Reporting

7-15-03-01. Definitions. Unless otherwise defined, or made inappropriate by context, all words used in this chapter have meanings given to them under North Dakota Century Code chapter 19-20.1-02.

1. "Approved" means approved by the agriculture commissioner.
2. "Appurtenances" means all valves, pumps, fittings, pipes, hoses, metering devices, mixing containers and dispensing devices that are connected to a storage container, or that are used to transfer liquid bulk fertilizer into or out of a storage container.
3. "Elephant ring" means a container with open top serving as a secondary containment vessel into which a primary storage container(s) is placed.
4. "Liquid bulk fertilizer" means liquid fertilizer in an undivided quantity exceeding fifty-five (55) U.S. gallons.
5. "Liquid fertilizer" means fertilizer in liquid form, and includes solutions, emulsions, suspensions and slurries. "Liquid fertilizer" does not include anhydrous ammonia.
6. "Low pressure nitrogen solutions" means an aqueous solution of ammonium nitrate and/or urea and/or other nitrogen carriers, containing various quantities of free ammonia exceeding two percent by weight. Aqua ammonia and non-pressure nitrogen solutions commonly referred to as 28 percent, 30 percent, or 32 percent nitrogen solutions are excluded from this definition.
7. "Operational area" means an area or areas at a storage facility where fertilizers are transferred, loaded, unloaded, mixed, or where fertilizers are cleaned or washed from application equipment, storage containers, or transportation equipment.

8. "Operational area containment" means any structure or system designed and constructed to effectively intercept and contain spills including container or contaminated wash water and rainwater and to prevent runoff or leaching from a storage facility.
9. "Primary containment" means the storage container used to store liquid bulk fertilizer.
10. "Secondary containment" means any structure used to contain product spills from storage containers.
11. "Storage container" means a container used for the storage of liquid bulk fertilizer, or a rail car, nurse tank, or other mobile container. Storage container does not include:
 - a. A mobile container storing liquid bulk fertilizer at a storage facility for less than 30 days, if this storage is incidental to the loading or unloading of a storage container at the storage facility; or,
 - b. A mobile container located on property that is not owned, operated or controlled by an owner or operator of a storage container; or,
 - c. A container used solely for emergency storage of leaking fertilizer containers that are 55 gallons or smaller.
12. "Storage facility" means a location at which liquid bulk fertilizer in undivided quantities in excess of two thousand five hundred (2,500) gallons is held in storage.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-03-02. General requirements.

1. **Primary containment.** All liquid bulk fertilizer containers must comply with the primary containment requirements of this chapter starting one year from DATE OF APPROVAL.
 - a. Storage containers and appurtenances shall be constructed, installed and maintained so as to prevent the discharge of liquid fertilizer.
 - b. Storage containers and appurtenances shall be constructed of materials which are resistant to corrosion, puncture, or cracking.

- c. Materials used in the construction or repair of storage containers and appurtenances may not be of a type that react chemically or electrolytically with stored liquid fertilizer in a way that may weaken the storage container or appurtenances, or create a risk of discharge.
 - d. Metals used for valves, fittings, and repairs 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.
 - e. 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.
 - f. Every storage container connection located below the maximum fill level of the container shall be equipped with a shut-off valve. The valve shall be placed within three times the diameter of the outlet from the container. For cone or spherical bottom containers, the valve may be located within three times the diameter of the outlet from the skirt or support frame of the container, provided the pipe is secured to the skirt or support frame.
2. **Appurtenances.** Appurtenances shall be adequately supported to prevent sagging and breakage.
 3. **Liquid level gauging device.** Every storage container shall be equipped with a 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 safely secured to the storage container to protect against breakage or vandalism which may result in a discharge. External sight gauges are prohibited unless they are equipped with an automatic shut-off valve.
 4. **Labeling of storage containers.** Every storage container shall be clearly labeled to identify the total amount of product that can be held at one time and its fertilizer contents as provided in NDCC 19-20.1-03.4.

5. **Prohibited materials.**

- a. Storage containers and appurtenances 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 phosphate (>0.1 percent) or chlorides may not be constructed of aluminum or aluminum alloys.
- c. Storage containers and appurtenances used for the storage of highly acidic (pH<5) 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 low pressure nitrogen solutions may not be constructed of mild steel, fiberglass, polyolefin or plastic.
- e. Storage containers and appurtenances used for the storage of phosphoric acid may not be constructed of ferrous materials other than grade 316 or 317 or superior stainless steel unless the container is lined with a suitable substance to prevent corrosion.
- f. Storage containers and appurtenances used for the storage of liquid fertilizers containing potassium chloride (muriate of 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 6 months and is completely emptied between storage periods, and, the empty containers and appurtenances are cleaned and visually inspected for leaks prior to being refilled for any subsequent period.

6. **Container and appurtenance protection.** Storage containers and appurtenances shall be protected against reasonably foreseeable risks of damage by trucks and other moving vehicles.

7. **Locks.** Valves on storage containers must be equipped with a locking withdrawal valve or must be stored in a secure area. The valves must be locked during nonbusiness hours and while unattended. Valves on empty containers need not be locked.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-03-03. Secondary containment. Distributors.

1. **Applicability.** This section only applies to distributors. Any storage facility built after DATE OF APPROVAL must comply with the rules set forth in this chapter. Any storage facility built before DATE OF APPROVAL will have two years from the DATE OF APPROVAL to comply with the requirements of this chapter for secondary containment. Secondary containment must involve use of diking, an elephant ring, or double walled storage containers and shall be required if the liquid fertilizer is present at the storage facility for more than 30 continuous days.
2. **Diking.** Storage containers must be located within a diked area constructed with a base, perimeter wall and sloped floor drain.
 - a. **Capacity.** Taking into account the volume occupied by storage containers and appurtenances, the capacity of the diked area for containment of storage facilities must contain, below the height of the dike:
 - (1) 110 percent of the volume of the largest storage container within the diked area if the secondary containment area is protected from rainfall, or
 - (2) 125 percent of the volume of the largest container if the secondary containment area is not protected from rainfall.
 - b. **Walls.** The following requirements shall be met when constructing walls for diking around the storage facility.
 - (1) The walls of a secondary containment area shall be constructed of earth, steel, concrete, or solid masonry, or other material specifically approved by the manufacturer. The walls must be

designed to withstand the pressure and weight of any discharged liquid and weight load of material used in construction.

- (2) Cracks and seams shall be sealed to prevent leakage.
 - (3) Walls constructed of earth or other permeable materials shall be lined as provided in this chapter. Earthen walls shall have a horizontal-to-vertical slope of at least three to one, unless a steeper slope is consistent with good engineering practice, and shall be packed and protected from erosion. The top of earthen walls shall be no less than 2.5 feet wide at the 125 percent capacity level.
 - (4) Walls constructed of concrete or solid masonry shall rest upon a floating base of concrete as stated in this chapter, or upon suitable concrete footings which extend below the average frost depth to provide structural integrity.
 - (5) Walls may not exceed 3 feet 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 area.
- c. **Liners.** The base and interior of a secondary containment area of any earthen walls of the dike shall be lined with asphalt, concrete, an approved synthetic liner, a clay soil liner, or other approved liner designed to limit permeability of the base and walls while compatible with the stored product.
- (1) 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 and static loads of storage containers, including appurtenances, equipment, and contents. Cracks and seams shall be sealed to prevent leakage.
 - (2) Synthetic liners shall be made of impervious materials which are compatible with the contents of the containment system, have a minimum thickness of 30 mils (0.8 millimeters), and shall be installed according to manufacturer's specifications. Geocomposite liners, such as a layer of sodium bentonite encapsulated between layers of geotextile fabric, are considered synthetic liners. All field constructed seams shall be tested, and repaired if necessary, in

accordance with the manufacturer's recommendations. Manufacturer information on the synthetic liner used and the date of installation must be made available to the agriculture commissioner upon request.

- (3) If a clay liner is used, 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. The liner shall be constructed in accordance with reliable civil engineering practices to achieve a coefficient of permeability not to exceed 1×10^{-6} centimeter per second, with a thickness of not less than 12 inches. The floor and internal walls of the secondary containment area shall have a protective barrier at least equivalent to 6 inches of sand, soil or gravel to limit desiccation, evaporation, freeze/thaw cycling or other physical damage.
- (4) A liner need not be installed directly under a storage container having a capacity of one hundred thousand (100,000) gallons or more which has been put into service prior to the effective date of this rule provided that one of the following alternative procedures are complied with, certified to in writing by the owner of the container, and the certificate is made available to the commissioner. Each option covered under this section shall be implemented only upon review and approval of the commissioner:
 - (a) Option 1: The container shall be emptied, cleaned, and tested for leaks. The walls and floor of the container shall be tested to assure that welds and thickness of steel plates are sound and adequate to contain the fertilizers. A record of the inspection, test results, and of any repairs made shall be made available to the commissioner upon request and maintained by the owner or operator. The interior floor and twelve inches up the walls of the container shall be coated with an approved liner to inhibit corrosion. A record of this procedure shall be made available to the commissioner upon request and maintained by the owner or operator for three years. An approved test for leaks and liner deterioration or metal corrosion shall be conducted every five years thereafter.
 - (b) Option 2: Monitoring devices shall be installed in angled borings under each tank. These monitoring devices shall

constitute a leak detection system for each tank in advance of the point at which any leak would reach groundwater. The number, length, and depth of each boring shall be determined on the basis of site characteristics. The array of monitoring devices under each tank shall constitute the best practical early warning detection system for tank leakage.

- d. **Drainage from secondary containment area.** Existing drainage tile within or underlying a diked area shall be eliminated except where used as a method of monitoring a secondary containment area. The secondary containment area is prohibited from having a relief outlet and valve. The base shall slope to a collection point where storm water can be removed from the secondary containment area by pumping or other means.
3. **Elephant ring.** Storage containers may be contained within an elephant ring in lieu of a diked containment area.
- a. Both the primary storage container and the elephant ring shall be fabricated of material compatible with each other and with the fertilizer being stored.
 - b. The height of the elephant ring wall shall not exceed 3 feet unless provisions are made for escape should flooding occur. The volume contained within the secondary containment storage walls up to the working height of the elephant ring shall be sufficient to contain a volume 125 percent of the volume contained in the primary storage container plus the volume displaced by the footings of any equipment (i.e., pumps, meters, etc.) placed within the secondary containment.
 - c. 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 underlain by a concrete pad or with eight inches of compacted gravel beneath four inches of compacted sand, or clay, or as recommended by the manufacturer of the elephant ring.
 - d. No piping connections to the primary storage container shall be placed through the wall of the elephant ring. All appurtenances 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 above the top of the elephant ring or otherwise protected from flooding.

- e. Accumulations of storm water and other material shall be promptly removed from the elephant ring. The elephant ring shall not have floor or wall drains for this purpose, but pumps or other over-the-wall methods may be used.
- 4. Double walled storage containers.** A double walled storage container may be used in lieu of a diked containment area. The second wall of the container shall have the ability to contain the 110 percent of the volume of the interior container should the inner wall leak and have means to remove the liquid fertilizer. The double walled container shall rest upon a floating base of concrete, or upon suitable concrete footings which extend below the average frost depth to provide structural integrity. Inspection and maintenance of the double walled container shall be conducted and records of inspections and maintenance maintained according to this chapter.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-03-04. Operational containment. Distributors. This section only applies to distributors. Areas used for the loading of 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 approved material.

1. The curbed and paved area shall be sufficiently large to hold the volume of the largest compartment of the mobile container involved in the loading or unloading process. The pad shall be designed, constructed and maintained to handle all loading conditions to which it is exposed. Cracks and seams shall be kept sealed.
2. The operational area containment for rail cars may consist of a portable containment device designed to contain any areas normally involved in the loading or unloading of the rail car, in combination with a means of transferring any release to a catch basin under this chapter.
3. The curbed and paved surface shall be liquid tight and drain into a liquid-tight catch basin. The curbed and paved surface plus the catch basin shall be of adequate size and design to contain a minimum 1500 gallons of discharged liquid. The required capacity shall be available at all times loading or unloading is taking place.

4. If the curbed and paved surface drains to a sump, the catch basin may include an above ground container. A pump shall be installed to automatically transfer the contents of the sump into an above ground container if the above ground container provides any of the capacity required under this chapter. The above ground container and appurtenances must be compatible with the fertilizer product being transferred.
5. Any spills during the transfer of liquid fertilizer shall be cleaned up immediately.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-03-05. Inspection and recordkeeping requirements.

1. Inspections of liquid fertilizer containers and appurtenances shall be completed at least monthly during periods when fertilizers are being stored or dispensed.
2. Inspections of the secondary containment system shall be completed at least twice a year when fertilizers are being stored or dispensed.
3. Records of inspection and maintenance for fertilizer containers and secondary containment area shall be kept for three years and must include the following:
 - a. Name of individual conducting the inspection or maintenance;
 - b. Date the inspection or maintenance was conducted;
 - c. A description of the conditions found during the inspection; and
 - d. Specific maintenance performed.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

7-15-03-06. Accidental release reporting. All liquid fertilizer spills of at least 100 gallons or any liquid fertilizer spill that causes or is likely to cause pollution of waters of the state must be reported within twenty-four hours to the agriculture commissioner.

History: Effective

General Authority: NDCC 19-20.1-12

Law Implemented: NDCC 19-20.1

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