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Kansas Fertilizer Law

Kansas Administrative Regulations

Article 4. Commercial Fertilizers

K.A.R. 4-4-1. Micronutrients. Additional plant nutrients, besides nitrogen, phosphorus and potassium, when mentioned or claimed on the label or container shall be registered and shall be guaranteed. Guarantees shall be made on the elemental basis. Sources of the elements guaranteed shall be shown on the application for registration. When claims for such nutrients are made on the label, containers, or application for registration, the minimum percentages which will be accepted for registration. (See table 1.)

TABLE 1

	Percent
• Calcium (Ca)	1.00
• Magnesium (Mg)	0.50
• Sulfur (S)	1.00
• Boron (B)	0.02
• Chlorine (Cl)	0.10
• Cobalt (Co)	0.0005
• Copper (Cu)	0.05
• Iron (Fe)	0.10
• Manganese (Mn)	0.05
• Molybdenum (Mo)	0.0005
• Sodium (Na)	0.10
• Zinc (Zn)	0.05

Guarantees or claims for the above-listed additional plant nutrients are the only ones which will be accepted. Proposed labels and directions for use of the fertilizer shall be furnished with the application for registration upon request. Warning or caution statements are required on the label for any product which contains 0.03 percent or more of boron in a water-soluble form or 0.001 percent or more of molybdenum. Any of the above-listed elements which are guaranteed shall appear in the order listed, immediately following guarantees for the primary nutrients, nitrogen, phosphorus and potassium. (Authorized by K.S.A. 2-1210; effective Jan. 1, 1966.)

K.A.R. 4-4-2. Inspection fee. The inspection fee for commercial fertilizers shall be \$1.67 for each 2,000 pounds. (Authorized by and implementing K.S.A. 2-1205, as amended by L. 2002, Ch. 181, § 1; effective, T-83-35, Nov. 10, 1982; effective May 1, 1983; amended May 1, 1984; amended May 1, 1986; amended, T-87-6, May 1, 1986; amended May 1, 1987; amended, T-4-6-22-89, June 22, 1989; amended Aug. 14, 1989; amended Oct. 25, 2002.)

K.A.R. 4-4-900. Definitions. (a) "Alternative design" means any process or technique for either primary or secondary containment that has been approved by the secretary in accordance with K.A.R. 4-4-956.

(b) "Application equipment" means any equipment used to apply fertilizer to land.

(c) "Appurtenance" means any device used in connection with a bulk fertilizer storage container or bulk fertilizer secondary containment area, structure, or device, including any safety device, liquid-level gauging device, auger, pump, valve, pipe, hose, fitting, and measuring or dispensing device.

(d) "Berm" means a dike, wall, or embankment used to contain liquid fertilizer.

(e) "Bladder tank" means any liquid fertilizer storage system consisting of the following:

(1) An external tank capable of holding the bladder tank's maximum volume without leakage;

(2) an internal, liquid-tight bladder that obtains its structural support from the external tank and is capable of holding the bladder tank's maximum volume without leakage; and

(3) a permanent cover to prevent the entry of precipitation.

(f) "Blending" means combining fertilizers or fertilizer ingredients to the customer's specifications.

(g) "Bulk fertilizer" means any fertilizer, whether dry or liquid, that is stored in quantities specified in K.A.R. 4-4-900 through K.A.R. 4-4-986.

(h) "Bulk fertilizer storage container" means any receptacle or device in which a bulk fertilizer is stored.

(i) "Bulk fertilizer storage facility" and "facility" mean any warehouse or other area where a bulk fertilizer, either in bulk or bagged, is held for storage. These terms shall include any facility in which fertilizer is mixed, blended, loaded, or unloaded. Each bulk fertilizer storage facility located within 300 feet of another facility owned or operated by the same person shall be considered the same facility for the purpose of determining the number of consecutive days in storage and determining whether the facility is exempt from the requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986.

(j) "Chemically compatible" means that the material will not react adversely with the bulk fertilizer that is being or will be stored, loaded, unloaded, mixed, blended, or otherwise handled.

(k) "Discharge" means any spill, leak, deposit, pumping, dumping, or emptying, whether accidental or intentional, that results in the release of a fertilizer. This term shall not include the lawful transferring, loading, unloading, repackaging, refilling, distributing, using, or disposing of a fertilizer, and the normal washing and rinsing activities on loading areas.

(l) "Dry fertilizer" means any fertilizer that is in solid form before any end-use application or mixing or blending for end-use application. This term shall include formulations including dusts, powders, and granules.

(m) "Elephant ring" means an open-top storage container that serves as a secondary containment vessel into which a smaller primary storage container has been placed.

(n) "Empty storage container" means a bulk fertilizer storage container that has a liquid volume of less than one percent of the container capacity.

(o) "End-use application" means the application of fertilizer to soil or plants in the course of normal agricultural or horticultural practice.

(p) "Existing facility" means any facility already built and either in operation or capable of being in operation on the effective date of these regulations.

(q) "Fertilizer products" means any substance, including rinsates, that contains elements or compounds used to promote the growth of agricultural or horticultural plants.

(r) "Floodplain" means the lowlands and relatively flat areas adjoining inland waters, including flood-prone areas that are inundated by floods and that have a one percent or greater chance of recurring flooding in any given year.

(s) "Flood-proof facility" means a facility that has been constructed and maintained to withstand waters from a 100-year flood event and prevent floodwater from contacting the fertilizer.

(t) "Gallon" means the United States standard measure of one gallon.

(u) "Inspection port" means a secured opening that allows access into the interior of a bulk fertilizer storage container for the purpose of inspection.

(v) "Liquid fertilizer" means any bulk fertilizer in liquid form before dilution for end-use application. This term shall include solutions, emulsions, suspensions, slurries, and gels. This term shall not include anhydrous ammonia.

(w) "Loading pad" means a permanent or portable structure in the operational area designed and constructed to intercept and contain spills, rinse water, and precipitation to prevent runoff and the leaching of fertilizer.

(x) "Low-volume pass-through" means the tonnage of fertilizer transferred away from the facility, during any consecutive 365-day period, below which an operational area shall not be required.

(y) "Mixing" means the combining of fertilizers or fertilizer ingredients into a fertilizer product for resale to nonspecific customers.

(z) "Mobile storage container" means a bulk fertilizer storage container that is used for transportation or temporary storage of bulk fertilizer.

(aa) "Modification" means any change in structures, processes, or activities at a bulk fertilizer storage facility that alters the efficacy of containment structures or systems, including changes in capacity. Modification to an existing facility shall void any applicable exemption as specified in this article. "Modified" shall describe a fertilizer facility that has any modifications, as defined in this subsection.

(bb) "Operational area" means any area at the fertilizer facility where fertilizers are mixed, loaded, unloaded, or blended, or where fertilizers are washed from application, storage, or transportation equipment.

(cc) "Permanent cessation of operations" means that, for at least 12 consecutive months, the facility has not been used to load, unload, mix, or blend any fertilizers.

(dd) "Plot plan" means a map or diagram showing the general layout of the facility.

(ee) "Primary containment" means the bulk fertilizer storage container that is in direct contact with the fertilizer being

stored.

(ff) "Process flow diagram" means a schematic design showing the movement of fertilizer through the facility.

(gg) "Reasonably foreseeable" means what the secretary determines would have been foreseeable at the time the decision affecting the facility or its condition was made. This term shall include consideration of the facility owner's or operator's knowledge of conditions at the time the condition was created or the decision was made.

(hh) "Secondary containment" means any structure, tank, liner, or container that is designed, constructed, and maintained to perform the following:

- (1) Intercept, hold, contain, or confine a discharge of fertilizer from primary containment;
- (2) prevent runoff; and
- (3) avoid leaching.

(ii) "Secretary" means the secretary of the Kansas department of agriculture or the secretary's authorized representative.

(jj) "Sump" means a recessed reservoir designed to be a receptacle for the collection of liquids.

(kk) "Temporary storage" means the storage of bulk fertilizer for no more than 60 consecutive days.

(ll) "Tip tank" means any tank or combination of tanks that is built on a frame having wheels and that is designed solely for the temporary storage of liquid fertilizer before its transfer to application equipment and not for the transportation of liquid fertilizer.

(mm) "Ton" means 2,000 pounds.

(nn) "Wastewater" means any water that is a result of precipitation collected in the facility or rinsates from cleaning the equipment or facility. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993; amended, T-4-7-1-94, July 1, 1994; amended Aug. 22, 1994; amended July 18, 2003.)

K.A.R. 4-4-901. Storage containers and appurtenances; basic requirements. (a) Each storage container and appurtenance shall be constructed, installed and maintained to prevent the discharge of fluid fertilizer.

(b) Each storage container and appurtenance shall be constructed of materials which are resistant to corrosion, puncture or cracking.

(c) All materials used in the construction or repair of any storage container or appurtenance shall not be of a type which react either chemically or electrolytically with stored fluid fertilizer and which might weaken the storage container or appurtenance, or create a risk of discharge.

(d) All metals used for valves, fittings and repairs shall be compatible with the metals used in the construction of the storage container or appurtenance, so that the combination of metals does not cause or increase any corrosion which might weaken the storage container or any appurtenance, or create a risk of discharge.

(e) Each storage container and appurtenance 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 container and appurtenance may be subject in the foreseeable course of operations.

(f) Every storage container connection shall be equipped with a shut-off valve located on the storage container as indicated by standard engineering practice except for any safety relief connection. Shut-off valves shall be left closed and secured except during periods of use. (Authorized by and implementing K.S.A. 1989 Supp. 2-1277; effective Jan. 14, 1991.)

K.A.R. 4-4-902. Prohibition against underground storage. (a) From and after the effective date of this regulation, no person shall construct new storage containers for underground storage of fluid fertilizer. This prohibition does not apply to:

- (1) a watertight catch basin used for the temporary collection of runoff or rinsate from transfer and loading areas; or
- (2) storage in a stainless steel storage container, or other approved storage container, if:

(A) the storage container is enclosed within an approved liner as required by K.A.R. 4-4-933; and

(B) an approved program of ground water monitoring has been established to detect leakage.

(b) From and after the effective date of this regulation, wherever an underground storage container for the storage of bulk fertilizer already exists, a leak detection and liquid recovery system shall be installed within the time prescribed by K.A.R. 4-4-952.

(c) The liquid recovery portion of the system shall be located under the lowest area of the storage container and shall contain:

(1) a moisture barrier located below the storage container extending at least to the storage container's edges and draining into a collection sump;

(2) a collection sump equipped with a liquid activated pump to transfer collected liquid to another storage container located on or above ground level; and

(3) an alarm system which is activated whenever the pump is activated and which remains activated until manually reset.

(d) For purposes of this regulation, the term "underground storage container" includes every storage container having more than 10% of its capacity, including the capacity of any piping, located below the soil surface.

(e) From and after January 1, 1994, no fertilizer shall be stored in an underground storage container. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-903. Prohibited materials. (a) Storage containers, elephant rings, and appurtenances shall not be constructed of copper, brass, zinc, or copper-base alloys unless recommended in writing by the manufacturer.

(b) Storage containers, elephant rings, and appurtenances used for the storage of fluid fertilizers containing phosphates or chlorides shall not be constructed of aluminum or aluminum alloys unless recommended in writing by the manufacturer.

(c) Storage containers, elephant rings, and appurtenances used for the storage of fertilizers or fluid fertilizer materials which have a pH of five or less shall not be constructed of ferrous materials other than stainless steel unless the ferrous

materials have been coated or treated with protective substances adequate to prevent corrosion caused by the substance being stored or unless recommended in writing by the manufacturer.

(d) Storage containers, elephant rings, and appurtenances used for the storage of aqueous solutions of anhydrous ammonia shall not be constructed of galvanized brass or bronze materials and shall not be constructed of mild steel, stainless steel, aluminum, fiberglass, polyolefins or plastic unless recommended by the manufacturer.

(e) Storage containers, elephant rings, and appurtenances used for the storage of phosphoric acid shall not be constructed of ferrous materials other than stainless steel unless the container is lined with a suitable substance to prevent corrosion caused by the substance being stored unless recommended in writing by the manufacturer.

(f) Storage containers, elephant rings, and appurtenances used for the storage of fluid fertilizers containing potassium chloride shall not be constructed of ferrous materials other than stainless steel or mild steel, unless:

(1) the container and appurtenances have been coated or treated with protective substances which are adequate to prevent corrosion resulting from the material being stored; or

(2) unless storage of fluid fertilizers containing potassium chloride in storage containers constructed of ferrous materials other than stainless steel or mild steel has been recommended in writing by the manufacturer of the container; and

(3) the container or appurtenance is used for storage periods of not more than a total of 90 calendar days within any period of 365 consecutive days. In such instances, the storage container shall be completely emptied between storage periods; or

(4) the empty container and appurtenances are cleaned and inspected for leaks prior to being refilled. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-904. Grounding and anchoring 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 constructed in accordance with K.A.R. 4-4-900 et seq. Metal storage containers shall be grounded when necessary to prevent corrosion or other damage which may be caused by electrolytic reaction with the material being stored. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-905. Security. (a) All storage containers and appurtenances shall be either locked, located within a fenced enclosure or otherwise adequately secured to provide reasonable protection against vandalism or unauthorized access which might result in a discharge of fertilizer or fertilizer materials.

(b) Valves on storage containers shall be locked or otherwise secured except when persons responsible for facility security are present at the facility.

(c) Valves on nurse tanks and other mobile fertilizer containers parked overnight at a storage facility shall be adequately secured, locked or located within a fenced enclosure except when persons responsible for facility security are present at the facility.

(d) Valves on empty containers need not be secured. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-906. Filling storage containers. Storage containers shall not be filled beyond the capacity for which they are designed taking into account the density of the fluid being stored and the thermal expansion of the stored material during storage. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-907. Pipes and fittings. Pipes and fittings shall be adequately supported to prevent sagging and possible breakage due to gravity and other forces which might be encountered in the ordinary course of operations. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-908. Liquid-level-gauging device. (a) Except as provided in paragraph (b) of this regulation, each storage container shall be equipped with a liquid-level-gauging device by which the level of fluid in the storage container can be readily and reliably measured.

(b) A liquid-level-gauging device shall not be required if the level of fluid in a storage container can be readily and reliably measured by other means approved by the secretary.

(c) Liquid-level-gauging devices shall be locked or secured, in a safe manner, to protect against breakage or vandalism which could result in a discharge.

(d) External sight gauges shall be prohibited unless:

(1) the gauge has a positive shut-off valve constructed from stainless steel;

(2) all pipes or other plumbing components which connect the shut-off valve to the storage container shall be constructed from stainless steel;

(3) the sight gauge's shut-off valve remains closed except when the amount of material stored in the storage container is being determined; and

(4) the shut-off valve is located on the storage container in a location which is readily accessible and which conforms to the storage container manufacturer's specifications. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-909. Labeling of storage containers. (a) Each storage container or building in which fertilizer or fertilizer materials are stored shall be clearly marked with a description of the contents.

(b) In lieu of marking the building or storage container, a sign containing a written description of the fertilizer or fertilizer

materials being stored may be posted outside the container.

(c) All descriptions shall be made in letters at least two inches high. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-910. Inspection and maintenance. (a) On a regularly scheduled basis, at least monthly, the operator of a storage facility shall:

- (1) routinely inspect and maintain storage facilities, storage containers and appurtenances to minimize the risk of a discharge;
- (2) inspect valves and other appurtenances for leakage; and
- (3) make a written record of all inspections and major maintenance or repair on the day of the inspection, maintenance or repair.

(b) Inspection and maintenance records shall be kept at the storage site, or at the nearest local office from which the storage site is administered.

(c) For the purposes of this regulation, major maintenance or repair means any repair or maintenance which requires taking the pump appurtenance or storage container affected out of service. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-911. Operational area containment for fertilizer. (a) Loading pads.

(1) Each area or pad used for loading fluid bulk fertilizer into storage containers or for unloading fluid bulk fertilizer from storage containers into mobile containers shall be curbed and paved with asphalt, concrete or other similar material approved by the secretary or be otherwise adequately designed to contain and allow recovery of any discharged fertilizer materials resulting from loading or unloading fertilizer materials or rinsates resulting from the cleaning of fertilizer application equipment.

(2) Each area or pad shall be sufficient to hold the entire mobile container during loading or unloading. This pad shall be designed, constructed and maintained to handle all reasonably foreseeable loading conditions to which it is exposed. Cracks and seams shall be kept sealed.

(3) Each area or pad shall be designed to prevent accumulation and overflow resulting from precipitation.

(4) Any cleaning at the storage facility of equipment used to apply fertilizer or fertilizer materials shall be cleaned upon a loading pad or area described in subsections (1), (2) and (3) of this section.

(5) Each facility where 125 tons or more of liquid fertilizer or 25 tons or more of dry fertilizer are received into or transferred out of one or more storage containers located at the facility during any period of 365 consecutive days shall have at least one loading pad or area which complies with the provisions of this regulation.

(b) Catch basins.

(1) The curbed and paved surface of the loading pad or area shall form or drain into a liquid-tight catch basin. If the curbed and paved surface of the loading pad or area drains to a sump, the catch basin may include the sump and an aboveground container if a pump is installed which transfers the contents of the sump into the aboveground container.

(2) The curbed surface and catch basin shall be of adequate design and size to contain a combined total of 110% of the largest volume of fertilizer or fertilizer material to be loaded or unloaded or 5,500 gallons of fluid whichever is greater and a minimum of 2,000 gallons of discharged fluid.

(d) Protection of containers and appurtenances. Each storage container and appurtenance, including pipes, shall be protected against any reasonably foreseeable risk of damage by trucks and other moving vehicles engaged in the loading or unloading of bulk fertilizer.

(e) Exceptions.

(1) This regulation shall not apply to the unloading of fertilizer or fertilizer materials from a mobile container into an application device at the site where the fertilizer is to be applied.

(2) In lieu of the requirements of paragraphs (a) and (b) of this regulation, a portable pad or device which provides confinement and allows recovery of fertilizer leaks, spills or other discharged fertilizer and which has been approved by the secretary may be used during the loading and unloading of fertilizer from rail cars.

(3) This regulation shall not apply to the unloading of rail cars directly into a permanent riser or manifold system which has been approved by the secretary as part of storage facility which complies with the requirements of K.A.R. 4-4-900 et seq.

(4) This regulation shall not apply to any storage facility through which a volume of less than 125 tons of liquid fertilizer or less than 25 tons of dry fertilizer is sold or transferred in any period of 365 consecutive days.

(f) Inspection and maintenance.

(1) The operator of every storage facility shall routinely inspect and maintain loading pads and catch basins. These inspections shall be conducted on a regularly scheduled basis at least monthly.

(2) The operator of a storage facility shall make a written record of each inspection and each major maintenance or repair on the day of the inspection, maintenance or repair. Inspection and maintenance records shall be kept at the storage site or at the nearest local office from which the storage site and operational area is administered.

(3) For the purposes of this regulation, major maintenance or repair means any repair or maintenance which requires taking the pump appurtenance or storage container affected out of service. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-912. Abandoned containers. (a) Each storage container and other container used at a storage facility to hold fluid bulk fertilizer or fertilizer rinsate shall be deemed abandoned if:

- (1) it has been out of service for more than six consecutive months because of a weakness or leak;
- (2) or it has been out of service for any reason other than nonuse for more than two consecutive years.

(b) Each abandoned underground container, including each abandoned underground catch basin, shall be thoroughly cleaned and removed from the ground or filled with an inert solid. Each connection and vent in such a container shall be disconnected and sealed. A record of the catch basin size, location, and method of closing shall be maintained at the storage facility as provided in K.A.R. 4-4-921.

(c) Each abandoned aboveground container shall be thoroughly cleaned. All hatches on each such container shall be closed, and all valves or connections shall be closed and sealed.

(d) A secondary containment facility shall not be deemed abandoned merely because there have been no discharges into it.

(e) Prior to placing an abandoned container back into service, the container shall have been inspected for compliance with the provisions of K.A.R. 4-4-900 et seq.

(f) For each tank which will remain unused for a period of at least two years, the owner of a fertilizer storage facility shall notify the secretary of the date when the tank is taken out of service and the date it is returned to service.

(g) All records required to be kept pursuant to this regulation shall be made available to the secretary as specified in K.A.R. 4-4-921. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-920. Storage and handling of dry bulk fertilizer. (a) Dry fertilizer materials shall be stored and handled in a manner which prevents pollution of groundwater by minimizing losses of the dry fertilizer or dry fertilizer materials to the air, surface water, groundwater, or subsoil.

(b) Non-fluid fertilizer or fertilizer materials shall be stored inside a properly designed structure or device with a cover or roof top, sidewalls and base sufficient to prevent fertilizer contact with precipitation and surface waters. Floors and sidewalls shall be strong enough to support the weight of the fertilizer being stored.

(c) All loading, unloading, mixing and handling of dry fertilizer, unless performed in the field where applied, shall be done using a containment method, device, or structure, which is of a size and design that will contain the fertilizer and can be operated to minimize emission of dust, vapors or both beyond the facility boundaries. Any collected materials shall be applied to a field at agronomic fertilizer rates or be otherwise recycled with other fertilizer mixes.

(d) Handling or work areas where any dry fertilizer is stored, loaded, unloaded or handled shall be constructed of concrete, asphalt or other material that is sealed with a product approved by the secretary to maintain a permeability rate at least equivalent to that of concrete or asphalt.

(e) Conveyors and augers shall be equipped with dust control boots or socks.

(f) Roof and surface runoff water shall be diverted away from the fertilizer buildings or loading area by use of grading or other means of water diversion.

(g) Railside unloading areas shall have a large enough area, including the area between the rails, surfaced with concrete or asphalt to provide for sufficient clean-up of all spilled fertilizer materials. As an alternative, a portable device approved by the secretary may be used if the user demonstrates that all spilled materials can be controlled and contained by the device.

(h) All doors shall be locked when facility is not in use.

(i) Mixing and blending devices shall be covered with a suitable roof or otherwise be suitably designed and installed to prevent rain, sleet, snow or hail from coming into contact with the dry fertilizer.

(k) The name of the storage facility and the name and telephone number of individuals who may be contacted in case of emergency shall be posted on the storage facility using letters not less than two inches high.

(l) Buildings used to store dry fertilizer or fertilizer materials shall be marked with a general description of their contents.

(m) Handling or working areas where dry fertilizers are stored, loaded, unloaded or handled shall be cleaned daily after use. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-921. Record keeping. (a) Records required to be maintained. Each of the following records shall be prepared by the operator of the storage facility and kept at the storage facility affected, or at the nearest local office from which the storage facility is administered.

(1) A record shall be completed on the day of discovery of all discharges of either 1,000 pounds or more of dry fertilizer outside the handling or working area or 100 gallons or more of liquid fertilizer into the secondary containment structure or area or any other portion of the storage facility including:

(A) the date and time of discharge, if known;

(B) the type of fluid or dry bulk fertilizer discharged;

(C) the volume of the discharged fertilizer;

(D) the cause of the discharge;

(E) the action taken, if any, to control or recover the discharged fertilizer; and

(F) the method of use or disposal of any recovered discharge. Updates of this record shall be made promptly showing the measures taken to control, recover, use or dispose of the discharge.

(2) An inventory record shall be kept of each fertilizer product.

(3) Any difference between the volume of each fertilizer product as shown in the inventory and the volume as measured which exceeds one per cent for a liquid fertilizer product or two per cent for a dry fertilizer product shall be reported to the secretary within three working days.

(4) A semi-annual inventory reconciliation shall be made at the end of June and December each year which shows the amount of fluid and dry bulk fertilizer which has been lost or unaccounted for from each storage container.

(5) Any difference between the volume of each fertilizer product as shown in the inventory and the volume as shown in the preceding inventory reconciliation which exceeds one per cent of the current inventory for each liquid fertilizer product or two per cent of the current inventory for each dry fertilizer product shall be reported to the secretary within three working days.

(6) A record shall be kept of the dates storage containers, appurtenances, operational area containment facilities, and secondary containment facilities were inspected and what maintenance or repairs, if any, were made.

(7) A record shall be kept listing the size and location of each abandoned storage container, if any.

(b) Period required for maintenance of records.

(1) Except as provided in subparagraph (b)(2), the records required by paragraph (a) shall be maintained for at least 5 years.

(2) Records required under subparagraph (a)(7) of this regulation shall be maintained as permanent records.

(3) Except for records required by paragraph (a), all other records required by K.A.R. 4-4-900 et seq. shall be maintained for at least 3 years.

(c) All records shall be available for inspection and copying by the secretary. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-922. Discharge response plan. (a) The operator of each storage facility shall prepare a written discharge response plan for the storage facility. This plan shall include:

(1) the name and telephone number of each person or agency which is to be contacted in the event of a discharge, including any persons responsible for the stored fertilizer;

(2) a complete copy of the storage container labeling required by K.A.R. 4-4-909 for each bulk fertilizer stored and the labeling required under K.S.A. 2-1201 et seq. for each fertilizer stored;

(3) identification, by location, of each storage container and the type of bulk fertilizer stored in it;

(4) the procedures to be used in controlling and recovering, or otherwise responding to a discharge for each type of bulk fertilizer stored at the facility; and

(5) the procedures for using or disposing of a recovered discharge.

(b) The operator shall keep the discharge response plan current at all times and shall update it at least annually.

(c) A copy of the discharge response plan shall be kept readily available at both the storage facility and the nearest local office from which the storage facility is administered.

(d) The operator of the storage facility shall provide a current copy of the plan to the local fire and police departments and the secretary.

(e) As an alternative, any environmental response plan or other plan which has been prepared to meet the requirements of another law or regulation, either state or federal, which contains the information required by this regulation may be accepted by the secretary. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-923. Existing storage tanks which have a capacity of 100,000 gallons or more. (a) Liquid fertilizer storage containers with a capacity of 100,000 gallons or more shall be located within an approved secondary containment area designed to allow the containment and recovery of any discharged fertilizer material.

(b) Unless otherwise approved pursuant to K.A.R. 4-4-956, the surface supporting the storage container shall be elevated above the surrounding surface of the containment area so that the lowest point of the storage container shall be at least six inches above the surrounding surface of the containment area to permit visual identification of any leaks which may develop in the floor of the storage container.

(c) This regulation shall apply to all storage containers with a capacity of 100,000 gallons or more which were placed in service on or before January 13, 1991. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-924. Storage tanks which have a capacity of 100,000 gallons or more; new construction. (a) This regulation shall apply to all storage containers with a capacity of 100,000 gallons or more which are constructed or placed in service on or after the effective date of this regulation.

(b) Liquid fertilizer storage containers with a capacity of 100,000 gallons or more shall be:

(1) located within an approved secondary containment area designed to allow the containment and recovery of any discharged fertilizer material; and

(2) placed on a surface which has been sealed with asphalt, concrete, attapulgite clay, sodium bentonite, or other material approved by the secretary.

(c) The bottom surface of the storage container shall be elevated above the surrounding surface of the containment area so that the lowest point of the storage container shall be at least six inches above the sealed surface to permit installation of a leak detection system.

(d) The leak detection system shall consist of:

(1) three or more perforated pipes or tile which shall:

(A) be placed on the sealed surface and below the storage container;

(B) be placed parallel to each other on not more than 10 foot centers; and

(C) extend to the outer edge of both sides of the tank; or

(2) any other leak detection system approved by the secretary.

(e) Unless otherwise approved pursuant to K.A.R. 4-4-956, each storage container shall be located in a secondary containment area which has been designed to permit both visual and sampling access to the leak detection system described in paragraph (d) of this regulation. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-931. Approved secondary containment of bulk fertilizer; general requirements. (a) Primary containment of liquid bulk fertilizer shall be located within a secondary containment area. Diked areas shall be constructed with a base, perimeter wall and sloped floor drain, except as provided by K.A.R. 4-4-934.

(b) The diked secondary containment area for fluid bulk fertilizer shall be physically separated and distinct from any secondary containment area for pesticides or other nonfertilizer materials; however adjoining secondary containment areas may share common walls.

(c) The diked area for secondary containment of storage facilities shall be able to contain, below the height of the dike, at least 110% of the capacity of the largest storage container plus the volume displaced by all other storage containers, fixtures, and materials located within the diked area.

(d) All pumps used for handling liquid fertilizer shall be located within the secondary containment structure or area.

(e) Except where used as a method of monitoring a secondary containment system, drainage within or underlying the area to be diked shall be eliminated.

(f) This regulation shall apply to:

(1) each storage facility in existence on the effective date of this regulation which has a total storage capacity of 5,000 gallons or more;

(2) each storage facility in existence on the effective date of this regulation which has a total storage capacity of 2,000 gallons or more and less than 5,000 gallons where 125 tons or more of liquid fertilizer is received into or transferred out of one or more storage containers located at the storage facility during any period of 365 consecutive days; and

(3) each storage facility which was not in existence on the effective date of this regulation and which has a total storage capacity of 2,000 gallons or more. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-932. Secondary containment requirements; walls. (a) The walls of each secondary containment facility shall be constructed of earth, steel, concrete, solid masonry or any other material approved by the secretary, and be designed to withstand a full hydrostatic head of any discharged fluid and weight load of material used in construction.

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

(c) Walls constructed of earth or other permeable materials shall be lined as provided in K.A.R. 4-4-933.

(d) 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. An exterior slope of 30 degrees or less shall be protected with grass or crushed stone. Slopes greater than 30 degrees and all interior slopes shall be protected with flat road stone or a similar crushed stone material.

(e) Walls shall not exceed six feet in height above interior grade unless provisions are made for normal access, necessary emergency access to tanks, valves and other equipment, and safe exit from the secondary containment facility.

(f) Walls constructed of concrete or solid masonry shall rest upon a floating base of concrete prepared as required in K.A.R. 4-4-933 or upon suitable concrete footings which extend below the average frost depth to provide structural integrity. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-933. Secondary containment requirements; 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, a clay soil liner or other product approved by the secretary, designed to limit permeability of the base and walls. Liners shall meet the requirements of this regulation.

(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 fluid and static loads of storage containers, including appurtenances, equipment, and contents. Cracks and seams shall be sealed to prevent leakage.

(c) Synthetic liners.

(1) All synthetic liners and installation plans shall be approved by the secretary. Until the manufacturer of the synthetic liner provides the secretary with a written confirmation of compatibility and a written estimate of the life of the liner, no approval shall be given.

(2) Synthetic liners shall not react either chemically or electrolytically with the materials being stored within the storage facility.

(3) Synthetic liners shall be installed according to manufacturer's specifications. All field constructed seams shall be tested and repaired, if necessary, in accordance with the manufacturer's recommendations.

(d) Clay soil liners. The surface soil, including the berm of an earthen dike and 10 feet beyond the berm, shall be sealed with a sealing agent such as sodium bentonite, attapulgite clay or a similar clay material approved by the secretary. The liner shall be constructed in accordance with reliable civil engineering recommendations to establish a barrier layer which will maintain a water level up to the working height of the containment structure for 72 hours, or a clay application which results in a downward water movement of not greater than one-half of an inch per 24 hour period. The floor of the containment area shall be protected with a layer of gravel, sand, earth or crushed stone at least six inches thick placed on top of the clay liner.

(e) Exemptions.

(1) A liner need not be installed directly under a storage container with a capacity of 100,000 gallons or more that has been constructed on site and put into use prior to the effective date of this regulation if all of the following conditions are met:

(A) A second bottom made of steel or other material approved by the secretary is constructed for the storage container, placed over the original bottom, and topped with a layer of smooth, fine gravel or coarse sand at least six inches thick;

(B) The original bottom of the storage container is tested for leaks before the sand layer or second bottom, as described in (A) are installed; and

(C) the newly constructed bottom is tested for leaks before any fluid fertilizer is stored in the storage container;

(D) records of the tests described in (B) and (C) are kept on file at the storage facility, or at the nearest local office from which the storage facility is administered; and

(E) a method to readily detect leaks from the newly constructed bottom into the sand layer is in place.

(2) The secondary containment requirements in this regulation shall not apply to rail cars which are periodically removed from the storage facility. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-934. Use of elephant rings for secondary containment. (a) Individual storage containers may be contained within an elephant ring as an alternative to a diked containment area. The elephant ring shall serve as a second containing wall in the event that the primary storage container develops a leak. The elephant ring shall be designed and installed to withstand a full hydrostatic head from the fluid stored in the enclosed primary storage container and all other stresses reasonably foreseeable from secondary containment of stored fertilizer.

(b) Both the primary storage container and the elephant ring shall be fabricated of materials compatible with each other and which do not react either chemically or electrolytically the fertilizer being stored. Use of any combination of metals or other materials which contribute to chemical or electrolytic corrosion is prohibited.

(c) The height of the elephant ring wall shall not exceed six feet. The volume contained within the secondary storage walls up to the working height of the elephant ring shall be sufficient to contain a volume of 110% of the volume contained in the primary storage container plus the volume displaced by the footings of any equipment such as pumps, meter or other devices, placed within the secondary containment vessel.

(d) The elephant ring shall be free of leaks and structural defects. The base of the elephant ring shall be protected from corrosion, both from inside and outside, and underlain:

(1) by a concrete pad; or

(2) with eight inches of compacted gravel beneath four inches of compacted sand; or

(3) as recommended by the manufacturer of the elephant ring and approved by the secretary.

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

(f) Accumulations of storm water and other material shall be pumped over the wall of the elephant ring by a sump pump within the secondary container, or by an exterior pump, and disposed of according to K.A.R. 4-4-935.

(g) Inspection and maintenance of the primary storage container and of the elephant ring shall be conducted as required by K.A.R. 4-4-920, and records of inspections and maintenance shall be made and maintained as required by K.A.R. 4-4-921. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-935. Drainage from contained areas within secondary containment. (a) Earthen or prefabricated containment area. An earthen or prefabricated containment area shall not have a relief outlet and valve. The base shall slope to a collecting spot where storm water can be discharged by pump over the berm for use in the blending process or for proper disposal in accordance with local requirements for disposal of storm water.

(b) Asphalt or concrete lined areas.

(1) An asphalt or concrete lined area shall have a recessed catch drain running through the center of the base or a sump as provided for in K.A.R. 4-4-936.

(2) The catch drain shall be at least six inches deep and 12 inches wide with an open grate cover.

(3) The asphalt or concrete slab located beneath the catch drain shall be at least the same thickness below and to the sides of the drain as the base is throughout the contained area and comply with K.A.R. 4-4-933.

(4) The asphalt or concrete base shall slope to the drain, and the drain shall slope to a discharge valve at the edge of the dike.

(5) The discharge valve shall be closed and secured except when used permitted by K.A.R. 4-4-905.

(6) The discharge valve shall drain to an underground concrete sump. A self-priming recovery pump shall be used to move all materials from the sump to alternate storage. The sump tank shall not be used as a permanent storage container. It shall be pumped periodically to remove any water, fertilizer material or both which it collects.

(7) Precipitation may be used for make-up water in fertilizer mixes or disposed of in accordance with local requirements if it is compatible with fertilizer materials being handled at the storage facility.

(c) Other areas.

(1) Earthen areas which are not lined with asphalt or concrete shall be lined with a synthetic liner approved by the secretary.

(2) Earthen areas lined with a synthetic liner shall be constructed as required in subsections (1) through (7) inclusive of section (b) of this regulation. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 14, 1991; amended Jan. 25, 1993.)

K.A.R. 4-4-936. Alternative to a recessed catch drain in containment areas. A sump may be located within the diked or secondary containment area as an alternative to the recessed catch drain if:

(a) the sump construction conforms to the thickness specifications for the remainder of the containment base;

(b) the sump is drained over the wall of the containment structure by means of a pump;

(c) no valve is plumbed into the sump unless the sump has a permanent catchment system as described in K.A.R. 4-4-911; and

(d) materials removed from the sump are disposed of in a manner consistent with K.A.R. 4-4-935. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-937. Inspection and maintenance requirements; secondary containment. (a) Every secondary containment area, structure or device shall be inspected by the operator of the storage facility at least every six months and be maintained as necessary to assure compliance with these regulations.

(b) The operator shall make a written record of all inspections and maintenance on the day of the inspection or maintenance which shall be kept at the storage facility or at the nearest local office from which the storage facility is administered.

(c) All secondary containment areas, structures and devices shall be kept free of debris and foreign matter. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-950. Time frames for submission of initial diagram or plans. (a) Within one year after the effective date of this regulation, the owner of each existing or proposed storage facility shall submit a diagram or plans of the storage facility containing the following information:

- (1) the location and size of each storage container;
- (2) the drainage pattern of the storage facility;
- (3) any source of drinking water within the facility, if any;
- (4) any source of ground or surface water within 1320 feet of the storage facility, if any;
- (5) any tank or other container used for the storage of petroleum products within the storage facility, if any;
- (6) the location of each pump, pipe or other appurtenance used in the storage or transfer of fertilizer within the storage facility, if any;
- (7) the location of each pad used for the loading of bulk fertilizer, if any; and
- (8) the location of the storage facility for the dry fertilizer, if any;
- (9) the standards and specifications for the construction of the storage facility for dry fertilizer, if any;
- (10) the size and location of each proposed secondary containment structure to be located within the storage facility to comply with the requirements of K.A.R. 4-4-900 et seq.;
- (11) the size and location of each proposed loading pad or area to be located within the storage facility to comply with the requirements of K.A.R. 4-4-900 et seq.; and
- (12) any other information required by the secretary.

(b) The diagram shall be drawn to an appropriate scale which permits all required information to be shown and be easily readable without magnification. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-951. Requirements for plans and specifications. (a) Whenever a storage facility is constructed or extensively remodeled or an existing structure is converted to use as a storage facility, properly prepared plans and specifications for the construction, remodeling or conversion shall be submitted by the owner of the storage facility to the secretary for review and approval before construction, remodeling or conversion is begun.

(b) The plans and specifications shall include the proposed layout, mechanical plans, construction materials, work areas, and type of equipment to be fixed and facilities which will be remodeled, converted or constructed.

(c) The plans shall also contain the information required by K.A.R. 4-4-950.

(d) Any person, after submitting the plans required by this regulation, shall be given a time period not exceeding six months by the secretary in which to resubmit the plans with any corrections or additions required by the secretary.

(e) Upon approval of the plans by the secretary, the owner of the fertilizer storage facility shall be given a time period in which to complete any changes, corrections or additional construction at the storage facility as contained in the approved plans. The time period shall not exceed two years for the construction of loading pads and shall not exceed three years for the construction or installation of dikes or secondary containment facilities. Time periods shall run from the date the plans are approved.

(f) The secretary may grant additional time for construction or installation of storage containers, structures, dikes, or other equipment for good cause upon receipt of a written request. Such request shall state the reason for the additional time and the amount of additional time needed. The request may be granted if the request was made in good faith and the circumstances underlying the request were beyond the control of applicant. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-952. Time frames for construction; liquid fertilizer storage facilities. (a) Within three years after approval of construction plans by the secretary, the owner of each storage facility shall complete construction or installation of secondary containment facilities required by K.A.R. 4-4-900 et seq.

(b) Within two years after approval of construction plans by the secretary, the owner of each storage facility shall complete construction or installation of loading and unloading pads required by K.A.R. 4-4-900 et seq.

(c) The secretary may grant additional time for construction or installation of storage containers, structures, dikes, or other equipment for good cause upon receipt of a written request. Such request shall state the reason for the additional time and the amount of additional time needed. The request may be granted if the request was made in good faith and the circumstances underlying the request were beyond the control of applicant. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-953. Time frames for construction plans; dry fertilizer. (a) Within three years after approval of construction plans by the secretary, the owner of each storage facility shall complete construction or installation of secondary containment facilities required by K.A.R. 4-4-900 et seq.

(b) Within two years after approval of construction plans by the secretary, the owner of each storage facility shall complete construction or installation of loading and unloading pads required by K.A.R. 4-4-900 et seq.

(c) The secretary may grant additional time for construction or installation of storage containers, structures, dikes, or other equipment for good cause upon receipt of a written request. Such request shall state the reason for the additional time and the amount of additional time needed. The request may be granted if the request was made in good faith and the circumstances underlying the request were beyond the control of applicant. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-954. Fertilizer discharge report requirement. Any discharge of either 1000 pounds or more of dry fertilizer outside the handling or working area or 100 gallons or more of liquid fertilizer into the secondary containment structure or area or any other portion of the storage facility shall be reported to the secretary within 48 hours. (Authorized by and implementing K.S.A. 1989 Supp. 2-1227; effective Jan. 14, 1991.)

K.A.R. 4-4-956. Alternative designs for bulk fertilizer storage facility. (a) A bulk fertilizer storage facility's alternative design that does not meet the requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986 may be approved by the secretary. The applicant shall provide proof sufficient to the secretary that the alternative design meets or exceeds the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986.

(b) Each application for approval of an alternative design shall include the following:

(1) The plans and specifications required by the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986;

(2) data from the manufacturer or designer of the proposed bulk fertilizer storage facility documenting that the alternative design meets or exceeds the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986;

(3) a description of the facility's system for the detection of leaks or other malfunctions that meets the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986;

(4) a statement by a licensed professional engineer certifying that the design provides protection to the environment that meets or exceeds the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986;

(5) the construction timelines; and

(6) any other relevant information regarding the safe handling of bulk fertilizers required by the secretary.

(c) Upon completion of construction and before using the bulk fertilizer storage facility, the owner or operator of the bulk fertilizer storage facility shall submit to the secretary a detailed record of construction and a statement certifying that the bulk fertilizer storage facility was constructed according to the approved application. (Authorized by and implementing K.S.A. 2-1227; effective Jan. 25, 1993; amended July 18, 2003.)

K.A.R. 4-4-982. Marking of mobile storage containers. (a) Each owner or operator of any mobile storage container shall mark each mobile storage container with the following information on at least two opposing exterior surfaces of the container:

(1) The word "fertilizer";

(2) the name and address of, and the emergency contact information for, the individual, corporation, association, or entity responsible for the mobile storage container; and

(3) the type of fertilizer in the mobile storage container.

(b) All information required by this regulation shall be marked in letters and numbers at least two inches high and in colors that sharply contrast with the color of the background. (Authorized by and implementing K.S.A. 2-1227; effective, T-4-7-1-94, July 1, 1994; effective Aug. 22, 1994; amended July 18, 2003.)

K.A.R. 4-4-983. Mobile storage containers. (a) Each mobile storage container or combination of mobile storage containers that has a combined storage capacity of 2,000 gallons or more and is used to store liquid fertilizer at the same location for more than 60 consecutive days of storage shall meet the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986.

(b) The 60-day period specified in subsection (a) of this regulation shall begin when the liquid fertilizer is delivered to an empty mobile storage container or when the mobile storage container is moved to a separate location more than 300 feet from the previous location and in accordance with K.A.R. 4-4-900(i) and K.A.R. 4-4-901.

(c) Each seller that delivers liquid fertilizers to any mobile storage container shall make and, for a minimum of three years, maintain records of the following for each delivery:

(1) The date of the delivery;

(2) the name of the person making the delivery;

(3) the number of gallons delivered;

(4) the legal description, to the nearest 10-acre quarter of the section, of the mobile storage container location at the time of delivery;

(5) a description of the fertilizer transported;

(6) the approximate quantity of fertilizer in the mobile storage container before delivery;

(7) the name of the owner or user of the mobile storage container; and

(8) the name and address of the buyer, seller, and transporting company, if different from the seller.

(d) Each seller shall provide written receipts containing the information specified in subsection (c) of this regulation to the owner or operator of the mobile storage tank, who shall retain these records for a minimum of three years.

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(e) The records required by this regulation shall be made available to the secretary upon request. (Authorized by and implementing K.S.A. 2-1227; effective, T-4-7-1-94, July 1, 1994; effective Aug. 22, 1994; amended July 18, 2003.)

4-4-984. Mobile containers. Each mobile container used for the storage of liquid fertilizer shall meet the requirements of K.A.R. 4-4-901 and K.A.R. 4-4-903. (Authorized by and implementing K.S.A. 2-1227; effective, T-4-7-1-94, July 1, 1994; effective Aug. 22, 1994.)

K.A.R. 4-4-985. Application for new or modified bulk fertilizer storage facilities. (a) Before beginning construction, the owner or operator of each proposed new or modified bulk fertilizer storage facility shall submit to the secretary a complete application. The applicant shall provide proof sufficient to the secretary that the design will meet or exceed the applicable requirements contained in K.A.R. 4-4-900 through K.A.R. 4-4-986.

(b)(1) Each application shall be submitted on forms provided by the secretary. Each applicant shall complete and submit the application according to the directions on the forms. The applicant shall identify all confidential business information. Each application shall include the following:

- (A) A location area map;
- (B) a detailed plot plan of the facility;
- (C) a water line backflow protection schematic diagram;
- (D) detailed construction plans and specifications;
- (E) a process flow diagram for the facility; and

(F) any additional relevant information regarding the safe handling of bulk fertilizers that the applicant or secretary deems necessary.

(2)(A) In addition to meeting the requirements listed in paragraph (b)(1) of this regulation, each application for a bladder tank shall also meet the requirements of K.A.R. 4-4-986.

(B) In addition to meeting the requirements listed in paragraph (b)(1) of this regulation, each application for an alternative design shall meet the requirements of K.A.R. 4-4-956.

(c) The application shall specify the physical location and the mailing address of the facility, if different from the address on the application.

(d) All construction plans and specifications for the facility submitted as part of the application shall be drawn to scale, be clearly and completely labeled, and be legible without magnification. The plans and specifications shall at a minimum contain the following:

- (1) A plot plan or map of the property that shows all structures and the location of all wells, utility poles, and drainage systems on the site;
- (2) the location of the facility relative to the floodplain;
- (3) the approximate distance from, the direction to, and the identity of all lakes, streams, drainage ditches, and storm drains within 1,320 feet of the facility;
- (4) the drainage pattern of the facility;
- (5) the distance from and direction to all public and private water wells within the facility or within 1,320 feet of the facility;
- (6) the location of all abandoned wells within 300 feet of the facility;
- (7) the site soil characteristics;
- (8) the depth to groundwater;
- (9) the location of all utility service entrances and easements or rights-of-way within the facility;
- (10) the construction plans for the secondary and operational area containment;
- (11) the manufacturer's installation instructions, estimated life expectancy, and confirmation of compatibility with fertilizer material, if any synthetic liners, synthetic materials, or prefabricated basins are used in the containment structure; and
- (12) the location of any tank or other container used for the storage of petroleum products within the storage facility, if any.

(e) Each set of construction plans and specifications for a bulk fertilizer secondary containment structure shall, at a minimum, contain the following:

- (1) The size and location of each proposed secondary containment structure;
- (2) the size and location of all bulk fertilizer storage containers or bins, pumps, piping, and appurtenances;
- (3) the size and location of all operational areas and load pads;
- (4) the drainage pattern and sump location; and
- (5) the calculated capacity of each containment structure in gallons or cubic feet.

(f) Elevation plans or maps shall be included with the application and shall show the location of all bulk fertilizer storage tanks and their horizontal, raised, or vertical positioning within the secondary containment and a tank schedule that provides all of the following information for each tank:

- (1) The construction material;
- (2) the capacity;
- (3) the diameter or dimensions;
- (4) the height; and
- (5) the date of installation.

(g) Each construction or modification project shall conform with the plans and specifications identified in the approved application and required by this regulation.

(h) Upon completion of construction or modification and before use of the newly constructed or modified portion of the facility, the owner or operator shall provide the secretary with certification that all construction or modification was completed in accordance with this regulation.

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(i) Sources outside of the Kansas department of agriculture may be utilized by the secretary for assistance in evaluating any alternative design application submitted. (Authorized by K.S.A. 2-1227; implementing K.S.A. 2-1228; effective July 18, 2003.)

K.A.R. 4-4-986. Liquid bulk fertilizer bladder tank requirements. (a) Each liquid bulk fertilizer bladder tank design shall be required to be approved by the secretary before use. Each applicant shall provide the information specified in this regulation to the secretary establishing that the bladder tank design meets or exceeds the applicable requirements of K.A.R. 4-4-900 through K.A.R. 4-4-986.

(b) Each application shall be submitted on one or more forms provided by the secretary. Each applicant shall complete these forms and submit the application in compliance with the directions on the forms. The applicant shall designate all trade secrets that the applicant wishes to be considered as confidential.

(c) Each application submitted for approval shall include the plans and specifications, which shall be certified and stamped by a registered professional engineer. These plans and specifications shall include the following:

- (1) All information required by K.A.R. 4-4-985;
 - (2) the results of a soil compaction study and an evaluation of these findings showing that the underlying soil and support pad can support the weight of the filled tank;
 - (3) construction details of the support pad, including details of the external leak detection;
 - (4) the wind loading and buoyancy calculations for the tank when empty; and
 - (5) construction and assembly details of the tank and liner, which shall include the following:
 - (A) The liner manufacturer's detailed information, including liner thickness, composition, chemical compatibility, and life expectancy;
 - (B) a description of the protective barriers between the liner and the tank, including cross-sections of each wall and the floor;
 - (C) detailed information about liner suspension;
 - (D) detailed information about roof support;
 - (E) detailed information about the method to be used to remove condensate, overage, and liner leakage, if any;
 - (F) detailed information about all external openings through the tank, including any leak detection ports, valves, manways, and other inspection ports;
 - (G) detailed information about all openings through the tank liner;
 - (H) detailed information about the liquid-level gauging device, including overage prevention;
 - (I) detailed information about the internal leak detection system;
 - (J) the method of securing the tank and appurtenances to prevent any discharge of stored fertilizer;
 - (K) each manufacturer's recommendations for inspection and maintenance of the tank, liner, and appurtenances and a statement specifying how these recommendations will be implemented; and
 - (L) any other relevant information regarding the safe handling of bulk fertilizer required by the secretary.
- (d) All external appurtenances, including leak detection ports and valves, shall meet the following requirements:
- (1) Be encased or enclosed to contain any leaks;
 - (2) have a leak detection method; and
 - (3) have a method to secure the enclosure from unauthorized access.
- (e) All pipes outside the tank shall be double-walled from the storage tank to the loading pad and shall have a leak detection method.
- (f) All tanks and appurtenances shall be protected from damage due to vehicle traffic.
- (g) Each applicant shall verify the manufacturer's certification that the external tank has been built to the applicable provisions of the American petroleum institute's API standard 650, published November 1998 and including the January 2000 addenda, November 2001 addenda, and all appendices, which is hereby adopted by reference.
- (h) Upon completion of construction and before use, the owner or operator of the facility shall submit to the secretary a detailed record of construction and a statement certifying that the facility was constructed according to the approved application.
- (i) Each bladder tank shall be inspected and maintained according to the approved plan. (Authorized by K.S.A. 2-1227; implementing K.S.A. 2-1228; effective July 18, 2003.)

Article 10. Anhydrous Ammonia

K.A.R. 4-10-1. Definitions. (a) "Appurtenances" means all devices that are used in connection with a container, including safety devices, liquid-level gauging devices, valves, pressure gauges, fittings, and metering or dispensing devices.

(b) "ASME" means American society of mechanical engineers.

(c) "ASME schedule 80" and "ASME schedule 40" mean pipe specifications contained in the 2007 edition of the ASME boiler and pressure vessel code, section II, part A, SA-53/SA-53M, titled "specification for pipe, steel, black and hot-dipped, zinc-coated, welded and seamless," and the appendices, which are hereby adopted by reference.

(d) "Backflow check valve" means a device designed to prevent ammonia from flowing in the wrong direction within a pipe or tube.

(e) "Capacity" means the total volume of a container as measured in standard U.S. gallons of 231 cubic inches, unless otherwise specified.

(f) "Chemical-splash goggles" and "Splashproof goggles" mean flexible-fitting chemical-protective goggles, with a hooded, indirect ventilation system that provides protection to the eyes and eye sockets from the splash of hazardous liquids. This term shall not include direct vented goggles.

(g) "Code" means the "introduction," the relevant parts of UG-1 through UG-137 titled "part UG: general requirements for all methods of construction and all materials," and parts UF-1 through UF-125 titled "part UF: requirements for pressure vessels fabricated by forging" of section VIII, division 1, of the ASME boiler and pressure vessel code, 2007 edition, which are hereby adopted by reference.

(h) "Container" means any vessel designed to hold anhydrous ammonia that is used for the storage, transportation, or application of anhydrous ammonia. This definition shall not apply to any refrigerated vessel with a design pressure of less than 15 psig.

(i) "Data plate" means a piece of noncorroding metal permanently attached by the manufacturer to the surface of a container that has been designed and constructed in accordance with paragraph UG-116 of section VIII, division 1 of the ASME code, 2007 edition, which is adopted by reference in subsection (g).

(j) "Densely populated area" means any location with either one or more multifamily housing units or eight or more single-family dwellings located within a quarter section.

(k) "Designed pressure" means maximum allowable working pressure.

(l) "Emergency shutoff valve" means a valve that stops the flow of product by spring closure, gravity, or pressure and can be activated by an outside means including a cable pull, hose pull, air assists, electrical closure, or back pressure. The emergency shutoff valve shall be placed in the liquid line internally or externally to the container. If an external valve is used, the valve shall be after the manual shutoff valve but as close to the opening of the container as possible. The emergency shutoff valve shall work properly from a remote location or when activated at the valve.

(m) "Excess-flow valve" means a device placed in a line that is designed to close when the flow of vapor or liquid flowing through the line exceeds the amount for which the valve is rated.

(n) "Filling density" means the percent ratio of the weight of gas in a container to the weight of water that the container will hold at 60°F.

(o) "Implement of husbandry" means a farm wagon-type vehicle or application unit that has an anhydrous ammonia container mounted on it and that is used for transporting anhydrous ammonia from a source of supply to farms or fields or from one farm or field to another.

(p) "Mobile container" means any container that is not installed as a permanent storage container.

(q) "National board inspector" is a person who holds a valid national board commission from the national board of boiler and pressure vessel inspectors and has fulfilled the national board commission requirements as specified in section VIII of the ASME code, 2007 edition.

(r) "NIOSH" means the national institute for occupational safety and health.

(s) "Non-code welding" means welding that does not comply with parts UW-1 through UW-65 of the ASME boiler and pressure vessel code, section VIII, division 1, titled "part UW: requirements for pressure vessels fabricated by welding," 2007 edition, which is hereby adopted by reference.

(t) "PSIG" means pounds per square inch gauge pressure.

(u) "Permanent storage container" means a stationary container having a volume of at least 3,000 water gallons.

(v) "Permanent storage facility" means a site that includes one or more permanent storage containers and their connections and appurtenances.

(w) "Pressure-relief valve" means a device designed to open to relieve pressure above a specified value to prevent an increase in internal fluid or vapor and to close once acceptable pressure conditions have been restored.

(x) "Proof-of-inspection seal" and "current KDA-issued proof-of-inspection seal" mean the decal applied to a permanent system following a successful KDA inspection, which shall occur once per calendar year. The seal is current until it expires on December 31 of the year following the inspection.

(y) "Public assembly area" means any building or structure established to accommodate groups of people for commercial, civic, political, religious, recreational, educational, or similar purposes. This term shall include buildings or structures used for medical care, including hospitals, assisted care facilities, and prisons.

(z) "Reactor unit" means equipment that utilizes anhydrous ammonia to manufacture liquid fertilizer.

(aa) "Respirator" means an air-purifying device with a full face-piece that has been approved by NIOSH under the provisions of 30 CFR Part II, Subpart I [13], dated July 1, 2009, for use in an ammonia-contaminated atmosphere, in compliance with 29 CFR 1910.134, dated July 1, 2009.

(bb) "System" means an assembly of one or more containers, pipes, pumps, and appurtenances used for the storage, transfer, transportation, or application of anhydrous ammonia, which may be permanent or mobile. This definition shall not apply to interstate anhydrous ammonia pipelines.

(cc) "USDOT" and "D.O.T." mean United States department of transportation. (Authorized by and implementing K.S.A. 2-1212; effective Jan. 1, 1966; amended Jan. 1, 1971; amended Jan. 1, 1973; amended May 1, 1986; amended, T-87-9, May 1, 1986; amended May 1, 1987; amended May 1, 1988; amended Jan. 25, 1993; amended March 12, 2010.)

K.A.R. 4-10-1a. Prohibited acts. It shall be a violation to perform any of the following: (a) Install, relocate, modify, repair, or use any system or equipment for storing, reacting, transferring, transporting, applying, or dispersing by any other means anhydrous ammonia unless the system, permanent storage facility, or equipment is in compliance with this article 10;

(b) except as provided under K.A.R. 4-10-4b(b), transfer anhydrous ammonia into a mobile container unless the container bears a legible manufacturer's data plate or equivalent stamp;

(c) deface the manufacturer's data plate or equivalent stamp;

- (d) transfer any anhydrous ammonia into a container or system having structural damage or any other defect that would prevent the containment of anhydrous ammonia;
 - (e) transfer anhydrous ammonia into or out of any container without the consent of the owner of each container;
 - (f) transfer, or permit the transfer of, anhydrous ammonia into a permanent storage container unless the permanent storage container has a current KDA-issued proof-of-inspection seal attached to the respective system;
 - (g) conduct non-code welding directly on a container or any parts subject to pressure;
 - (h) fail to report any release of 100 pounds or more of anhydrous ammonia within 48 hours of the release;
 - (i) conduct a transfer without an attendant present at the transfer site;
 - (j) transfer anhydrous ammonia into any vessel that does not comply with K.A.R. 4-10-1 through 4-10-16; or
 - (k) maintain anhydrous ammonia in any vessel that does not meet the requirements of K.A.R. 4-10-1 through 4-10-16.
- (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-1b. Reportable events. The owner or operator of each anhydrous ammonia storage facility or any equipment shall report, to the secretary or the secretary's authorized representative, each accidental or unauthorized release of 100 pounds or more of anhydrous ammonia within 48 hours after the release. Nothing in this regulation shall require the reporting of an intentional release of anhydrous ammonia into the soil during the normal course of application. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-2e. Container valves and appurtenances. (a) Connections to containers shall be limited to liquid-level gauges, emergency shutoff valves, pressure gauges, vapor-relief valves, liquid lines, vapor lines, and thermometers.

(b) Each vapor line and liquid line shall have a manually operated shutoff valve located as close to the container as practical.

(c) On or before July 1, 2012, each permanent storage container shall be equipped with an emergency shutoff valve that meets the requirements of K.A.R. 4-10-1 (l).

(d) No metal part or component of a system that is normally in contact with anhydrous ammonia shall be made of a metal that is incompatible with anhydrous ammonia, including galvanized metal, cast iron, zinc, copper, and brass.

(e) Openings from the container or through fittings that are not larger than a no. 54 drill size opening shall not be required to be equipped with an excess flow valve.

(f) Each valve and appurtenance shall be suitable for use with anhydrous ammonia and designed for not less than the maximum pressure to which the valve and appurtenance will be subjected. Each valve that could be subjected to container pressures shall have a rated working pressure of at least 250 psig.

(g) (1) Each vapor or liquid line greater than a no. 54 drill size opening shall be equipped with an excess flow valve that closes automatically at the rated flows of vapor or liquid specified by the manufacturer.

(2) The connections, lines, valves, and fittings protected by one or more excess flow valves shall have a greater capacity than the rated flow of the excess flow valves so that the valves will close in case of failure at any point in the lines or fittings.

(h) Each liquid connection used to fill a permanent storage container shall be fitted with a backflow check valve.

(i) (1) All piping, tubing, and fittings subjected to container pressure shall be made of materials specified for use with anhydrous ammonia and shall be designed for a minimum working pressure of 250 psig.

(2) All piping, tubing, and metering or dispensing devices shall be securely mounted and protected against damage.

(3) Threaded joints may be used only with seamless black steel pipe that meets or exceeds ASME schedule 80 specifications. Black steel pipe that meets or exceeds ASME schedule 40 specifications with at least 800 psig minimum bursting pressure may be used if pipe joints are welded or joined by means of welding type flanges. Pipe joint compounds used shall be resistant to ammonia.

(4) Each flexible connection shall have a bursting pressure of at least 1,000 psig. (Authorized by and implementing K.S.A. 2-1212; effective May 1, 1987; amended March 12, 2010.)

K.A.R. 4-10-4a. Containers. (a) Each container shall be constructed and tested in accordance with the code and shall have a minimum design pressure of 250 psig.

(b) Subsection (a) shall not prohibit the continued use of permanent storage containers that were constructed and maintained in accordance with Kansas statutes and regulations in effect before the effective date of this regulation.

(c) Each permanent storage container shall be inspected according to K.S.A. 44-913 et seq., and amendments thereto, by the Kansas department of labor, division of industrial safety and health upon initial installation and relocation.

(d) (1) Each permanent storage container that has sustained structural damage shall be inspected and approved for use by the Kansas department of labor, division of industrial safety and health.

(2) Each mobile container that has sustained any structural damage shall be inspected and approved for use by a national board inspector.

(3) Structural damage shall include evidence of any of the following:

(A) Corrosion;

(B) any indentation or abrasion that meets any of the following conditions:

(i) Is over one-half inch deep and includes a weld;

(ii) is deeper than 1/10th of the greatest length of the dent but does not include a weld; or

(iii) is deeper than one inch;

(C) stretching;

(D) cracking;

(E) faulty welds;

- (F) non-code welding;
- (G) faulty couplings; or
- (H) any other similar condition.

(e) All repairs and alterations of permanent and mobile containers shall meet the requirements of the code and shall be performed by a person or company that has a current certificate of authorization from the national board of boiler and pressure vessel inspections.

(f) Non-code welding shall be performed only on saddles or brackets that are not within the pressure-retaining boundaries of the container.

(g) All records of inspections and welding on the container shall meet the following requirements:

- (1) Be maintained by the owner of the container;
- (2) be made available to the secretary upon request; and

(3) be transferred with change of ownership of the container. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-4b. Markings on containers and systems. (a) Except as provided by K.A.R. 4-10-4a(b) and 4-10-4b(b), each container shall have a data plate, or manufacturer's equivalent stamping, that is permanently attached to the container in a location that is both legible and readily accessible for inspection.

(b) A mobile container that does not have a legible data plate or equivalent stamping may be allowed for ammonia use only if the container is properly tested, registered, and marked under USDOT exemption # DOT-SP13554.

(c) Each shutoff valve within a system shall be identified to show whether the valve is in liquid or vapor service. The method of identification may be by color code or by use of the word "vapor" or "liquid" placed within 12 inches of the valve by means of a stencil, tag, or decal.

(d) All container surfaces shall be maintained to avoid deterioration. Surfaces that require paint shall be painted white.

(e) Each permanent storage container or group of permanent storage containers shall be marked with the following:

- (1) Letters at least four inches high, on at least two sides, with the words "CAUTION AMMONIA" or "ANHYDROUS AMMONIA," in a color that contrasts with the color of the container; and
- (2) a national fire protection association diamond for anhydrous ammonia placed in a location that would be readily visible to emergency responders.

(f) Each mobile container shall be marked with the following, using a color that contrasts with the color of the container and letters at least two inches high:

- (1) The words "ANHYDROUS AMMONIA" or "Anhydrous Ammonia" on both sides and on the rear of the container; and
- (2) the words "INHALATION HAZARD" or "Inhalation Hazard" on two opposing sides of the container.

(g) In addition to the markings required in subsection (f), the following information shall appear on each implement of husbandry:

- (1) The owner's name;
- (2) the address of the owner's place of business;
- (3) a telephone number to be contacted in case of an emergency;
- (4) an alphabetical or numerical identification symbol; and
- (5) a decal containing the following information:
 - (A) "CAUTION ANHYDROUS AMMONIA (UNDER PRESSURE) READ CAREFULLY";
 - (B) "Keep away from pop-off valve marked ↑. This is a safety device and shall not be tampered with or adjusted";
 - (C) "Stand upwind when working around equipment";
 - (D) "Wear goggles and rubber gloves when transferring product and bleeding hoses";
 - (E) "Do not fill tank in excess of 85% full";
 - (F) "Never place any part of body in line with valve or hose openings. Use extreme care in handling hoses. Never lift a hose by the valve wheel";
 - (G) "Slowly bleed hoses after transferring product";
 - (H) "Close valves firmly but do not wrench";
 - (I) "Do not permit children near this equipment";
 - (J) "Park equipment away from buildings or any possible fire hazards. Never allow tanks to be subjected to extreme heat";
 - (K) "Do not attempt any repairs of this equipment. In event of any failure, call your dealer immediately"; and
 - (L) "Do not operate this equipment until you have received instructions from your dealer." (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-4c. Permanent storage facility design and permanent storage container location. (a) Before installing or relocating a permanent storage container or permanent storage facility, the owner may submit to the secretary a detailed diagram of the permanent storage facility for review or request a preliminary site survey to ensure that the proposed site meets the requirements in subsections (c), (d), (e), and (f).

(b) The name of the permanent storage facility and the telephone number to be contacted in case of an emergency shall be posted and be legible from each facility entrance using letters at least two inches high.

(c) No permanent storage container shall be located inside an enclosed structure unless the structure is specifically constructed for this purpose.

(d) The nearest edge of the nearest permanent storage container shall be located at a distance meeting the following conditions:

- (1) At least 50 feet from the edge of any property not owned or leased by the permanent storage facility;

- (2) at least 50 feet from a well or other point of diversion used as a source of drinking water;
 - (3) at least 50 feet from storage locations of flammables or explosives;
 - (4) at least 1,000 feet from the area accessible to the public of any public assembly area, as defined in K.A.R. 4-10-1; and
 - (5) not on or less than 100 feet from the surface of a public roadway.
- (e) The site of the permanent storage facility shall be located on property of sufficient size to permit traffic in and out of the area and allow adequate access for emergency personnel.
- (f) Each new permanent storage container or permanent storage facility shall be located outside of a municipality or other densely populated areas, unless the location has been approved in writing by the appropriate local governing body. The owner or operator of each permanent storage container located in a municipality or densely populated area shall obtain written approval from the appropriate local governing body before relocating the permanent storage facility or installing additional permanent storage containers within the municipality or densely populated area.
- (g) (1) Each permanent storage container shall be mounted on either of the following:
- (A) A skid assembly with sufficient surface area to properly support the skid-mounted container; or
 - (B) either reinforced concrete footings and foundations or structural steel supports mounted on reinforced concrete foundations. The reinforced concrete foundations or footings shall extend below the established frost line and shall be constructed to support the total weight of the containers and their contents. If the container is equipped with bottom withdrawal, the container's foundation shall maintain the lowest point of the container at not less than 18 inches above ground level.
- (2) Each container shall be mounted on its foundation in a manner that permits expansion and contraction. Each container shall be adequately supported so as to prevent the concentration of excessive loads on the supporting portion of the shell. Corrosion prevention measures shall be utilized on any portion of the container that is in contact with either the foundation or saddles.
- (3) Each container shall be securely anchored.
- (h) All appurtenances to any permanent storage container shall be protected from tampering and mechanical damage, including damage from vehicles. Each manually controlled valve that, if open, would allow ammonia to be transferred or released, shall be kept locked when unattended and during nonbusiness hours. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

- K.A.R. 4-10-4d. Pressure-relief valves.** (a) Each container or system of containers shall have liquid and vapor pressure-relief valves to prevent pressure build-up in any portion of the system. Each pressure-relief valve shall be manufactured for use with anhydrous ammonia and be installed, maintained, and replaced according to the manufacturer's instructions.
- (b) Each vapor-relief valve shall be set to indicate discharge at a pressure of not less than 95 percent, and not more than 100 percent, of the design pressure of the container to which the vapor-relief valve is attached. Each vapor-relief valve shall be constructed to completely discharge before the pressure exceeds 120 percent of the design pressure of the container to which the vapor-relief valve is attached.
- (c) Pressure-relief valves shall not exhaust within or beneath any building or other confined area.
- (d) Each pressure-relief valve discharge opening shall have a suitable rain cap or other device that allows free discharge of the vapor and prevents the entrance of water.
- (e) Each pressure-relief valve shall be replaced if the valve meets any of the following conditions:
- (1) Fails to meet applicable requirements;
 - (2) shows evidence of damage, corrosion, or foreign matter; and
 - (3) does not have functional weep holes that permit moisture to escape.
- (f) The discharge from each pressure-relief valve shall be vented according to one of the following:
- (1) For vapor-relief valves, upward and away from where people could be located. The discharge shall flow in an unobstructed manner into the open air from a height of at least seven feet above the working area;
 - (2) for liquid-relief valves, downward with the opening positioned between six and 18 inches from the ground; or
 - (3) in any other manner that has been approved by the secretary or an authorized representative of the secretary.
- (g) (1) Vent pipes or tubing used to channel releases from pressure-relief valves shall not be restricted or smaller in size than the pressure-relief valve outlet connection.
- (2) Vent pipes may be connected and channeled into a common header if the cross-sectional area of the header is at least equal to the sum of the cross-sectional areas of each of the individual vent pipes.
- (3) Unless a vent is directed toward the ground and rain will not be able to enter, each pressure-relief valve discharge opening shall have a rain cap.
- (4) If moisture accumulation could occur in a vent, suitable provision shall be made to drain the moisture from the vent. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

- K.A.R. 4-10-4e. Hose specifications.** (a) Each hose with a diameter of at least 1/2 inch used in ammonia service and subject to container pressure shall withstand at least 350 psig and shall have the following information etched, cast, or impressed in a legible format at intervals not to exceed five feet along the hose surface:
- (1) The phrase "Anhydrous Ammonia";
 - (2) the maximum working pressure of the hose; and
 - (3) the date the hose is to be removed from service.
- (b) Each hose shall meet or exceed ASME schedule 80 specifications and have factory-installed ends designed for use with anhydrous ammonia.
- (c) Each hose shall be replaced before or upon the expiration of the manufacturer's removal date.

(d) A hose shall be removed from service if a visual examination reveals any of the following:

- (1) Illegibility of any of the markings required in subsection (a);
- (2) cuts exposing reinforcing fabric;
- (3) soft spots or bulges in the hose;
- (4) a blistering or loose outer covering;
- (5) kinking or flattening;
- (6) stretch marks;
- (7) slippage at any coupling; or
- (8) any other damage that could compromise the integrity of the safe use of the hose. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-4f. Gauging devices. (a) Each container, except any container filled by weight, shall be equipped with a liquid-level gauging device designed for use with anhydrous ammonia and installed according to the manufacturer's instructions.

(b) Each gauging device shall be arranged so that the maximum liquid level to which the container may be filled is readily determinable.

(c) Each container shall be equipped with a fully operational pressure-indicating gauge with a dial graduated from 0-400 psig.

(d) Each gauging device shall have a design pressure at least equal to the design pressure of the container on which the device is used.

(e) Each device used to weigh or measure anhydrous ammonia shall meet all of the requirements of weighing and measuring devices in K.S.A. 83-201 et seq., and amendments thereto, and any implementing regulations adopted by the secretary. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-5. Tank trucks, semitrailers and trailers for transportation of anhydrous ammonia. Each tank truck, semitrailer, and trailer, except implements of husbandry, used for the transportation of anhydrous ammonia shall meet the following requirements: (a) Design pressure of containers.

(1) Each container shall be constructed in accordance with K.A.R. 4-10-2b and shall have a minimum design pressure of 250 psig.

(2) The shell or head thickness of each container shall not be less than $\frac{3}{16}$ of an inch.

(3) Baffles shall not be required for any cargo tank that is designed so that the container is loaded to capacity and discharged at one unloading point. All other containers having a capacity in excess of 500 gallons shall be equipped with suitable, semirigid baffle plates.

(4) Except for safety relief valves, liquid level gauging devices, and pressure gauges, all container openings shall be labeled to designate whether they communicate with liquid or vapor space. Labels may be located on valves.

(b) Mounting containers on truck.

(1) The container shall be attached to the cradle, frame, or chassis of a vehicle in a manner designed to withstand, in any direction, that amount of static loading equal to twice the weight of the container when filled and its attachments. The safety factor used shall be not less than four and shall be based on the ultimate strength of the material to be used.

(2) "Hold-down" devices, when used, shall anchor the container to the cradle, frame, or chassis in a suitable and safe manner that will not introduce an undue concentration of stresses.

(3) If any vehicle is designed and constructed so that cargo tanks constitute, in whole or in part, the stress member used in lieu of a frame, the cargo tanks shall be designed to withstand the stresses thereby imposed.

(4) All connections, including any hose installed in the bottom of a container, shall not be lower than the lowest horizontal edge of the trailer axle.

(5) While in transit, both ends of each transfer hose shall be secured.

(6) If the cradle and the container are not welded together, a suitable material shall be used between them to eliminate metal-to-metal friction.

(c) Container valves and appurtenances.

(1) Each container shall be equipped with a fixed liquid level gauge.

(2) Each container shall be equipped with a fully operational pressure-indicating gauge that has a dial graduated from 0-400 psi.

(3) Nonrecessed container fittings and appurtenances shall be protected against damage.

(4) Filling connections shall be provided with approved automatic valves to prevent backflow whenever the filling connection is broken.

(5) Except for safety relief valves and those connections specifically exempted by K.A.R. 4-10-2e(b) and K.A.R. 4-10-2e(d), all connections to containers shall be provided with approved excess-flow valves.

(6) All containers shall be equipped with an approved vapor return valve.

(d) Safety devices.

(1) The discharge from each safety relief valve shall be directed upward and away from the container and shall flow in an unobstructed manner into the atmosphere. Loosely fitting rain caps shall be used.

(2) Each unloading line shall be provided with an excess-flow valve at the point where the hose leaves the truck.

(e) Marking of containers. Each side and the rear of every container shall be conspicuously and legibly marked on a background of sharply contrasting color with the words "anhydrous ammonia" in letters at least four inches high and shall be placarded in compliance with applicable D.O.T. regulations.

(f) Piping, tubing, and fittings.

(1) All piping, tubing, and metering or dispensing devices shall be securely mounted and shall be protected against damage.

(2) Threaded pipe shall be extra heavy and comply with ASME schedule 80. Standard weight pipe that complies with ASME schedule 40 may be used if the joints are welded.

(g) Electrical equipment and lighting. Tank trucks, tank trailers, and tank semitrailers shall not be equipped with any artificial light other than electric light. Electric lighting circuits shall have suitable overcurrent protection.

(h) Trailers and semitrailers.

(1) Each trailer or semitrailer shall be equipped with a reliable system of brakes that comply with D.O.T. regulations.

(2) Each trailer or semitrailer shall have lights that comply with D.O.T. regulations.

(i) Safety equipment. All tank trucks, trailers, and semitrailers shall be equipped with the following:

(1) An approved gas mask that has current ammonia canisters having intact seals and that covers the entire face;

(2) one pair of rubber or suitable plastic protective gloves;

(3) one pair of rubber or suitable plastic protective boots;

(4) one rubber or suitable plastic protective slicker, or rubber or suitable plastic protective rain suit, or both;

(5) a pair of flexible-fitting, splash-proof goggles; and

(6) a container of not less than five gallons of clean water.

(j) Transfer of liquids.

(1) Each container shall be loaded by any of the following:

(A) Weight;

(B) a suitable liquid level gauging device; or

(C) a suitable meter.

(2) Pumps or compressors designed and installed in accordance with K.A.R. 4-10-2(j) and properly protected against physical damage may be mounted on ammonia tank trucks and trailers.

(k) Protection against collision. Each end-fitted tank truck and each semitrailer shall be provided with properly attached steel bumpers or a chassis extension to protect the tank, piping, valves, and fittings in case of collision.

(l) Conversion from other service to anhydrous ammonia. Tanks used for the transporting or storage of materials other than anhydrous ammonia shall be emptied of the material previously hauled, and the pressure in the tank shall be reduced to atmospheric pressure. If the material previously hauled in the container will be harmful to the anhydrous ammonia, then the tank shall be purged before being placed in anhydrous ammonia service, and all appurtenances shall be changed to comply with these regulations.

(m) Mobile containers. Except for tank trucks and semitrailers that comply with K.A.R. 4-10-5a, mobile containers shall be unloaded only at approved locations.

(n) Parking. Except in emergencies, tank trucks, semitrailers, or trailers transporting anhydrous ammonia shall not be parked in cities or in densely populated areas.

(o) Conversion of tanks from anhydrous ammonia to other service. Tanks used for the transportation of anhydrous ammonia shall be emptied and purged. Ammonia vapor shall be vented into an adequate portable supply of water and not into the atmosphere. An adequate supply of water shall be deemed to be five gallons of water per each one gallon of liquid ammonia. The aqueous ammonia solution resulting from the purging process shall be disposed of properly. (Authorized by and implementing K.S.A. 2-1212; effective Jan. 1, 1966; amended Jan. 1, 1971; amended Jan. 1, 1973; amended May 1, 1986; amended, T-87-9, May 1, 1986; amended May 1, 1987; amended May 1, 1988; amended April 13, 2001.)

K.A.R. 4-10-5a. Tank trucks and semitrailers used for transport for infield delivery. Tank trucks and semitrailers used to transport anhydrous ammonia may be used to fill an implement of husbandry with a capacity of 20,000 pounds or more. These trucks and semitrailers shall be exempt from the requirements in K.A.R. 4-10-6b if the following requirements are met:

(a) The tank truck or the semitrailer transferring the anhydrous ammonia or the implement of husbandry shall carry at least 100 gallons of water for whole-person rinsing if exposure to anhydrous ammonia occurs.

(1) The water shall be clearly identified for safety use and be readily accessible.

(2) The water shall be visibly clean, free of debris, and maintained in a liquid state.

(b) When an implement of husbandry is being loaded, at least 100 gallons of water shall be present at the delivery site for the venting of anhydrous ammonia and shall be used in accordance with K.A.R. 4-10-6a(k). This water shall be separate from the water specified in subsection (a) and shall be maintained in a liquid state.

(c) Any tank truck, semitrailer, and implement of husbandry subject to this regulation may be inspected by the department of agriculture.

(d) Each tank truck, semitrailer, and implement of husbandry subject to this regulation shall meet all requirements of this regulation before loading, transporting, or off-loading anhydrous ammonia.

(e) During the transfer of anhydrous ammonia, the nearest edge of the nearest vehicle, tank, and hose involved with the transfer shall be located according to the following:

(1) At least 50 feet from the edge of any property not owned or leased by the owner or operator of the permanent storage facility;

(2) at least 50 feet from any well or other point of diversion used as a source of drinking water;

(3) at least 50 feet from storage locations of flammables or explosives;

(4) at least 500 feet from the area accessible to the public within any public assembly area as defined in K.A.R. 4-10-1;

and

(5) at least 50 feet from the surface of a public roadway. (Authorized by and implementing K.S.A. 2-1212; effective April 13, 2001; amended March 12, 2010.)

K.A.R. 4-10-6a. Transfers. (a) Transfer to a permanent storage container shall be made only to a system displaying a current KDA-issued proof-of-inspection seal.

(b) Each container filled according to liquid level by any gauging method, other than a 85 percent fixed-length dip tube gauge, shall have a thermometer well and functional thermometer so that the internal liquid temperature can be easily determined and the amount of liquid in the container can be easily corrected to the volume the liquid would occupy at 60° F.

(c) A transfer shall not exceed one of the following:

(1) 85 percent of the container's capacity by volume; or

(2) 56 percent filling density for permanent storage containers or 54 percent filling density for implements of husbandry.

(d) The amount of anhydrous ammonia transferred shall be measured by one of the following:

(1) Weight;

(2) a liquid-level gauging device; or

(3) a flowmeter.

(e) Flammable gases, or gases that will react with anhydrous ammonia including air, shall not be used to transfer anhydrous ammonia.

(f) At least one attendant shall be present to monitor and control each transfer of anhydrous ammonia.

(g) Loading and unloading systems shall be protected to prevent a release if the transfer hose is severed.

(h) Each transfer shall occur only in the open air unless the transfer occurs within a structure specifically constructed for that purpose.

(i) (1) Only pumps and compressors designed for use with anhydrous ammonia shall be used.

(2) Liquid pumps and vapor compressors shall be designed for 250 psig working pressure.

(3) The pressure-actuated bypass valve and return piping shall be installed in accordance with the pump manufacturer's instructions.

(4) Each vapor compressor and liquid pump shall have an operational pressure gauge graduated from 0-400 psig at the inlet and at the outlet.

(5) Shutoff valves shall be installed within three feet of the inlet of a liquid pump and within two feet of the discharge. With vapor compressors, the shutoff valves shall be located as close as is practical to the compressor connections.

(j) The piping used to transfer anhydrous ammonia from a tractor trailer or railroad tank car into a permanent storage container shall be equipped with an excess flow valve and backflow pressure valve, which shall be located as close as practical to where the piping connects with the transfer hose.

(k) (1) During the removal of anhydrous ammonia from a transfer hose, the anhydrous ammonia shall be vented into an adequate supply of water.

(2) For purposes of this regulation, an adequate supply of water shall mean at least five gallons of nonammoniated water for each gallon of liquid ammonia or fraction of a gallon that could be contained in the hose. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-6b. Transfers; tank cars and transport trucks; additional requirements. In addition to the transfer requirements in K.A.R. 4-10-6a, each transfer from a tank car or transport truck shall meet the following requirements:

(a) Except when loading into implements of husbandry or reactor units, tank cars and transport trucks shall be unloaded only through a permanently installed loading point and into a permanent storage container.

(b) A sign reading "Stop—Tank Car Connected" shall be displayed at the active end or ends of the siding while the tank car is connected for unloading.

(c) While tank cars are on a side track for unloading, the wheels at both ends shall be blocked on the rails. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-7. Implements of husbandry. In addition to the container requirements in K.A.R. 4-10-2e, 4-10-4a, 4-10-4b, 4-10-4d through 4-10-4f, and 4-10-6a, each system that is mounted on an implement of husbandry and is used for the transport of anhydrous ammonia shall meet the following requirements:

(a)(1) A stop or stops shall be attached to either the vehicle or the container to prevent the container from being dislodged from its mounting if the vehicle stops suddenly.

(2) A hold-down device shall anchor the container to the vehicle at one or more places on each side of the container.

(3) Each container mounted on a four-wheel trailer shall have the container's weight distributed evenly over both axles.

(4) If the cradle and the tank are not welded together, material shall be used between the cradle and the tank to eliminate metal-to-metal friction.

(b)(1) Each connection and appurtenance shall be protected from physical damage.

(2) A hose and connection installed in the bottom of a container shall not be lower than the lowest horizontal edge of the vehicle axle.

(3) The entire length of each hose shall be secured during transit in a manner that prevents damage to any portion of the hose or to the connections.

(4) When each hose is removed, the fittings shall be capped to prevent the accidental discharge of ammonia.

(c) Each implement of husbandry used for transportation shall meet the following requirements:

(1) Be securely attached to the pulling vehicle by use of a hitch pin or ball of proper size for the weight pulled. The hitch pin or ball shall be supplemented by two welded safety chains. Links of the safety chains shall be made of steel and shall have a breaking strength that exceeds the gross weight of the implement to which the chains are attached;

(2) be constructed, maintained, and utilized so as to follow in the path of the pulling vehicle and not swerve from side to side while being towed;

(3) be pulled at a speed not faster than is reasonable and safe under existing conditions;

(4) not be parked on any public street or other thoroughfare except in an emergency; and

(5) be equipped with at least five gallons of unfrozen and readily accessible water during the transport, transfer, or use of anhydrous ammonia, for use if exposure to anhydrous ammonia occurs.

(d) When any implement of husbandry is pulled on a public roadway, the following requirements shall be met:

(1) Each implement of husbandry with a capacity greater than 1,000 gallons shall be pulled as a single unit.

(2) When two implements of husbandry are pulled, the total capacity pulled shall be limited to not more than 2,000 gallons.

(3) No more than two implements of husbandry shall be pulled at the same time by the pulling vehicle. (Authorized by and implementing K.S.A. 2-1212; effective Jan. 1, 1966; amended Jan. 1, 1971; amended Jan. 1, 1973; amended May 1, 1986; amended March 12, 2010.)

K.A.R. 4-10-10. Safety. (a) The following personal safety equipment shall be available for use at each permanent storage facility and reactor unit when anhydrous ammonia is being transferred and when maintenance is being conducted on a system:

(1) A NIOSH-approved respirator that covers the entire face and has current ammonia canisters with intact seals;

(2) one pair of protective gloves made of rubber or any other material impervious to anhydrous ammonia;

(3) one pair of protective boots made of rubber or any other material impervious to anhydrous ammonia;

(4) one protective suit made of rubber or any other material impervious to anhydrous ammonia;

(5) a shower or at least 100 gallons of clean water to be used as safety water; and

(6) a pair of chemical-splash goggles.

(b) During each transfer, the attendant shall wear the personal protective equipment specified in paragraphs (a)(2) and (a)(6), at a minimum.

(c) An area of at least 10 feet around any container or system shall be kept free of combustibles. (Authorized by and implementing K.S.A. 2-1212; effective March 12, 2010.)

K.A.R. 4-10-16. Reactor units. (a) Each reactor unit shall operate only at a site that meets the following requirements:

(1) The nearest edge of the reactor unit shall be located at a distance in accordance with the following requirements:

(A) At least 50 feet from the edge of any property not owned or leased by the owner or operator of the permanent storage facility;

(B) at least 50 feet from any well or other point of diversion used as a source of drinking water;

(C) at least 50 feet from storage locations of flammables or explosives;

(D) at least 500 feet from any area accessible to the public as defined in K.A.R. 4-10-1; and

(E) not on or less than 50 feet from the surface of a public roadway.

(2) Each reactor unit shall be operated outside of municipalities or other densely populated areas unless the location has been approved in writing by the appropriate local governing body.

(b) During the transfer of anhydrous ammonia from railroad tank cars or transport trucks to a reactor unit for the manufacture of ammoniated solutions, the portable reactor unit shall be equipped with the following safety devices:

(1) Remote-controlled shutoff devices located on the tank car connection immediately preceding the hose attachment and on the discharge side of the pump; and

(2) a backflow check valve in the inlet line to the reactor unit.

(c) When anhydrous ammonia is transported to a stationary reactor unit in an implement of husbandry, the implement of husbandry shall be equipped with the following:

(1) A manually operated remote-controlled shutoff device on the discharge valve immediately preceding any hose attachments; and

(2) a backflow check valve installed in the rigid piping leading to the reactor unit at the point of connection for the transfer hose.

(d) The implement of husbandry shall be monitored at all times during the reacting process.

(e) The transfer hose shall be disconnected from the reactor unit when the reactor unit is not in operation.

(f) The required air-operated or manually operated remote-controlled shutoff device shall be tested before each production run of ammoniated solutions. (Authorized by and implementing K.S.A. 2-1212; effective May 1, 1986; amended May 1, 1988; amended Jan. 1, 1989; amended March 12, 2010.)