Department of Agriculture

Adopted Permanent Rules Relating to Chemigation

Rules as Adopted

AGRICULTURAL CHEMICAL CHEMIGATION SAFETY

1505.2100 DEFINITIONS.

Subpart 1. **Scope.** The definitions in this part and Minnesota Statutes, sections 18B.01 and 18C.005, apply to parts 1505.2100 to 1505.2800.

Subp. 2. **Agricultural chemical.** "Agricultural chemical" means a pesticide as defined in Minnesota Statutes, chapter 18B, or a fertilizer, plant amendment, or soil amendment as defined in Minnesota Statutes, chapter 18C.

Subp. 3. **Antipollution device.** "Antipollution device" means equipment or a device used to prevent the backflow or backsiphonage of agricultural chemicals or mixtures of agricultural chemicals and water to the groundwater or surface water from the application of agricultural chemicals through irrigation systems and includes, but is not limited to, a reduced pressure zone backflow preventer, single or double irrigation system supply check valve, air gap, vacuum relief valve, automatic low pressure drain, injection line check valve, system interlock, low pressure shutdown device, and supply tank safeguard.

Subp. 4. **Automatic low pressure drain valve.** "Automatic low pressure drain valve" means a self-activating device designed and constructed to effectively and immediately drain that portion of an irrigation pipeline or conduit or check valve body whose contents could potentially enter the water supply when operation of the irrigation system pumping plant fails or is shut down.

Subp. 5. **Calibration.** "Calibration" means the use of devices and procedures utilized and employed with a chemigation system to determine the rate of agricultural chemical

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application.

Subp. 6. **Check valve.** "Check valve" means a device designed and constructed to effectively provide a positive, absolute closure of an irrigation pipeline or conduit or an agricultural chemical injection line that positively prevents the flow of a mixture of agricultural chemicals or agricultural chemicals and water to an irrigation pipeline, water supply, injection device, or supply tank when operation of the irrigation system pumping plant or agricultural chemical injection unit fails or is shut down.

Subp. 7. **Chemigation system.** "Chemigation system" means a device or combination of devices having a hose, pipe, or other conduit directly connected to a water supply through which a mixture of agricultural chemicals, or agricultural chemicals and water, are injected or drawn into and applied to land, crops, or plants.

Subp. 8. **Commissioner.** "Commissioner" means the commissioner of agriculture or an agent authorized by the commissioner.

Subp. 9. **Department.** "Department" means the Department of Agriculture.

Subp. 10. **Fertilizer chemigation.** "Fertilizer chemigation" means a process for applying fertilizers to land or crops including agricultural, nursery, turf, golf course, or greenhouse sites in or with irrigation water during the irrigation process.

Subp. 11. **Incident.** "Incident" means a flood, fire, tornado, transportation accident, storage container rupture, leak, spill, emission discharge, escape, disposal, or other event that releases or immediately threatens to release an agricultural chemical accidentally or otherwise into the environment, and may cause unreasonable adverse effect on the environment. Incident does not include the legal use of an agricultural chemical.

Subp. 12. **Injection unit.** "Injection unit" means an agricultural chemical injection metering pump, venturi (vacuum),

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pressure differential, or other metering device interlocked with the irrigation system that withdraws an agricultural chemical from a supply tank and injects the agricultural chemical into the irrigation system during a chemigation operation.

Subp. 13. **Interlock.** "Interlock" means the interconnection between an irrigation pump and agricultural chemical injection unit that causes injection system shutdown.

Subp. 14. **Irrigation.** "Irrigation" means the act of supplying water for agricultural and horticultural purposes to land, crops, or plants by means of pipes, hoses, sprinklers, drippers, ditches, furrows, or other devices that are connected directly to a source of ground or surface water.

Subp. 15. **Low pressure shutdown device.** "Low pressure shutdown device" means a device interlocked with the irrigation system that will shut down the irrigation system when the water pressure decreases to the point where an incident may occur.

Subp. 16. **Permitted-by-rule.** "Permitted-by-rule" means an applicant is considered to have a permit under part 1505.2200 to construct and operate a chemigation system if the applicant complies with parts 1505.2100 to 1505.2800, including the submission of a permit application and the required fee under part 1505.2200.

Subp. 17. **Pesticide chemigation.** "Pesticide chemigation" means the process of applying pesticides to land or crops including, but not limited to, agricultural, nursery, turf, golf course, or greenhouse sites in or with irrigation water during the irrigation process.

Subp. 18. **Public water supply.** "Public water supply" has the meaning given in part 4720.0100.

Subp. 19. **Reduced pressure zone backflow preventer.** "Reduced pressure zone backflow preventer" means a device designed to prevent backflow consisting of two spring loaded check valves with an intermediate reduced pressure zone that drains to the atmosphere by a relief valve, with a reduced pressure maintained in the intermediate zone by means of a pressure differential valve.

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Subp. 20. **Substantially altering.** "Substantially altering" means modifying a chemigation system by changing or adding injection units, supply tanks, safeguards, or antipollution devices described in the applicants most recently submitted permit application. Routine maintenance does not constitute a substantial alteration.

Subp. 21. **Vacuum relief valve.** "Vacuum relief valve" means a device effectively designed and built to automatically relieve or break vacuum in an irrigation pipeline or conduit caused by system failure or shut down.

Subp. 22. **Water supply.** "Water supply" means a source of water that is connected directly to an irrigation system such as a single well, group of wells, dug pit, lake, river, or stream.

1505.2200 APPLICATION; PERMIT; FEE AND APPLICATION RENEWAL; ALTERATION; INSPECTION.

Subpart 1. **Permit required.** A person shall comply with parts 1505.2100 to 1505.2800 before applying agricultural chemicals through an irrigation system. An applicant is considered to be permitted-by-rule if the applicant is in compliance with parts 1505.2100 to 1505.2800.

Subp. 2. **Initial fee; application renewal.** The application fee for an initial chemigation system permit established by Minnesota Statutes, section 18B.08, subdivision 4, or section 18C.205, subdivision 3, must be submitted with the initial chemigation system permit application. An updated chemigation system permit application must be submitted to the commissioner on forms provided by the commissioner every two years from the date of the applicant's initial submission of their permit application. No additional fee is required.

Subp. 3. **Permits previously granted under repealed parts 1505.2000 to 1505.2080.** An applicant previously granted a permit under repealed parts 1505.2000 to 1505.2080 shall submit an updated permit application every two years from the effective date of parts 1505.2100 to 1505.2800. No additional fee is required.

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Subp. 4. **Application.** An applicant for a chemigation system permit shall apply on forms supplied by the commissioner. The application must include, at a minimum:

A. the name, address, and telephone number of the applicant to whom a permit is to be issued;

B. the number and location, by legal description, of well heads, surface water supply withdrawal points, or the public water supply that will be used in the chemigation process;

C. the estimated amounts and types of agricultural chemicals to be applied through the irrigation system;

D. diagrams or photographs of the irrigation system detailing the required antipollution devices;

E. diagrams, drawings, and calculations detailing the required safeguards of agricultural chemical storage containers at the chemigation site, if applicable;

F. the number of the applicant's department of natural resources water appropriation permit, if applicable;

G. the applicant's or applicant's agent's private applicator certification or noncommercial certification number, if applicable; and

H. a description of the chemigation system inspection procedures and time frames for inspection.

Subp. 5. **Chemigation system alteration.** Before substantially altering a chemigation system, an applicant shall submit a permit application form to the commissioner describing the changes to be made to the chemigation system. No additional fee is required.

An applicant is considered to be permitted-by-rule for the substantial alteration if the applicant complies with parts 1505.2100 to 1505.2800.

Subp. 6. **Inspection.** Chemigation systems are subject to inspection by the commissioner or the commissioner's agent under Minnesota Statutes, section 18D.201.

1505.2300 AGRICULTURAL CHEMICAL APPLICATION; SETBACKS AND

SAFEGUARDING; ANTIPOLLUTION DEVICES; PURGING; POSTING.

Subpart 1. **Application of agricultural chemicals through irrigation systems.**

A. A pesticide may be applied through an irrigation system only if the pesticide is labeled for the method and device specified for application, the crop, and application site.

B. Fertilizers may be applied through irrigation systems.

Subp. 2. **Setbacks and safeguarding.**

A. Agricultural chemical storage areas and supply tanks, the end of the discharge hose for check valve drain lines, and agricultural chemical mixing and loading areas must not be located closer to a water supply well than the distance specified in chapter 4725. If not specified in chapter 4725, the minimum setback distance for agricultural chemical storage areas and supply tanks, the end of the discharge hose for check valve drain lines, and mixing and loading areas from the water supply must be the same as the minimum setback distance specified in chapter 4725 for agricultural chemical supply tanks and agricultural chemical mixing and loading areas used for chemigation.

B. An agricultural chemical supply tank must be safeguarded if the tank storage meets at least two of the following conditions:

(1) the supply tank has a rated capacity of more than 1,500 United States gallons;

(2) the supply tank is located within 100 feet of a water supply; or

(3) the supply tank is located at a chemigation site for more than 30 consecutive days.

C. If required, agricultural chemical supply tanks must be confined to a safeguard that is adequate in the event of a release to prevent movement of the agricultural chemical to the water supply.

The safeguard must consist of a wall and liner or prefabricated basin as specified in item E.

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D. The capacity of the safeguard for an agricultural chemical supply tank must be at least equal to the sum of all of the following:

(1) the volume of the largest agricultural chemical supply tank or other container within the safeguard;

(2) 25 percent of the capacity of the largest agricultural chemical supply tank or other container within the safeguard for an unroofed safeguard, or ten percent of the capacity of the largest agricultural chemical supply tank or other container within the safeguard covered by a roof; and

(3) the total volume of released liquid that would be displaced by the portions of all other containers with the safeguard to the height of the safeguard wall and all other fixtures and materials located within the safeguard.

E. The walls and base of a safeguard may be made of ferrous metal, reinforced concrete, solid reinforced masonry, synthetic lined earth, or prefabricated ferrous metal or synthetic materials. The safeguard must be designed according to standard engineering practices to be leakproof and to withstand a full hydrostatic head of released liquid to the height of the safeguard.

(1) Masonry walls must be reinforced, capped with concrete, and parged on the interior. The joint between any masonry wall and any floor or liner must use internal waterstops or similar materials to make the joint leakproof. Control joints protected with waterstops or similar materials must be used for the base. The interior base and walls must be coated with a material resistant to agricultural chemicals. Cracks and seams must be sealed.

(2) The joints between a reinforced concrete wall and any floor or liner must use internal waterstops or similar materials to make the joint leakproof. Control joints protected with waterstops or similar materials must be used for the base. The interior base and walls must be coated with a material resistant to agricultural chemicals. Cracks and seams must be sealed.

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(3) Synthetic liners must have a minimum thickness of 30 mils (0.8 millimeters), be chemically compatible with the materials being stored within the safeguard, photo resistant, and puncture resistant. The earthen base of a synthetic liner must be free of large rocks, angular stones, sticks, or other materials that may puncture the liner.

(4) A prefabricated safeguard must be composed of rigid walls and a base of ferrous metal or synthetic materials that are resistant to corrosion, puncture, or cracking. Materials used for the safeguard must be chemically compatible with the materials being stored within the safeguard. Synthetic materials must be photo- and puncture-resistant.

(5) The base and walls of a safeguard may not contain a drain or similar opening.

Subp. 3. **Antipollution devices.** Chemigation systems must be filled with antipollution devices as detailed in this subpart. The devices must be designed and built of materials suitable for those purposes, including agricultural chemical compatibility, and must be kept functional during chemigation. Antipollution devices may be installed as portable devices for use on other permitted chemigation systems, except that portable devices are not allowed for use on systems connected to the public water supply.

A. A mainline irrigation system supply reduced pressure zone backflow preventer or two check valves in a series must be provided for systems directly connected to a water supply, and must be located in the irrigation system supply pipeline between the irrigation system water supply pump or source of irrigation water and the point of injection of the agricultural chemical.

The following additional conditions apply:

(1) Mainline check valves:

(a) a single mainline check valve may be used for the application of fertilizer;

(b) mainline check valve backflow prevention devices must meet the design and equipment standards in item B;

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(c) mainline check valve backflow prevention devices must be tested and certified by an independent testing laboratory to meet the performance standards in item B; and

(d) mainline check valves must be stamped, tagged, or otherwise marked to indicate working pressure, flow rate, and direction, and date, month, and year of manufacture.

(2) Reduced pressure zone backflow preventers:

(a) a reduced pressure zone backflow preventer must be used when the source of irrigation water is potable water; and

(b) a reduced pressure zone backflow preventer must be approved by the Department of Health under chapter 4715, and applicants must install and maintain a reduced pressure zone backflow preventer under chapter 4715.

The commissioner shall keep and provide to interested persons a list of Department of Health approved reduced pressure zone backflow preventers and mainline check valves certified by independent testing laboratories. Mainline check valves approved by the commissioner under repealed parts 1505.2000 to 1505.2080 may continue to be used after the effective date of this part if the mainline check valves comply with item B and the department has been notified of any changes in design or materials.

B. If a single irrigation system supply check valve or two irrigation system supply check valves in a series are used, each check valve must be equipped with an inspection port or similar device and be immediately preceded in the irrigation system by a vacuum relief valve and automatic low pressure drain valve.

The inspection port must be installed on the horizontal irrigation pipeline on the supply side of each check valve in a manner that the inlet to the automatic low pressure drain can be easily observed during irrigation system shutdown.

The vacuum relief valve must be installed on the top of the horizontal irrigation pipeline on the supply side of the check valve. The valve must have an orifice size of at least a

three-quarter inch diameter for a four-inch pipe; a one inch diameter for a five inch to eight inch pipe; and a two inch diameter for a ten inch or 12 inch pipe.

The automatic low pressure drain must be provided on the bottom of the horizontal irrigation pipeline on the supply side of the check valve. The device must have an internal and external orifice size of at least a three-quarter inch diameter. If two check valves in a series are required to be used, the check valve located in line nearest to the pivot or irrigation system must meet one of the following specifications:

(1) the check valve must use a spring-loaded, automatic, low pressure drain or an automatic low pressure drain with similar operating characteristics; or

(2) the check valve must use an automatic low pressure drain that will drain the supply side of the body of the check valve within three minutes of system shutdown.

The drain may not extend beyond the inside surface of the bottom of the irrigation pipeline or conduit and must be at least two inches above grade. The device must be positioned, or the location of the grade adjusted, so that liquid will discharge away from a water supply when draining occurs.

An irrigation system supply check valve must be of heavy duty construction with all materials, including internal parts, resistant to corrosion or protected to resist corrosion. It must be rated a minimum of 150 pounds per square inch working pressure and be quick closing by spring action and tight sealing so that no leakage occurs at joints or the valve seat when subjected to an internal hydrostatic pressure test of at least 300 pounds per square inch for one minute. There must be no leakage at joints or the valve seat when the check valve is subjected to an internal hydrostatic pressure equivalent to the head of a column of water five feet high, retained within the downstream portion of the valve body for 16 hours.

Irrigation system supply check valves, when installed, must be level except that a deviation of not more than ten degrees from the horizontal is permitted.

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C. An injection line check valve that is resistant to agricultural chemicals must be provided on the agricultural chemical injection line between the point of agricultural chemical injection into the irrigation system and the agricultural chemical injection unit, pump, or solution tank, and be functional to prevent the flow of liquid from the irrigation line to the agricultural chemical injection device and the flow of liquid or material from the agricultural chemical supply tank to the irrigation line.

D. An interlock, such as electrical, pressure, mechanical, or water motor, must be provided between the irrigation system or water pump and the agricultural chemical injection unit. If interruption of the irrigation water flow occurs, the interlock must, at a minimum, cause the shutdown of the agricultural chemical injection unit.

E. A low pressure shutdown device must be used with the irrigation system that will shut down the irrigation system if the water pressure decreases to the point when an incident may occur.

Subp. 4. **Purging system.** The irrigation system must be operated as necessary on each and every occasion after an agricultural chemical injection is terminated to allow for a complete purging of the agricultural chemical from the system.

Subp. 5. **Posting of sites.** Sites being treated with pesticides through chemigation systems must be posted with signs during pesticide treatment. The posting of signs is governed by items A to D.

A. Signs must be in compliance with subitems (1) to (3).

(1) Signs must be at least eight and one-half inches by 11 inches, highly visible, with contrasting colors for letters and background.

(2) Letters must be at least three-eighths of an inch tall.

(3) Signs must contain at least:

(a) the signal word from the pesticide

label;

(b) the name of the pesticide;

(c) the date of treatment; and

(d) the reentry date as described on the pesticide label.

B. Signs must be conspicuously placed at usual points of entry for all sites and at property corners for nongreenhouse sites that are immediately adjacent to public transportation routes or other public or private nonagricultural property, except that signs must be placed no greater than 100 feet apart for a field chemigation site that is located immediately adjacent to a public area such as a park, school, or residential area.

C. Signs must be removed after the reentry date expires unless signs are of a more permanent nature, such as laminated signs, in which case information must be updated as necessary.

D. If more restrictive instructions for posting exist on the label of the pesticide being used in chemigation, the label instructions must be totally followed.

1505.2400 RECORDS AND REPORTS.

Pesticide chemigation system application records and fertilizer chemigation system mix and application records must be kept by the chemigation system applicant for five years from the date of application. Records detailing dates of chemigation system inspection, names of persons performing the inspection, and condition of the chemigation unit must be kept on forms provided by the commissioner. System inspection and equipment maintenance records must be retained by the chemigation system permit holder for five years.

1505.2500 RESPONSIBILITY; CALIBRATION AND OPERATION; INSPECTION; OFF-TARGET APPLICATION; INCIDENT PREVENTION; INCIDENT REPORTING.

A chemigation system applicant or the applicant's agent shall:

A. calibrate and operate each chemigation system in a

manner that prevents an agricultural chemical incident or nonlabeled application of a pesticide;

B. inspect each chemigation system as necessary while agricultural chemicals are being applied;

C. prevent operation of a chemigation system in such a manner that agricultural chemicals are applied to an area other than an area targeted to receive an agricultural chemical application;

D. not clean agricultural chemical chemigation application, storage, pumping, or injection equipment in surface waters of the state, or fill or clean agricultural chemical chemigation application, storage, pumping, or injection equipment adjacent to surface waters, ditches, or wells where, because of the slope or other conditions, agricultural chemicals or materials contaminated with agricultural chemicals could enter or contaminate the surface waters, groundwater, or wells, as a result of overflow, leakage, or other causes; and

E. upon discovering that an incident has occurred, immediately report the incident to the commissioner.

1505.2600 COMMISSIONER'S RESPONSIBILITY.

The commissioner shall annually provide chemigation safety information to each chemigation system applicant.

1505.2700 INSTALLATION; MAINTENANCE; MODIFICATION.

Subpart 1. **Proper installation and maintenance.** Irrigation systems, antipollution devices and valves, and agricultural chemical injection units, pumps, and solution tanks used for chemigation purposes must be installed and maintained to ensure proper functioning during chemigation. Maintenance necessary to assure proper functioning of the device must be performed before introduction of agricultural chemicals.

Subp. 2. **Modification.** If modification or changes in design, technology, irrigation practices, or other similar reasons warrant the use or placement of equipment other than that specified in parts 1505.2100 to 1505.2800, the commissioner may allow the changes if protection to the water supply is at

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least equal to that provided by the equipment or equipment placement required in parts 1505.2100 to 1505.2800.

1505.2800 PROHIBITED ACTS.

It is a violation of Minnesota Statutes, chapters 18B and 18C, for a person to apply an agricultural chemical to land, crops, or plants in or with irrigation water in violation of parts 1505.2100 to 1505.2800. Parts 1505.2100 to 1505.2800 are enforceable under Minnesota Statutes, chapter 18D.

EFFECTIVE DATE. Parts 1505.2100 to 1505.2800 are effective January 1, 1994, except that an owner or operator may submit an application for a chemigation permit according to part 1505.2200 and the commissioner may collect the required fee and grant a chemigation permit before January 1, 1994.

REPEALER. Minnesota Rules, parts 1505.2000; 1505.2010; 1505.2020; 1505.2030; 1505.2040; 1505.2050; 1505.2060; 1505.2070; and 1505.2080, are repealed effective December 31, 1993.

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