# RULE-MAKING ORDER

**(RCW 34.05.360)**

**CR-103** (12/31/00)

**Agency:** Agriculture

☒ **Permanent Rule**
☐ **Emergency Rule**
☐ **Expedited Repeal**

**(1) Date of adoption:** June 18, 2001

**(2) Purpose:** To clarify rules and address issues and concerns raised since implementation of the original fertigation rules. These rule revisions address the proper operation and system configuration required to protect the environment and human health from fertigation applications.

**(3) Citation of existing rules affected by this order:**

**Repealed:**
**Amended:**
**Suspended:**

**(4) Statutory authority for adoption:** RCW 15.54, RCW 15.58 and RCW 17.21
**Other authority:**

**PERMANENT RULE ONLY**

Adopted under notice filed as WSR 01-11-130 on 5/22/01 (date). 16-202-2000,

Describe any changes other than editing from proposed to adopted version: Sections 16-202-2002, 2003, 2005 and 2006 are not included in this filing.

**EMERGENCY RULE ONLY**

Under RCW 34.05.350 the agency for good cause finds:

☐ (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.

☐ (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.

Reasons for this finding:

**EXPEDITED REPEAL ONLY**

Under Preproposal Statement of Inquiry filed as WSR ___ on ___ (date)

**(5.3) Any other findings required by other provisions of law as precondition to adoption or effectiveness of rule?**

☐ Yes ☒ No If Yes, explain:

**(6) Effective date of rule:**

| **Permanent Rules** | **Emergency Rules** |
|---|---|
| ☐ 31 days after filing | ☐ Immediately |
| ☒ Other (specify) 11/9/01 * | ☐ Later (specify) ___ |

*(If less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

**NAME (TYPE OR PRINT)**
JIM JESERNIG

**SIGNATURE**

**TITLE**
DIRECTOR

**DATE**
6/18/01

**CODE REVISER USE ONLY**

CODE REVISER SERVICES
STATE OF WASHINGTON

JUN 18 2001

TIME 1:53 AM PM

WSR 01-13-063

**(COMPLETE REVERSE SIDE)**

**Note: If any category is left blank, it will be calculated as zero. No descriptive text.**

**Count by whole WAC sections only, from the WAC number through the history note. A section may be counted in more than one category.**

**The number of sections adopted in order to comply with:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Federal statute:** | New | ___ | Amended | ___ | Repealed | ___ |
| **Federal rules or standards:** | New | ___ | Amended | ___ | Repealed | ___ |
| **Recently enacted state statutes:** | New | ___ | Amended | ___ | Repealed | ___ |

**The number of sections adopted at the request of nongovernmental entity:**

New ___ Amended ___ Repealed ___

**The number of sections adopted in the agency's own initiative:**

New 17 Amended ___ Repealed _

**The number of sections adopted in order to clarify, streamline, or reform agency procedures:**

New 17 Amended ___ Repealed _

**The number of sections adopted using:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Negotiated rule making:** | New | ___ | Amended | ___ | Repealed | ___ |
| **Pilot rule making:** | New | ___ | Amended | ___ | Repealed | ___ |
| **Other alternative rule making:** | New | 17 | Amended | ___ | Repealed | _ |

## PART 1
## GENERAL PROVISIONS

NEW SECTION

**WAC 16-202-2001 What is the purpose of this chapter?** The purpose of this chapter is to establish performance standards for fertigation that are protective of existing and future uses of surface water and ground water quality.

## PART 2
## GENERAL REQUIREMENTS FOR FERTIGATION OPERATIONS

NEW SECTION

**WAC 16-202-2004 What are the identification requirements for application tanks?** The purpose of identification requirements is to minimize the potential for human exposure and to facilitate remediation in the event of component malfunction or a contamination event.

(1) An application tank must:

(a) List tank contents;

(b) Display its maximum net capacity;

(c) Display a contact name and telephone number; and

(d) Display an owner-derived numeric or alphanumeric tank identifier.

(2) This information must be visibly recorded and securely affixed to each application tank. The distinguishing information shall be designed to remain intact and legible throughout the active use of the container.

(3) Lettering that displays the contact name, telephone number, and tank identifier shall be a minimum of two inches in height and in a color contrasting to the background.

NEW SECTION

**WAC 16-202-2007 How should rinsate from equipment or backflush water from a filtration device be handled?** (1) Water used to rinse, flush, or clean equipment or containers is considered rinsate. It must be applied onto a target site or disposed of properly.

(2) Contaminated backflush water from a filtration device cannot contaminate ground water or surface water, or adversely impact sensitive areas.

## PART 3
## SAFETY REQUIREMENTS FOR FERTIGATION SYSTEMS

NEW SECTION

**WAC 16-202-2008 What are the general antipollution safety device requirements for a fertigation system?** All systems must have antipollution safety devices that include a backflow prevention system, a metering device, injection device, and system interlock to prevent backflow into the irrigation water source or chemical supply system.

NEW SECTION

**WAC 16-202-2009 What measures must be used to prevent backflow into the irrigation water source?** Backflow prevention is a requirement on all irrigation systems used for fertigation except when alternative technology is applied.

(1) Pressurized irrigation system.

(a) At least one irrigation mainline check valve must be correctly installed, properly operated, and adequately maintained to prevent contamination of the water source. The check valve must be located upstream from the injection point. The check valve must be automatic, quick-closing, and capable of forming and maintaining a watertight seal.

(b) An inspection port or a direct access point must be positioned immediately upstream of the check valve to allow visual and manual inspection of the check valve and the low pressure drain. The inspection port or access point must have a minimum

diameter of four inches. If a four-inch inspection port or access point is not feasible, an alternative system must be devised.

(c) An inspection port or access point is not required with an approved backflow prevention assembly.

(d) A vacuum relief valve must be located upstream of the irrigation line check valve, installed at the top of the irrigation pipeline and adequately sized to prevent backsiphoning. The orifice size must comply with current American Society of Agricultural Engineers (ASAE) standards.

(e) An automatic low pressure drain or similar mechanism must be placed upstream of the irrigation line check valve and at the lowest point in the bottom of the pipeline. The low pressure drain must be of adequate size and properly positioned to intercept and purge leakage away from the water source.

(f) Product-treated water cannot be discharged through a water outtake.

(2) Nonpressurized water delivery system.

(a) System design must prevent the introduction of treated water into the water source.

(b) Backflow prevention may be achieved with a hydraulic discontinuity in source water flow or by a sufficient hydraulic gradient.

(c) Backflow devices for nonpressurized systems may include a weir box, drop structure, ASAE approved air gap, batch tank, or similar device that can function to prevent backflow into the source water.

(d) Injection must occur downstream from the water diversion point.

(3) Cross-connection to municipal or public water system. Backflow prevention devices must be approved by the Washington state department of health in accordance with WAC 246-290-490.

NEW SECTION

**WAC 16-202-2010 What alternative methods may be used to prevent backflow into the irrigation water source?** The application of alternative technology in achieving backflow prevention must be accomplished either by a backflow system or by system design to fulfill the provisions of this chapter. The operator must be able to demonstrate that backflow cannot occur. Alternative technology must provide substantially equal or greater protection than the provisions of this chapter.

(1) System design. If a system's configuration will provide substantially equal or greater protection due to the physical laws of gravity and water hydraulics, components of a backflow prevention system may be waived by the department.

(2) Barometric pipe loop.

(a) Barometric loops can only be used on systems pumping from

a surface water source.

(b) The barometric pipe loop must be located in the main water line immediately downstream of the irrigation water pump.

(c) A barometric pipe loop must be designed with sufficient elevation differential to compensate for backflow.

(d) The bottom of the barometric loop apex must be at least thirty inches above the highest water-emitting device or of any portion of the irrigation application system.

(e) The barometric loop must contain a vacuum relief device at the loop apex that allows air into the pipeline immediately upon loss of pressure. The orifice size must comply with current American Society of Agricultural Engineers (ASAE) standards.

(f) The chemical injection port must be located downstream of and at least thirty inches below the bottom of the pipe loop apex.

(3) The department will recognize alternative backflow devices, providing they are as restrictive as the provisions of this chapter.

NEW SECTION

**WAC 16-202-2011 What are the prevention requirements for backflow into or seepage from application tanks?** All irrigation and injection systems used for fertigation must prevent backflow into the application tank. Leakage or siphonage from the application tank through the injection system into the irrigation system must also be prevented.

(1) Injection into a pressurized section of an irrigation system must include:

(a) An automatic, quick-acting injection line check valve must be used to prevent leakage from the application tank into irrigation water and to prevent irrigation water from entering the chemical injection line. The injection line check valve must maintain, at a minimum, 10 psi opening (cracking) pressure or adequate opening pressure to prevent gravity flow due to hydraulic head pressure from the application tank. The check valve must be located at the point of product injection into the irrigation water; and

(b) Where siphon action induced by an irrigation system could compromise the cracking (opening) pressure of an injection line check valve, a vacuum relief valve must be installed in the irrigation line downstream of the injection point. The orifice size must comply with current American Society of Agricultural Engineers (ASAE) standards.

(2) Injection into nonpressurized (e.g., open surface, gated pipe, or spigotted pipe) portion of irrigation system must include a hydraulic discontinuity in source water flow or a sufficient hydraulic gradient such that chemicals or treated water cannot contaminate the water source. Backflow devices for nonpressurized

systems may include a weir box, drop structure, air gap, batch tank, or similar device whose intended function is to prevent backflow into the application tank.

(3) Venturi or other passive injection systems.

(a) If backpressure or backsiphonage can occur, the chemical injection line must contain an automatic, quick-closing check valve. The valve must be located immediately adjacent to the chemical inlet side of the venturi.

(b) If product can potentially siphon or seep into the water supply, the chemical injection line must contain a normally closed solenoid operative valve connected to the system interlock, or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. The valve must be installed adjacent to the product outlet on the application tank.

(c) With a bypass system, as an alternative to (a) and (b) of this subsection, the automatic, quick-closing check valve may be installed in the bypass immediately upstream of the venturi water inlet. In addition, either the normally closed solenoid or the hydraulic solenoid may be installed immediately downstream of the venturi water outlet.

(d) Bypass systems with a booster pump must have the normally closed solenoid interlocked with the source pump for the irrigation system.

NEW SECTION

**WAC 16-202-2012 What alternative methods may be used to prevent backflow into or seepage from application tanks?** Alternative technology used for backflow prevention must be accomplished by system design to fulfill the provisions of this chapter.

(1) In lieu of a normally closed solenoid with the injection system.

(a) A normally open valve must be located in the chemical injection line between the application tank and a positive displacement injection pump. The normally open valve must be spring-loaded, and must close upon a vacuum and open at atmospheric pressure. It must be elevated at least twelve inches above the maximum fluid level in the application tank and must be the highest point in the injection line.

(b) The mechanism described in (a) of this subsection cannot be used in conjunction with a venturi injection system.

(2) In lieu of a 10 psi opening (cracking) pressure check valve.

(a) An automatic, quick-acting, spring-loaded check valve must be attached at or positioned immediately adjacent to the injection point to prevent irrigation water from entering the chemical injection line.

(b) A normally closed solenoid must be installed immediately adjacent to the product outlet on the application tank. If electric, it must be interlocked with the injection pump or, if hydraulic, with the irrigation system.

(c) In place of (b) of this subsection, a normally open valve must be located in the chemical injection line between the application tank and a positive displacement injection pump as described in subsection (1)(a) of this section. This alternative cannot be used with venturi injection systems.

NEW SECTION

**WAC 16-202-2013 What are the requirements for metering devices?** Metering devices must be capable of being accurately calibrated. Metering devices must control the rate of product injection into irrigation water and discontinue product delivery when the predetermined application quantity has been dispensed. All metering systems must be functionally interlocked with the source irrigation pump or irrigation water delivery system.

(1) Injecting product with a pressurized metering pump.

(a) The metering pump must be of a positive displacement design.

(b) Water-powered injection pumps can only be used when no other power source is available to operate the injection unit.

(c) The metering pump must be interlocked to the irrigation system in the event of an irrigation system malfunction or failure.

(2) Injection into nonpressurized section of an irrigation system.

(a) Application rate may be accomplished with an adjustable valve, flow control device, or other metering mechanism.

(b) The metering device must also control application quantity by employing a slide metering device or by placing a predetermined quantity into a batch tank.

(3) Venturi system as a metering device.

(a) A venturi system may be used as a metering device, except where variable pressure may contribute to a variable injection rate.

(b) The chemical injection line must contain either a normally closed, solenoid-operated valve connected to the system interlock or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. The valve must be placed on the intake side of the injection pump, immediately adjacent to the application tank.

(c) The chemical injection line between the application tank and the venturi must contain an automatic, quick-closing check valve to prevent the flow of liquid back toward the application tank. The check valve must be placed immediately adjacent to the venturi chemical inlet.

(d) In bypass systems, the check valve may be installed immediately upstream of the venturi water inlet. Either the normally closed solenoid or hydraulically operated valve may be installed immediately downstream of the venturi water outlet.

(e) If a booster or auxiliary pump is used in conjunction with a venturi system, the normally closed solenoid must be electrically interlocked with the source pump for the irrigation system.

NEW SECTION

**WAC 16-202-2014 What are alternative methods for metering?** Alternative technology used for metering product must fulfill the provisions of this chapter.

A person may function as a metering device with a nonpressurized irrigation delivery system. However, the individual must remain on-site to continuously monitor the application and be immediately available to terminate the application in the event of equipment malfunction. The person must be knowledgeable about the operation of the irrigation and injection systems.

NEW SECTION

**WAC 16-202-2015 What are the requirements for product injection devices?** The irrigation water source and application tank must be protected from backflow and from siphonage.

(1) Pressurized injection or injection into pressurized irrigation system.

(a) An injection line check valve must be used whenever injection occurs in a pressurized section of an irrigation system or with a pressurized injection system.

(b) The injection line check valve must inject product directly into the irrigation water and must be installed downstream of the irrigation mainline check valve.

(c) The point of injection into an irrigation system cannot be located within ten feet of a wellhead, public waterway, off-farm irrigation supply ditch or conveyance system, or sensitive area.

(d) The injection line check valve mechanism must prevent leakage due to hydraulic head pressure from the application tank and must prevent backflow from the irrigation water source into the supply tank. The injection line check valve must maintain, at a minimum, 10 psi opening (cracking) pressure or adequate opening pressure to prevent gravity flow from the application tank.

(e) In instances where siphoning action induced by an irrigation system could compromise the opening (cracking) pressure

of a injection line check valve, a vacuum relief valve must be installed in the irrigation line downstream of the injection point.

(2) Injection into nonpressurized section of irrigation system.

(a) If injection occurs in a nonpressurized portion of the irrigation system, an air gap or other hydraulic discontinuity must exist between the pressurized or nonpressurized irrigation water source and the point of product injection.

(b) When an air gap is used in conjunction with a public water supply, injection may only occur downstream of the air gap.

(3) Venturi systems.

(a) The chemical injection line must contain either a normally closed solenoid-operated valve connected to the system interlock or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. The valve must be placed on the intake side of the injection pump, immediately adjacent to the application tank.

(b) The chemical injection line between the application tank and the metering device must contain an automatic, quick-closing check valve. The check valve must be placed immediately adjacent to the venturi chemical inlet.

NEW SECTION

**WAC 16-202-2016 What alternative methods may be used for product injection?** Alternative technology used for injection must fulfill the provisions of this chapter. With a surface supplied water source, the injection point must occur downstream from the point of diversion. With a pressurized water source, the injection point must be located such that product backflow cannot occur.

(1) Injection with barometric loops.

(a) Barometric loops can only be used on systems pumping from a surface water source.

(b) The barometric loop must be located in the water line immediately downstream of the irrigation water pump.

(c) A barometric pipe loop must be designed with sufficient elevation differential to compensate for backflow.

(d) The bottom of the barometric loop apex must be at least thirty inches above the highest water-emitting device or of any portion of the irrigation application system.

(e) The barometric loop must contain a vacuum relief device at the loop apex that allows air into the pipeline immediately upon loss of pressure. The orifice size must comply with current American Society of Agricultural Engineers (ASAE) standards.

(f) The injection point on a barometric loop must be located downstream of and at least thirty inches below the bottom of the barometric pipe loop apex.

(2) Solenoid and check valve.

(a) The chemical injection line must contain either a normally closed solenoid-operated valve connected to the system interlock or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. A normally closed, solenoid-operated valve must be placed on the intake side of the injection pump, immediately adjacent to the application tank.

(b) The chemical injection line between the application tank and the metering device and the injection point must contain an automatic, quick-closing check valve to prevent the flow of liquid back toward the application tank. The check valve must be placed immediately adjacent to the venturi chemical inlet.

NEW SECTION

**WAC 16-202-2017 What are the requirements for a system interlock?** A system interlock must automatically shut off the injection system if the irrigation pump stops operating or if variation in water flow adversely affects product injection rate or product distribution uniformity. The operator must be able to demonstrate that backflow cannot occur.

(1) Pressurized injection systems or injection into a pressurized portion of the irrigation system requires either an electrical, hydraulic, or mechanical system interlock device.

(2) When the injection point is at a nonpressurized section of the irrigation application system, a slide metering scale or batch tank may function as the system interlock.

(3) With venturi systems.

(a) Booster or auxiliary water pumps must be connected with the system interlock such that when pressure in the mainline changes to the point where product distribution is adversely affected automatic shutoff of product supply will occur.

(b) The supply line must contain either a normally closed solenoid-operated valve connected to the system interlock or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. If a booster or auxiliary pump is used in conjunction with a venturi system, the normally closed solenoid must be electrically interlocked with the source pump for the irrigation system.

NEW SECTION

**WAC 16-202-2018 What alternative methods can be used as a system interlock?** Alternative technology used for injection must fulfill the provisions of this chapter.

(1) Human interlock. In lieu of an automatic interlock, a person may serve as a system interlock. The individual must continuously monitor the application, be alert throughout the application process, be immediately available to terminate the application in the event of equipment malfunction, and be knowledgeable about the operation of the irrigation and injection systems.

(2) Solenoid and check valve.

(a) The chemical injection line must contain either a normally closed solenoid-operated valve connected to the system interlock or a normally closed hydraulically operated valve that opens only when the main water line is adequately pressurized. A normally closed, solenoid-operated valve must be placed on the intake side of the injection pump, immediately adjacent to the application tank.

(b) The chemical injection line between the application tank and the metering device must contain an automatic, quick-closing check valve to prevent the flow of liquid back toward the application tank. The check valve must be placed immediately adjacent to the venturi chemical inlet.

NEW SECTION

**WAC 16-202-2019 What is an appropriate monitoring schedule?** A fertigation application must be visually inspected at least daily to ensure that system components are functioning properly. Specific applications due to location or product characteristics may require more frequent monitoring.

NEW SECTION

**WAC 16-202-2020 Public water system cross-connections or connection to a potable water supply intended for human use.** If the irrigation system is cross-connected to a public water system, Washington state department of health (DOH) rules (WAC 246-290-490) apply to backflow prevention.

Cross-connections of a fertigation system to any potable water system intended for human use must have either a department of health-approved reduced pressure backflow assembly or reduced pressure detector assembly installed for backflow prevention. Otherwise, a physical separation in the form of an air gap may be used to protect the water source.

## PART 4
## PENALTIES AND PENALTY ASSIGNMENT SCHEDULE

NEW SECTION

**WAC 16-202-2021 Penalties.** (1) Any person who fails to comply with any provision of this chapter shall be subject to imposition of a civil penalty as provided in RCW 15.54.474.

(2) The director may bring an action to enjoin the violation or threatened violation of any provision of this chapter or any rule made pursuant to this chapter in a court of competent jurisdiction of the county in which such violation occurs or is about to occur.