

Chemigation and Fertigation: Distinguishing Illusion from Reality in Achieving Compliance with Federal Law and State Rules

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Role of Washington State Department of Agriculture (WSDA) – Pesticide Management Division

The Pesticide Management Division is one of six divisions within the WSDA, along with Agency Operations and Market Development, Animal Health Services, Commodity Inspection, Food Safety and Consumer Services, and Plant Protection.

The Pesticide Management Division is comprised of three branches, which are listed below along with the primary function of each. Each branch is comprised of various programs.

- Compliance Services: Enforces federal and state pesticide laws and investigates complaints of pesticide misuse. Administers the Chemigation and Fertigation Technical Assistance Program.
- Program Development: Manages the waste pesticide disposal program; licenses and recertifies commercial, public, and private pesticide applicators, operators, consultants, and pesticide dealers; licenses pesticide application equipment; authorizes recertification accreditation to classes; and administers the Farm Worker Protection and Ground Water Programs.
- Registration Services: Registers pesticides, fertilizers, and animal feeds distributed for use in Washington State; enforces state fertilizer and feed laws and rules; and administers the Endangered Species Program.

Chemigation and Fertigation Technical Assistance Program

The Chemigation and Fertigation Technical Assistance Program is administered by the Compliance Services branch.

The goals of the WSDA Chemigation and Fertigation Technical Assistance Program are to advise operators of chemigation and fertigation systems with the intent to safeguard human health, to protect waters of the state from contamination, and to realize voluntary compliance with relevant federal and state legislation. These goals are achieved by ensuring that antipollution devices are in-place, properly installed, appropriately operated, and adequately maintained; by enhancing industry awareness of stewardship practices by means of presentations, training programs, and publications; and, if necessary, by formulating new rules.

Although voluntary compliance is the desired course of action, a regulatory process with possible civil action may be pursued, providing circumstances warrant such action. However, technical assistance whether by individual consultation or on-site visits is the desired course of action. To be rendered, technical assistance must first be requested.

Enforcement of Federal Pesticide Legislation and State Pesticide Laws and Rules

The U.S. Environmental Protection Agency (USEPA) by means of a Memorandum of Understanding assigns primacy to WSDA to enforce federal pesticide legislation, that is, FIFRA (Fungicide Insecticide Rodenticide Act, as amended). If deemed that WSDA is not adequately enforcing FIFRA, USEPA can rescind the agreement. Thus, USEPA may either pursue an agreement with another state agency or elect to enforce FIFRA itself.

The Washington State Legislature conferred WSDA Pesticide Management Division with the statutory authority to regulate the sale, distribution, and use of pesticide, fertilizer, and feed. The authority to enforce is authorized by the following laws. (Washington laws are designated with the RCW [Revised Code of Washington] citation.)

RCW 15.53: Commercial Feed Act
RCW 15.54: Commercial Fertilizer Act
RCW 15.58: Pesticide Control Act
RCW 17.21: Pesticide Application Act

Accordingly, the WSDA Pesticide Management Division – Compliance Services Branch is assigned the enforcement of federal pesticide legislation (pesticide label provisions and the Worker Protection Standard) and is responsible for the transportation, sale, distribution, mixing, handling, loading, application, worker notification, posting, storage, and disposal of pesticides in Washington State. Fundamentally, its mandate is to ensure that pesticides are used properly, and thereby do not injure people, damage property, or cause environmental harm.

The Advent of Federal Legislation

The application of pesticides (chemigation) or fertilizers and soil amendments (fertigation) to plants or land by means of irrigation water has been practiced since the 1970s. As management strategies, these practices were widely adopted by the 1980s as practitioners strove to enhance production efficiencies and to lower costs. In the late 1990s, these practices traversed from the agricultural and plant nursery sectors to golf courses and residential landscapes. Today, chemigation and fertigation are practiced in nearly every venue in which irrigation water is used.

Just as chemigation and fertigation are not new, neither are the federal legislation nor the state rules and laws that govern its use. Witnessing the rapid adoption of the practice and responding to concerns with the potential for groundwater and surface water contamination, regulatory interdiction was inevitable. Thus, on June 5, 1980, U.S. Congress authorized the U. S. Environmental Protection Agency (USEPA) to write guidelines that would ensure the safe and effective use of pesticides if applied through irrigation systems, a document now known as the Label Improvement Program (LIP).

The USEPA guidance governing the application of a pesticide through an irrigation system was subsequently set forth in PR Notice 87-1: Label Improvement Program for Pesticides Applied through Irrigation Systems (Chemigation), which took effect on March 11, 1987. (PR Notices are issued by the USEPA Office of Pesticide Programs to inform pesticide registrants and other interested persons about important policies, procedures, and regulatory decisions.) PR Notice 87-1 required pesticide product registrants to amend their pesticide labels to include additional use directions, equipment requirements, and other application

restrictions as described in the Notice. For chemigation to be authorized as an application method, the product registrant must include the additional use requirements and restrictions on the product label. Within its provisions, USEPA required pesticide product registrants to “upgrade, improve or revise” pesticide labels to comply with current labeling standards by no later than April 30, 1988. Conversely, if not authorized for chemigation, label language must disallow the practice. The pesticide label cannot remain silent as to product’s use through an irrigation system. Accordingly, no pesticide product labeled for agricultural, nursery, turf farm, golf course, or greenhouse uses can be released for shipment by a product registrant after April 30, 1988 unless the product bears an amended label which complies with PR Notice 87-1.

Conception of the Washington State Chemigation and Fertigation Rules

The Washington State Chemigation Rule, as comparable legislation does in nearly 20 other states, has its origin in PR Notice 87-1. The initial rule became effective (that is, was promulgated) on October 31, 1989. The fertigation rule, which closely parallels the provisions in the chemigation rule, was promulgated on January 7, 1991. Washington State is unique in that fertigation is promulgated in its own rule. States with chemigation programs either referenced fertigation with chemigation or excluded fertigation by omission.

The principal differences between the chemigation and fertigation rules include licensing, treatment area posting, record keeping, and worker protection requirements – these provisions do not apply to fertigation. Another dissimilarity involves the length of time that a product can remain in an application tank before a secondary containment structure is necessary. For chemigation, product can remain in an application tank for only 14-days between applications; a longer period will necessitate tank placement in a secondary containment structure. For fertigation, the time period is nine months, or the end of the application or irrigation season, whichever is shorter. The application tank must be connected to and dedicated for use with an irrigation system; it cannot be used as a storage facility.

In 1999, the agricultural sector requested that WSDA revise the chemigation and fertigation rules to align the dated provisions with current practices and to normalize engineering controls with existing methodology. A technical advisory group comprising 12 individuals who represented irrigation supply companies, agri-chemical dealerships, farmers, and plant nursery and greenhouse operators, and the environmental community dedicated 18 months to drafting revised rule provisions. Conditional on the public hearing process, the revised rules were promulgated on November 9, 2001 as the Washington State Chemigation Rule (WAC 16-202-1001) and Fertigation Rule (WAC 16-202-2001).

Chemigation and fertigation are defined in state rule, as follows:

“Chemigation” means the application of any substance or combination of substances intended as a pesticide, plant or crop protectant, or system maintenance compound applied with irrigation water.

“Fertigation” means the application of any commercial fertilizer, nutrient, soil amendment, or reclaimed water with irrigation water intended for plant or soil biota growth and development or for soil conditioning or reclamation. No distinction is made between organic and inorganic sources, so the definition is inclusive of both, including materials like compost tea.

The chemigation and fertigation rules apply to anyone who uses a water source to apply a chemical to plants or land, including but not limited to greenhouse and plant nursery ventures,

golf course and turf farm operations, agricultural and horticultural businesses, and residential and business owners.

As defined in state rule, a chemigation operation “means all activities and equipment association in preparing for, performing, and concluding a chemigation application, which includes, but is not limited to, calibrating, mixing, loading starting up, operating, monitoring, or shutting down a chemigation system.” To supervise a chemigation operation, the responsible applicator must hold a current pesticide license with the appropriate endorsement(s).

A chemigation or fertigation system is inclusive of the irrigation supply and distribution system and the chemical injection system. Thus, the entire system is deemed an application device, and it will be considered as such during an application, or an inspection.

Civil Penalties for Chemigation and Fertigation Misapplications

RCW 17.21 confers authority to pursue civil action against individuals who violate provisions in the chemigation rule. The punitive process and assessment of penalties appear in WAC (Washington Administrative Code) 16-228: General Pesticide Rules. Department action may begin with a Notice of Correction. Dependent on repeat or more serious citations, action may advance to a license suspension or revocation or a monetary fine, or both. Of note is that USEPA, as the authorizing federal agency, may also pursue enforcement action against the violator and can, and has, assigned its own penalties.

Federal pesticide legislation (namely, FIFRA) does not regulate the use of fertilizers or other nutrient containing compounds unless these materials are also registered as pesticides. However, Washington State as granted statutory authority in RCW 15.54: Fertilizer, Minerals, and Limes does regulate the application of fertilizer material (inorganic and organic), soil amendments, and soil conditioners that are applied by means of irrigation water. WAC 16-200-7401: Rules Relating to Determination of Penalties for Violations of the Fertilizer Regulation Act references the civil penalties for violations that arise from the misuse of a fertilizer during a fertigation operation. The fertigation rule is unique in that it is the only legislation in Washington State under which fines or other measures can be assessed resulting from the misapplication of a fertilizer. Penalties range from a monetary fine to the denial or cancellation of the businesses’ bulk fertilizer distribution license.

Overview of Chemigation Provisions on the Pesticide Label

The pesticide label must address chemigation by either (a) prohibiting chemigation or (b) permitting chemigation. The label cannot remain silent as to chemigation. If authorized by USEPA for chemigation, the product label must contain use directions with reference to (a) the type of irrigation system through which the product can be applied, (b) the backflow prevention devices on the irrigation water supply system to prevent contamination of the water source, (c) special antipollution measures for direct connections or possible cross connections to public water systems, (d) backflow prevention devices on the chemigation injection line, (e) system interlock to discontinue product injection in event of an irrigation system malfunction, (f) application monitoring, (g) treatment area posting, (h) product injection rate, and (i) the quantity of irrigation water to be applied. Other conditions of use (i.e., wind speed, temperature, setbacks or buffers, drift prevention, and temperature inversions) also apply to chemigation. For a chemigation or fertigation application, it is a violation of product use should the product be either applied other than to the treatment area

or allowed to move off-site due to particle drift or product vaporization.

All chemigation systems – ranging from a homeowner employing a hose end sprayer applicator to an orchardist using a microirrigation system to a grower operating a center pivot – present the potential for contamination of the irrigation water supply without adequate safeguards or their proper operation. State legislation requires the proper installation, appropriate operation, and adequate maintenance of safety devices and of the application apparatus, which includes the irrigation distribution and application system and the injection device.

The injection device and irrigation system are considered an application unit. Before conducting a chemigation or fertigation application, the irrigation system and the injection equipment must be evaluated to assess its integrity and its performance in accordance with manufacturer’s specifications, established or accepted industry standards, or state statute. It is the applicator’s responsibility to demonstrate that an operation will not result in reasonably foreseeable harm to humans, surface or ground water, or desirable plants or animals. The applicator of record is ultimately responsible for a chemigation application.

Remember: The pesticide label is a legal document, and it is the responsibility of the user to comply with all the conditions of use contained therein.

Antipollution and Safety Devices

Chemigation and fertigation rules require that effective safety devices be installed between (a) the irrigation water source and the point of pesticide or fertilizer injection into the irrigation system and (b) the point of pesticide or fertilizer injection and the application tank. These devices prevent water source contamination resulting from backpressure and back-siphoning. The injection system must also be outfitted with a mechanism (system interlock) to shut down the injection system with the loss of irrigation system pressure.

For chemigation, pesticide labels explicitly reference devices that must be incorporated into the water supply system and the chemigation injection system to protect the water source from pesticide contamination. These safety devices are also listed in the chemigation and fertigation rules, along with alternative methods that provide substantially equal protection. However, what is not referenced on the pesticide label is the “List of USEPA Authorized Alternative Chemigation Safety Equipment.” In this document, USEPA recognizes alternative devices to those identified in the pesticide label. For example, a pesticide label requires that a “functional normally closed, solenoid-operated valve (be) located on the intake side of the injection pump.” However, as an alternative device, a “functional spring-loaded check valve with a 10 psi minimum cracking pressure” is permitted.

The antipollution devices required for the irrigation and injection systems appear below.

Irrigation System

Mainline check valve
Vacuum relief valve
Low pressure drain
Inspection port (Washington State)

Injection System

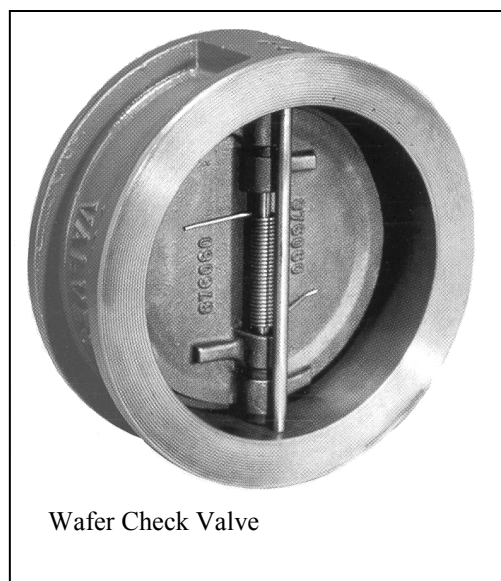
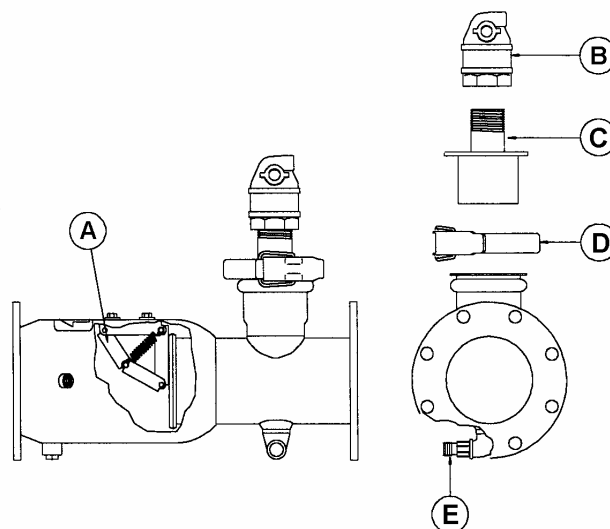
Check valve (10 psi minimum)
System interlock

Washington State chemigation and fertigation rules have an additional requirement, an inspection port that must be located upstream and within eight inches of the irrigation mainline check valve.

The inspection port allows the system operator to assess the integrity of the irrigation mainline check valve and to evaluate the operation of the low pressure drain. The irrigation mainline check valve, inspection port, vacuum relief valve, and low pressure drain can be engineered into a single device, known as a chemigation check valve. A wafer valve can also be used. The devices can be retrofitted separately as well.

Special equipment is required if the water source is directly connected to or potentially cross connected to a public water system. Your water purveyor should be consulted before undertaking any chemigation or fertigation activity.

Washington State Chemigation and Fertigation Rules are performance based. That is, the rules recognize alternative technology that will substantially comply with the intent of the safety devices as referenced on the pesticide label. For example, an irrigation application system may be installed below the water source. In such a setting, it is hydraulically impossible for treated water to backflow into the water source. As another example, the use of an air gap between the water source and the irrigation system is in and of itself a backflow device, negating the need for a backflow device on the water supply system.



Although strict compliance with the pesticide label would nonetheless require a backflow device between the water source and point of injection, WSDA will waive devices that serve no functional purpose. However, only a WSDA representative can waive the device requirements. Until a waiver is granted, all devices are required.

Container Labeling

Application tanks, regardless of size, used in conjunction with a chemigation or fertigation operation must bear identifying information. Identifying information (contact name, telephone number, and unique identifier) must be a minimum of two inches in height and in a color contrasting to the background, visibly recorded and securely attached to the tank, and remain intact and legible throughout the application. The information will aid in the notification of the responsible applicator should circumstances necessitate such. An event may include the rupture of a tank, system malfunction, off-site application, or a medical emergency. Application tanks must be placed in such a manner that the information is readily visible from outside the treatment area.

If application tanks are located in a secured area – such as the inside of a locked building or within a fenced area, contact information may be posted on the outside of the structure. The application tank must also display the content of the material and the maximum net capacity. Below is a summary of the information that must appear on an application tank.

Chemigation

Complete pesticide label
EPA establishment number, if necessary
Maximum net capacity
Contact name
Telephone number
Owner derived tank identifier

Fertigation

List of primary tank contents
Maximum net capacity
Contact name
Telephone number
Owner derived tank identifier

Placement of Application Tanks

Mixing and loading activities associated with a chemigation or fertigation application cannot occur within 20 feet of wellheads, waters of the state (which include irrigation ditches and wasteways, streams, lakes, rivers, and ponds), or sensitive areas. Sensitive areas are defined in both the chemigation and fertigation rules. Public roadways are included in the definition. In addition, the point of injection cannot occur within 10 feet of these sites. The conditional setbacks for mixing and loading activities, injection, and tank placement constitute defensible zones in the event that a mishap occurs.

Application tanks must be positioned down gradient from and cannot be placed closer than 20 feet to a wellhead, waters of the state, or a sensitive area. If circumstances preclude sighting subject to this criteria, then the application tank may be placed in a secondary containment facility that is at least 110 percent, if covered, or, if uncovered, 125 percent of the volume of the tank, plus the displacement of any other item in the containment structure.

Monitoring of an Application

For a chemigation application, on-site monitoring of the application apparatus must occur at least every four (4) hours, unless the label requires or circumstances (e.g., proximity to sensitive areas or climatological conditions) prudently compel a more frequent monitoring interval. The fertigation rule requires the application system to be visually inspected at least once each day. Both rules require the applicator to constantly monitor the application whenever a sensitive area is at risk. Again, sensitive areas include public roadways. As referenced above, the application system is inclusive of the injection apparatus and the irrigation system. Thus, the operation of the entire system must be assessed.

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