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South Carolina Chemigation Law

A Workbook for Certified Pesticide Applicators

To accompany the VHS tape "South Carolina Chemigation Law"

Based on materials developed by: Clemson University Pesticide Information Program

Developed for South Carolina by:

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CLEMSON EXTENSION

South Carolina Chemigation Law

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Chemigation Law in South Carolina

The South Carolina Chemigation Law is designed to prevent groundwater contamination caused by chemigation systems.

This law first requires that the following four anti-siphoning devices be installed on the water supply line of *all* irrigation systems to be used for chemigation:

- *A check valve,*
- *A vacuum breaker,*
- *A low pressure drain,*
- *A mechanical or electrical interlock.*

Additional requirements of the South Carolina Chemigation Law are as follows:

1. Anti-siphoning devices cannot be altered in any way that would influence their effectiveness;
2. The Clemson University Dept. of Pesticide Regulation must be notified if any water source is, or is suspected to be, contaminated from a chemigation operation;
3. Operators must maintain records of type of chemical applied, date, rate of application, location, and water source, for a period of two years for all chemigation applications;
4. The low pressure drain, installed flush with the bottom of the irrigation pipe, must drain all contaminated water in the pipe at least 20 feet away from the water source;
5. The check valve must be flanged and bolted onto the irrigation pipe, rather than welded, to allow for inspection and servicing.

Also, chemigation systems where the chemicals are injected by gravity flow or venturi flow are required to have *at least one* of the following installed on the chemical injection line:

1. A check valve requiring positive head pressure to open, located in the injection line at the point of injection into the supply line. This valve will only open after sufficient pressure has developed in the irrigation line; or
2. An electrically operated valve between the injection point in the supply line and the chemical tank that will close when the irrigation pump loses power;
3. An elevated loop of the chemical supply line, located between the chemical injection point and the chemical tank and extending higher than the chemical tank. This loop should have a vacuum breaker installed at the top to prevent siphoning in either direction when the system is shut down.

And finally, if a chemigation system is connected to a public *water supply system* rather than a well, it is regulated by the South Carolina Department of Health and Environmental Control under the South Carolina Safe Drinking Water Act and the South Carolina State Primary Drinking Water Regulations, NOT by the South Carolina Chemigation Law, and must meet the requirements of these regulations instead.

Compliance

1. *Read product labels and follow the directions explicitly.*
2. Determine which backflow prevention devices described above are required by law -see a copy of the South Carolina Chemigation Law or talk to the Clemson University Dept. of Pesticide Regulation.
3. Safety shields should remain in place on all pumps and other equipment as required by law.

Good Management Practices When Chemigating:

1. *Calibrate* before you chemigate.
2. The EPA's 1992 Worker Protection Standard requires you to have a *fresh wafer supply* at the irrigation well pump outlet for personal safety and clean up. The faucet should be located upstream from check valve or at the least from the injection port.
3. If you should use it for mixing, *keep the hose well above the inlet to the supply tank* to prevent back-siphoning.
4. Turn off sprinkler heads adjacent to the pivot point, so you do not contaminate equipment and for personal safety.
5. *Monitor the system* while chemigating:
   - To insure accuracy and effectiveness of the chemical application;
   - To prevent potentially hazardous environmental contamination.
6. *Watch the weather. You* are liable for drift damages to neighboring crops. Avoid contamination of surface water, livestock, wildlife and other non-target sites and *prevent situations leading to runoff* of chemigation water.

***READ the** LABEL!*
The label is the law!

South Carolina Chemigation Law

Directions: Circle the letter of the best answer

1. How does chemigation save you time?

   A. Two separate operations are combined into one.
   B. Chemicals can be applied faster.
   C. The calibration step can be left off.
   D. Chemigation may take place even on windy or rainy days.

2. Why is chemigation an ecologically sound practice?

   A. Because it does not cause contamination of non-target sites through drift or runoff.
   B. Because it requires fewer passes by farm machinery, thus reducing soil compaction and mechanical injury to plants.
   C. Because only organic pesticides are used in chemigation systems.
   D. All of the above

3. Chemigation can save you money by _____.

   A. reducing or eliminating the cost of additional chemical application equipment
   B. reducing or eliminating waste and other costs of misapplication
   C. reducing the total amount of chemical being applied per acre
   D. All of the above

4. The biggest *disadvantage of* chemigation is _____.

   A. the amount you have to pay for a license
   B. the potential for groundwater contamination
   C. the expense of installing the anti-pollution devices
   D. that you have to stay on site to run the equipment

5. According to the regulations prescribed by the South Carolina Chemigation Law, all chemigation systems are required to have a minimum of _____ anti-siphoning devices installed on the water supply line.
   (how many)

   A. 4
   B. 15
   C. 2
   D. 8

6. What does an *irrigation line* check valve do?

   A. Prevents water from flowing into the chemical supply tank;
   B. Opens to let you see if any water is flowing through the pipe;
   C. Prohibits backflow of any chemical or chemical and water mixture into the water source;
   D. Controls the amount of chemical being injected into the irrigation water;

7. _____ must also be installed between the check valve and the water source to relieve the pressure in the irrigation pipeline if a malfunction occurs.

   A. Another check valve
   B. A low-pressure drain
   C. A solenoid valve
   D. A vacuum relief valve

8. Why must the check valve on the irrigation pipe be bolted instead of welded into place?

   A. To relieve some of the pressure when the system starts up;
   B. To prevent leaking;
   C. To provide a low pressure drain for the irrigation pipe;
   D. To make it possible to inspect and service the valve;

9. To be in compliance with the regulations of the South Carolina Chemigation Law, _____.

   A. check valves must be replaced every 200 hours of operation
   B. special regulatory agents must inspect each system at least once a year
   C. the outlet for the low pressure drain must be at least 20 feet away from the water source
   D. an applicator must maintain records on every chemigation application for a ten year period

10. According to South Carolina State Law, a record of each chemigation application must be maintained for a period of _____ years.
    (how many)

    A. 1
    B. 2
    C. 5
    D. 10

11. The records on each chemigation application must include _____.

    A. the chemicals that were applied
    B. the location
    C. the water source
    D. All of the above

12. Contamination of groundwater can occur through _____.

    A. drift
    B. triple rinsing of empty containers
    C. spilling or back-siphoning of chemicals
    D. All of the above

13. Each time before you chemigate you should _____.

    A. inspect your equipment
    B. calibrate the system
    C. read the pesticide label
    D. All of the above

14. If you use a private well as a water source for chemigation in South Carolina, the regulatory agency is the _____.

    A. Department of Pesticide Regulation
    B. Department of Health and Human Services
    C. Department of Health and Environmental Control
    D. Department of Agriculture

15. If the water source you use for chemigation is a public water supply, the regulatory agency in South Carolina is the _____.

    A. Department of Pesticide Regulation
    B. Department of Health and Human Services
    C. Department of Health and Environmental Control
    D. Department of Agriculture

16. Which anti-siphoning device provides a good inspection port for your chemigation system?

    A. irrigation line check valve
    B. vacuum relief valve
    C. low-pressure drain
    D. venturi pump

Answer Key: South Carolina Chemigation Law

1. **Answer A is correct.** Chemigation combines irrigation and chemical application into one operation. Chemigation systems do not necessarily apply chemicals at a faster rate than traditional methods of application, nor should chemigation take place on windy or rainy days as drift or runoff may occur. Chemigation systems must be calibrated carefully before each use, as should all chemical application systems.

2. **Answer B is correct.** Traditional methods of chemical application require tractors or other application equipment to drive back and forth across the field. The irrigation equipment already in place can perform the function without additional passes by farm machinery.

3. **Answer D is correct.** Chemigation is an efficient and uniform method of applying agricultural chemicals over large acreages. The irrigation system applies the chemical, so fewer sprayers or tractors may be necessary. Over-application of a chemical may damage crops and under-application may reduce crop productivity. Chemicals can be applied with a high degree of accuracy using chemigation. Due to the accuracy and uniformity of the method, in some cases, less chemical is required per acre when chemigation is used.

4. **Answer B is correct.** To protect both yourself and the environment and to be in compliance with the law, before chemigating, you must take precautions to be sure that your equipment is functioning properly, that all anti-pollution devices are installed and working, and that the system is calibrated accurately. Finally, you must be sure you have read and followed label directions exactly.

5. **Answer A is correct.** The four devices are: a check valve, a vacuum relief valve, a low pressure drain on the irrigation pipeline, and an interlock interconnecting the power sources for the irrigation system and the chemical injection system.

6. **Answer C is correct.** The check valve is located between the chemical injection point and the water source. It must be easily accessible for inspection and maintenance.

7. **Answer D is correct.**

8. **Answer D is correct.** The check valve is one of the most important pieces of equipment on the irrigation pipeline and is required by law to prevent back-siphoning of chemical into the water supply. Therefore, it should be easily accessed to inspect its performance and to provide proper maintenance.

9. **Answer C is correct.** The outlet for the low pressure drain must be at least 20 feet from the water source to prevent contamination of the water source. According to the regulations outlined in the South Carolina Chemigation Law, records must be kept for a period of two years. Check valves must be flanged and bolted on to facilitate inspection and maintenance, but the number of operating hours between replacements is not specified. The regulations do not require routine yearly inspections by regulatory agents, but they do require that permission to inspect be granted at any time.

10. **Answer B is correct.** Records of each chemigation application must be maintained for a period of two years and must be shown to regulatory inspectors upon request.

11. **Answer D is correct.** These records will include: type of chemical applied, date, rate of chemical applied, site and water source. They may be kept as notations on the chemical purchase invoice or as production logs.

12. **Answer C is correct.** Contamination of groundwater can occur through spilling or sloppy handling of chemicals at the mixing site, or through draining or back-siphoning of chemigation water back into the water source.

13. **Answer D is correct.** To ensure that your chemigation operation is both safe and effective, you should inspect your equipment to ensure that it is functioning properly, calibrate the system and read pesticide labels carefully to determine what restrictions apply when the chemical is to be applied through chemigation. In addition, you should know the local, state, and federal regulations governing chemigation and be sure your system is in compliance.

14. **Answer A is correct.** Chemigation using private wells comes under the South Carolina Chemigation Law and any other federal or local regulations. These regulations are enforced by the Department of Pesticide Regulation at Clemson University.

15. **Answer C is correct.** Public water systems are regulated by the South Carolina Department of Health and Environmental Control under the South Carolina Safe Drinking Water Act and the South Carolina State Primary Drinking Water Regulations

16. **Answer B is correct.** The vacuum relief valve sits on tap of the irrigation pipe. When the valve is removed, you can look down into the pipe to see which direction the water in the pipe is flowing.

South Carolina Chemigation Law

Pesticide Applicator Training Evaluation

Circle one response for each item.

SD	Strongly Disagree
D	Disagree
N	Neither Agree nor Disagree
A	Agree
SA	Strongly Agree
NA	*Not Applicable*

If you have already been active in this behavior, circle

As a result of this training…

1. I better understand my responsibility to protect groundwater through proper chemigation practices. SD D N A SA NA

2. I better understand the types of backflow prevention, anti–pollution devices I must maintain on my chemigation equipment. SD D N A SA NA

3. I am more aware of specific chemigation requirements in the state of South Carolina. SD D N A SA NA

4. My knowledge of the types of chemigation records I am required to keep has increased. SD D N A SA NA

5. I feel that Clemson Extension is helping me to better comply with equipment regulations on my chemigation operation. SD D N A SA

6. I am already or intend to put into practice the following chemigation management practices: *(Check ALL that apply.)*
   - 9 Inspect my system for signs of damage or wear before each chemical application
   - 9 Maintain complete records on my chemigation applications for two years
   - 9 Periodically monitor my chemigation system during use
   - 9 Identify all situations that could lead to groundwater or surface water contamination before chemigating
   - 9 Other _____
     (please specify)

Overall, I think this recertification training video was: (circle one)

Poor Fair Good Very Good Excellent

Overall, I think this recertification training workbook was: (circle one)

Poor Fair Good Very Good Excellent

What could be done to improve this training?