

# ANTIPOLLUTION DEVICE GUIDELINES

## for Greenhouse/Nursery Chemigation Systems

This information was prepared to provide guidance to those persons who apply fertilizer and/or pesticide through an irrigation system. This activity is defined as chemigation and a chemigation permit from the MN Department of Agriculture may be required. A permit is not required if the chemigation system is a stand-alone system, i.e., Fixed Air Gap. Please refer to the Fixed Air Gap section for more information.



In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.



## What is Greenhouse/ Nursery Chemigation?

Chemigation is the application of agricultural chemicals (fertilizer and/or pesticide, including *herbicides*, *insecticides*, *bactericides*, *algacides*, *mititicides* and *fungicides*) to greenhouses or nursery sites, land or crops, during the irrigation process.

When the water supply used for chemigation is connected to groundwater or surface water, these water sources must be protected from potential backflow contamination. Antipollution devices<sup>1</sup> must be properly installed in the chemigation system and are required by law to be maintained to provide maximum protection from agricultural chemicals backflowing into the water source.

## Chemigation Permit-by-Rule

A Chemigation Permit is required when applying a fertilizer and/or pesticide through an irrigation system that is connected to groundwater or surface water.

Permit-by-Rule means an applicant is permitted under Minnesota Rules, to construct and operate a chemigation system<sup>2</sup> as long as the applicant complies with the rule criteria and submits the necessary permit application and fee. (MN Rules, Part 1505.2200, Parts 1505.2100 to 1505.2800, and Part 1505.2200)

Permit applications, additional program information, including rules and statutes can be found at [www.mda.state.mn.us/chemigation-permit-program](http://www.mda.state.mn.us/chemigation-permit-program)

<sup>1</sup> Antipollution devices – 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.

<sup>2</sup> Chemigation system – 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

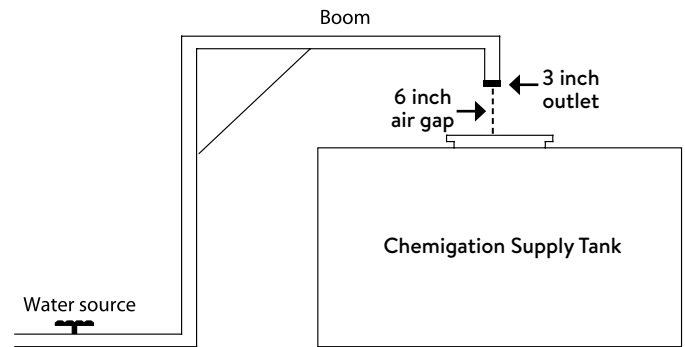
# Examples of Antipollution Devices

## Fixed Air Gap

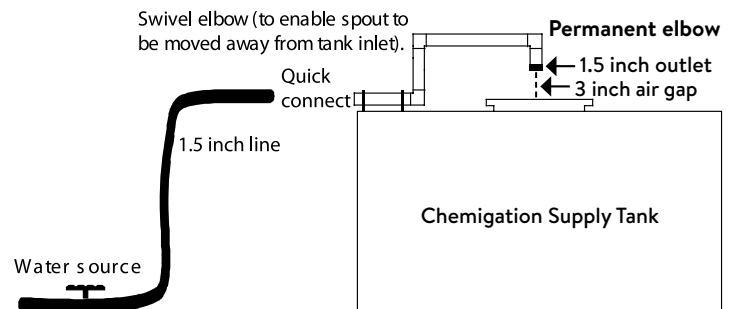
A Fixed Air Gap is a physical separation from the water supply discharge outlet to the fill opening of the chemigation supply tank. A fixed air gap must be installed so the physical distance from the end of the water supply discharge outlet that is at least two (2) times the diameter of the size of the discharge outlet. The water supply discharge outlet must be permanently fixed. (Example- a two inch water supply line must be permanently fixed at least four inches above the fill opening of the chemigation supply tank used for irrigation water.)

If your chemigation system has a properly installed permanently fixed air gap, the system would be considered “stand alone” and no Chemigation Permit is required. See properly installed fixed air gap examples 1 (a) and 1 (b) on the right.

EXAMPLE 1(a)



EXAMPLE 1(b)



## Other Antipollution Devices Requiring a Minnesota Department of Agriculture (MDA) Chemigation Permit:

The following antipollution devices are required when the chemigation system is connected to a groundwater or surface water source:

- 1) Reduced Pressure Principal Backflow Prevention Assembly (RP) (RP or also referred to as RPZ); or
- 2) Pressurized Vacuum Breaker<sup>4</sup> (PVB)

A test and inspection tag must be affixed to the device. See RPP/RPZ and PVB installation diagrams 2(a) and 2(b), respectively, along with an example of the test inspection tag on page 3:

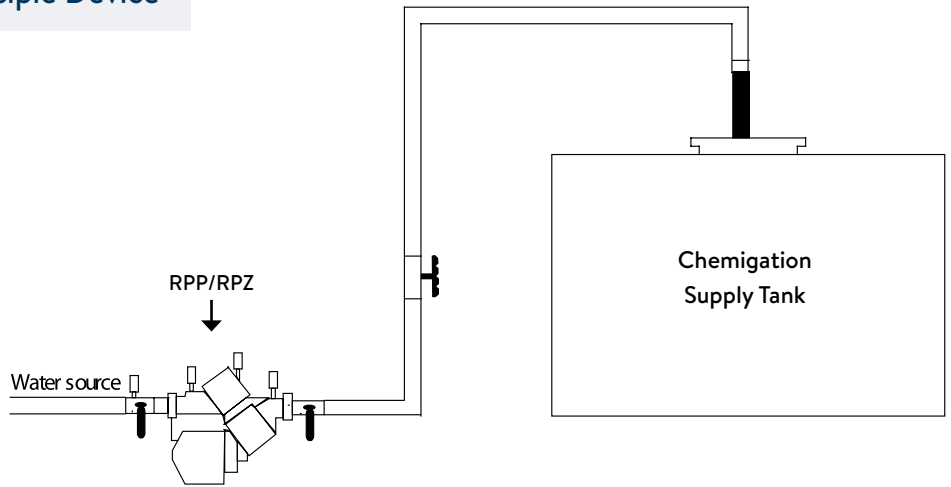
An RP/RPZ or PVB are antipollution devices used in chemigation systems that are alternatives to a fixed air gap. Installation of either of these devices (RP/RPZ or PVB) require the appropriate MDA Chemigation Permit. They must be installed by a licensed plumber and tested after installation and at least annually thereafter. All Pressurized Chemigation Systems<sup>5</sup> that are connected to a municipal or a potable water supply must have an RPP/RPZ installed as the main anti-pollution backflow device protecting the water supply. A PVB may only be used on a pressurized chemigation system if the well is non-potable.

<sup>3</sup> **Reduced Pressure Principal Backflow Prevention Assembly (RP) or also referred to as RPZ** - two independent check valves with an automatic pressure differential valve located between the two valves. If either valve leaks, the relief valve will discharge to the atmosphere.

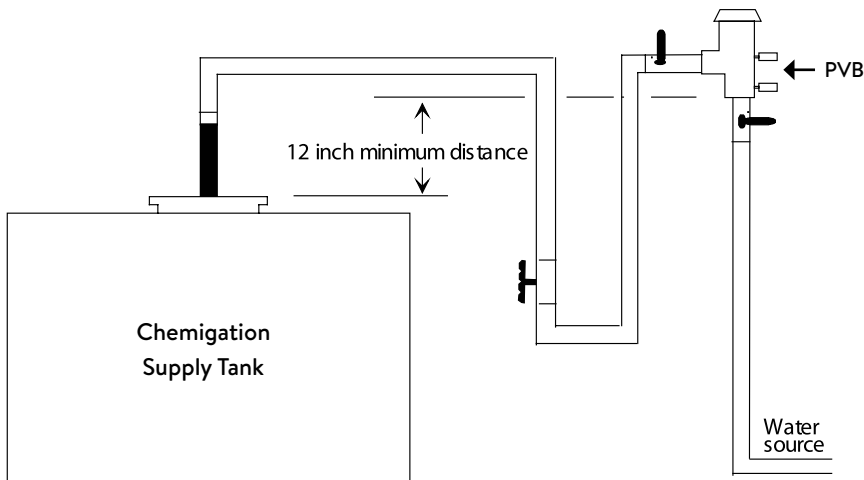
<sup>4</sup> **Pressurized Vacuum Breaker (PVB)** - Vacuum Breaker (PVB) - Contains a spring loaded “popet” valve to prevent the backsiphonage or backflow in the event of pressure loss in the irrigation water supply.

<sup>5</sup> **Pressurized Chemigation System** - Agricultural chemicals are mechanically injected into an irrigation system by using a motorized pump to create hydraulic energy.

## EXAMPLE 2(a) Reduced Pressure Principle Device



## EXAMPLE 2(b) Pressurized Vacuum Breaker



### Requirements for PVB

- Installed 12 inches above overflow level of equipment being filled.
- Installed in a continuous pressure system.
- Shutoff valve needs to be installed downstream of PVB (on the outlet side).
- Installation must be in a location where PVB is readily accessible.

## This is an example of a RPZ Inspection Tag

**2020 Minnesota Plumbing Code  
Part 603.5.23 through 603.5.23.4**

Installation of Testable Backflow Prevention Assembly

Notification of Installation  
Testing and Maintenance  
Inspection and Records  
Notification of Removal

**See Minnesota Department of Labor and Industry  
Backflow Devices Factsheet/2020 Minnesota  
Plumbing Code**

[www.dli.mn.gov/sites/default/files/pdf/fs\\_backflow.pdf](http://www.dli.mn.gov/sites/default/files/pdf/fs_backflow.pdf)

Reduced Pressure Zone Backflow Preventer - Accredited Testing By:					
Company Name _____		Phone Number _____			
Address _____		City/State/Zip _____			
Bldg. Address _____		Manuf _____			
	#1 CV psi/diff	Relief psi/diff	#2 CV	Tester Name & Number	Date
Installed					
1st Year					
2nd Year					
3rd Year					
4th Year					

# Other Considerations

## Well Setback Distances

Under Minnesota State Statute potential sources of contamination (i.e., a fertilizer or pesticide storage or mix tank) may not be placed, constructed or installed near a groundwater well. For specific setback distance requirements please review the Minnesota Department of Health website and the Minnesota State Statute at [www.health.state.mn.us/divs/eh/wells/construction/isolate](http://www.health.state.mn.us/divs/eh/wells/construction/isolate)

## Agricultural Chemical Supply Tank Safeguards

Chemigation supply tanks may require additional safeguarding when located closer than 100 feet from a well for more than 30 consecutive days or if the supply tanks are greater than 1,500 gallons in capacity. Refer to the MDA “Chemigation Environmental Safeguard” fact sheet for additional information on chemigation supply tank safeguards (i.e. secondary containment).

## For Further Information

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### MN Department of Labor and Industry Antipollution Device Inspection:

Brad Jensen, Program Supervisor, Chief Plumbing Inspector: 218-290-1591

### MN Department of Health (MDH) Well Management Well Isolation Distances

Well Management Section 651-201-4600

### MN Department of Agriculture (MDA) Chemigation Compliance

#### Inspection and Compliance Assistance

Kari Mastin, Ag Chemical Consultant: 651-272-7501  
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#### Permitting

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### Please contact a plumbing inspector in the region

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A plumbing permit may be required from the administrative authority prior to installation for all testable backflow devices. Testable devices include Reduced pressure principal backflow prevention assemblies, Double check backflow prevention assemblies, Pressure vacuum breaker backflow prevention assemblies, Spill resistant pressure vacuum breakers.