

### Prevent or minimize drift and runoff

- Select the correct pesticide formulation (granulars, soil fumigation and injectors) for the type of application to be made, given site and soil conditions, to avoid leaching to groundwater or runoff to surface water.
- Be aware of applications next to impervious surfaces or paved areas, such as sidewalks and roads. These can result in pesticides carried in runoff to surface water.



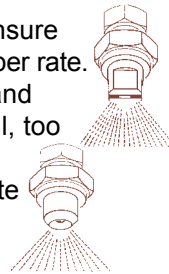
- Avoid leaving puddles of pesticides as they may leach to groundwater or run off to surface water.
- Check for buffers between field crops and surface water which can intercept runoff and prevent it from traveling to waterways.



### Calibrate Often and Use Correct Nozzles



- Calibrate application equipment; it is an important first step in minimizing risk of contaminating water resources.
- Check calibration frequently to ensure pesticides are delivered at the proper rate.
- Use the right nozzle for the job, and replace nozzles that are too small, too large or worn.
- Operate nozzles at the appropriate pressure.
- Be aware that unnecessarily high pressure increases nozzle wear and the possibility of pesticide drift.



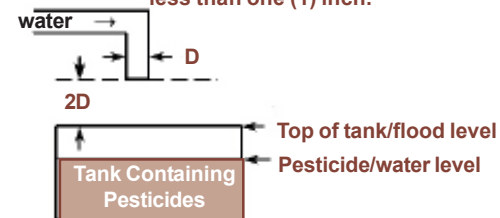
### Prevent Spills and Back-Siphoning

- Avoid mixing and loading pesticides near wells and other water sources.
- Clean pesticide spills immediately.
- Use approved anti-siphoning devices on all chemigation equipment.

#### Anti-Siphoning Device

**Note:**

**D** = diameter of water supply pipe  
**2D** = double the diameter of water supply pipe. In no case shall the air-gap be less than one (1) inch.



### Dispose of Pesticides and Containers Properly

- It is illegal to dispose of pesticides improperly.



- Choose the best method of disposal that protects people and the environment, by:
  - Following the product label instructions for pesticide and container disposal;
  - Triple-rinsing containers holding liquid formulation, puncturing the top and bottom, and crushing flat;



- Recycling pesticide containers; and,
- Never burying pesticide containers, as residues in the containers may contaminate water resources.

PREPARED BY:  
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DIVISION OF SOLID & HAZARDOUS MATERIALS  
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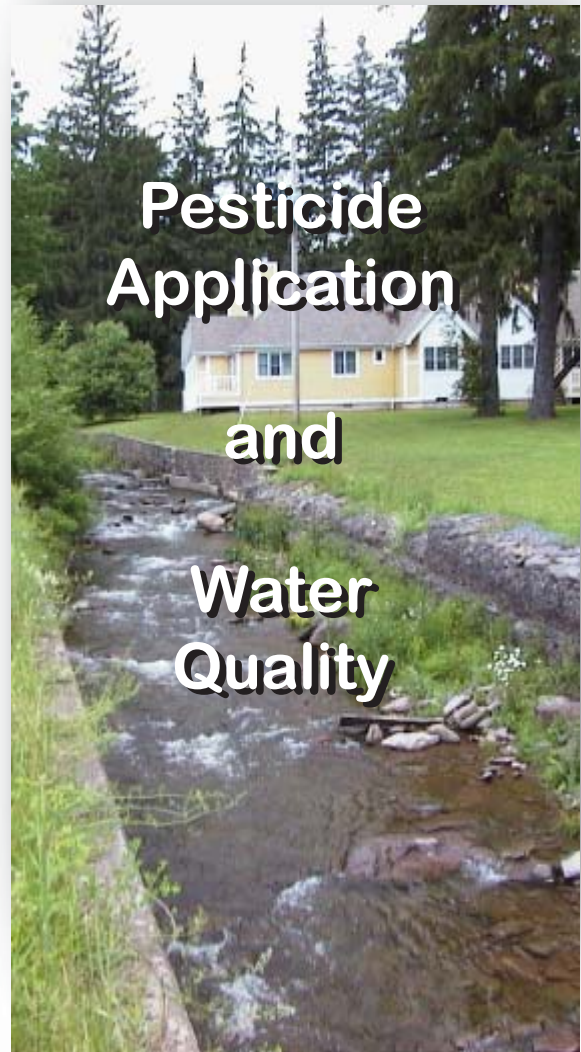
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New York State



## WATER QUALITY PROTECTION TIPS FOR PROFESSIONAL APPLICATORS

# Pesticide Application and Water Quality



New York State  
Department of Environmental Conservation  
George E. Pataki, Governor    Erin M. Crotty, Commissioner

# Pesticide Application and Water Quality

**W**ater is a vital resource for all life. It is vulnerable to contamination by pesticides. This brochure provides information for professional pesticide applicators, who have the responsibility to protect water quality through:

- Understanding the relationship between soils, water and pesticides;
- Learning how to properly apply pesticides to protect water resources; and,
- Using best management practices at all times.

## Q. Why is the relationship between soils, water and pesticides important?

**A.** Understanding this relationship can help prevent contamination of ground and surface water from pesticides. Pesticides and their properties, soil types, and conditions at the treatment site, affect the rate that pesticide-laden water either travels through the soil as leachate to groundwater or runs off impervious surfaces at the site to surface water. Following is more information about these crucial relationships.

## Selecting and Applying Pesticides

- Most pesticide applications have the potential to contaminate water resources, so it is essential to select pesticides or application methods carefully.
- Surface and subsurface applications have the greatest contamination potential.
- Before choosing a pesticide, review the product label for ground and surface water advisories.

## Selecting and Applying Pesticides

- For details on pesticide properties, such as those listed here, review the Department's product registration letters at <http://pmep.cce.cornell.edu/pims>.

## Important Pesticide Properties

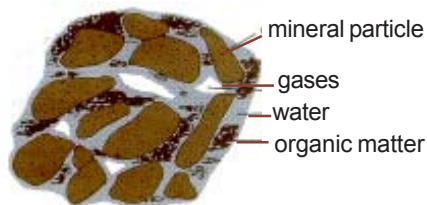
- How easily a pesticide dissolves in water (solubility);
- Whether pesticides stick to soil particles (adsorption) instead of travelling through the soil to groundwater;
- How quickly a pesticide evaporates (volatility) when applied; and,
- How quickly a pesticide is broken down by soil microbes (degradation).



## Important Soil Properties

- How much organic matter there is in the soil to retain pesticides and water;
- Whether air spaces and worm holes (macropores) exist, which would allow rapid flow through the soil;
- Whether the soil texture is sandy or contains clay;
- How quickly water can pass through the soil (permeability); and,
- How saturated the soils are when applying pesticides.

## Four Major Components of Soil



## Water, Sand and Clay

Sandy soils have less organic matter and large particles of soil. They therefore are less able to hold water in the soil, allowing pesticides and water to travel quickly through to groundwater. On the other hand, clay soils hold water longer, and can readily form surface puddles of pesticides. This can lead to runoff to water bodies.



Clay



Sand

## Important Site Conditions

Several conditions influence which application techniques should be used to prevent pesticides leaching to groundwater, running off to surface water, or drifting out of the targeted area. Be aware of:

- The best time to apply a pesticide;
- Locations of water bodies and all wells;
- Depth of the water table;
- Soil type and slope of the land; and,
- Current and forecast weather conditions.

## Q. How can one learn to properly apply pesticides?

**A.** There are several ways.

- *Read and follow the pesticide label.* The law requires that pesticide product labels be followed. Labels provide valuable information on potential environmental hazards, including any use restrictions related to water resources.



Labels can also help applicators choose the:

- pesticide which best controls target pests;
  - pesticide least harmful to aquatic organisms; and,
  - application methods to keep the pesticide within the area to be treated and away from water resources.
- *Seek pesticide applicator training courses.*
- *Read pesticide applicator training manuals.*
- *Consult local specialists on soil properties.*

## Q. What are the most important practices to follow?

**A.** All practices listed in the pesticide applicator training manual are important to use. Four primary water protection practices include the following:

### Prevent or minimize drift and runoff

- Avoid applying pesticides in windy conditions. Pesticides from high-pressure sprayers and mist blowers can drift off target and contaminate surface water. Set the boom height as close as possible to the target.

