

- Store agricultural chemicals in covered areas or containers to protect them from being scattered by wind or washed away by rain.
- Store them in a location in which the direction of groundwater movement is from wells to storage areas.
- Use sturdy pans or trays to hold small containers of pesticides.
- Use containers such as children's wading pool to hold bags of fertilizer/pesticides.
- Use backflow prevention devices when applying chemicals through an irrigation system to eliminate the risk of direct contamination of the well.
- Use household cleaning supplies that are less toxic to your septic system.
- Use pesticides with less potential to leach. Stay at least 100 feet from your well when filling your crop sprayer with water. Use a 100-foot hose
- Recycle pesticide containers. Check with the Extension office to see if your state has hazardous waste disposal days.

## What to Avoid...

- Avoid pesticide application when conditions are most likely to promote leaching.
- Avoid spills when handling or using pesticides.
- Do not use pesticides uphill or within a few hundred feet of your wells.

- Do not store liquid pesticides on a shelf above dry pesticides.
- Do not rinse your sprayer in the same spot every time. Move the sprayer around or rinse it in the fields.

## Use Pesticides Safely!

- Read and follow the pesticide label.
- Wear protective clothing and safety devices as recommended on the label.
- Bathe or shower after using pesticides.
- Be cautious when you apply pesticides.

Know your legal responsibility as a pesticide applicator.  
You may be liable for injury or damage resulting from pesticides.

The **most effective actions** are to **control and/or limit what is applied to the land** in terms of pesticides, fertilizers, and herbicides. Make use of BMPs suggested by the local Cooperative Extension Services.

Source of information:

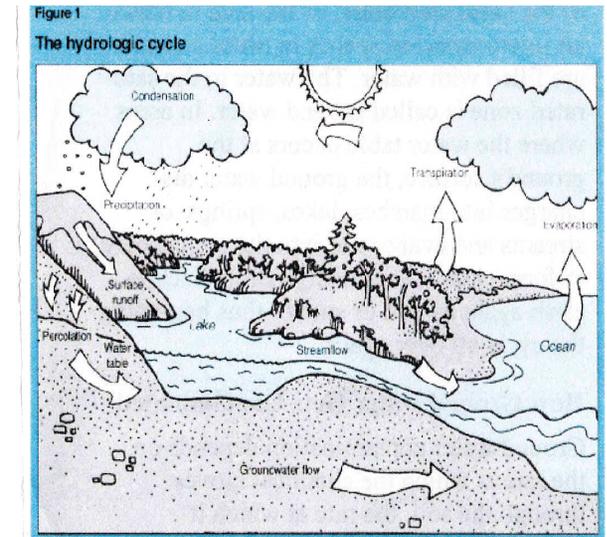
Citizens guide to Ground-water Protection U.S. EP A and Groundwater Primer U.S. EP A Region 5

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# PROTECTING OKLAHOMA'S GROUNDWATER FROM PESTICIDES



Ground water is one of the basic natural resources of the State of Oklahoma. Like surface water, groundwater can be contaminated by human activities.

## What Is Ground Water, and Where Does It Come From

Actually, groundwater occurs as part of what can be called the oldest recycling program - **the hydrologic cycle**. The hydrologic cycle involves the continual movement of water between the earth and the atmosphere through evaporation and precipitation. As rain and snow fall to the earth, some of the water runs off the surface into lakes, rivers, streams, and the oceans; some

evaporates, and some is absorbed by plant roots. The rest of the water soaks through the ground's surface and moves downward through the unsaturated zone, where the open spaces in rocks and soil are filled with a mixture of air and water, until it reaches the water table. The water table is the top of the saturated zone, or the area in which all interconnected spaces in rocks and soil are filled with water. The water in the saturated zone is called groundwater. In areas where the water table occurs at the ground's surface, the groundwater discharges into marshes, lakes, springs, or streams and evaporates into the atmosphere to form clouds, eventually falling back to earth again as rain or snow - thus beginning the cycle all over again.

## How Groundwater Gets Contaminated

Ground water contamination depends on the rate at which the chemical moves through the soil, the rate at which it degrades to inactive materials, and the depth to ground water.

Groundwater contamination can result from:

1. Point sources, where concentrated chemicals are manufactured, stored, or handled; or
2. Nonpoint source, such as cropland, industrial sites, lawns, or golf courses, where diluted chemicals are applied over a large area.

A nonpoint-source problem could arise from repeated use of the same pesticide over many years.

## Agricultural Sources of Contamination



### FACT

### Common Agricultural Sources Of Groundwater Contamination:

- animal burial areas
- chemical storage/use areas
- irrigation sites
- manure storage/spreading



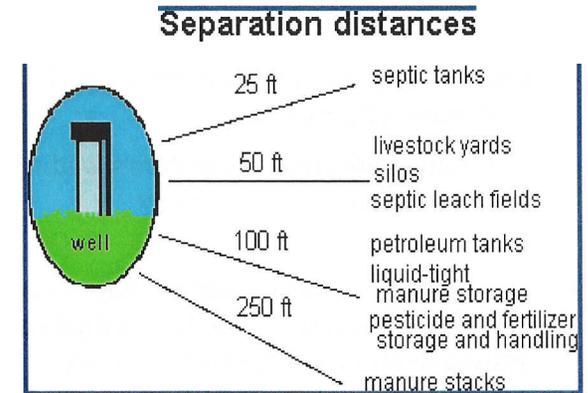
Pesticides, fertilizers, herbicides and animal waste are agricultural sources of groundwater contamination. The means of agricultural contamination are varied and numerous, but some examples follow:

- spillage of fertilizers and pesticides during handling
- runoff from the loading and washing of pesticide sprayers or other application equipment
- using chemicals uphill from or within a few hundred feet of a well

Pesticides are of particular concern since they are so widely used. Using too much pesticide, selecting the wrong pesticide, or applying a pesticide incorrectly not only wastes money, but may also degrade the environment. Groundwater also is used for about half of the nation's agricultural irrigation and nearly one-third of the industrial water needs. This makes ground water a vitally important national resource.

Storage of agricultural chemicals near conduits to groundwater, such as open and

abandoned wells, sink holes, or surface depressions can lead to groundwater contamination. Contamination may also occur when chemicals are stored in uncovered areas, unprotected from wind and rain, or are stored in locations where the ground water flows from the direction of the chemical storage to the well.



## How to Prevent or Reduce Groundwater Contamination Storage and Disposal

- Lay heavy plastic sheeting between 6 x 6 beams on the machine floor. Park the sprayer on top of the plastic.
- Lock up the chemicals to keep them away from children and to help prevent accidental spills.
- Properly dispose of empty containers, equipment rinse water, and unused chemicals.

Store agricultural chemicals away from obvious conduits to groundwater, such as operating and abandoned wells, sink holes, surface depressions where ponded water is likely to accumulate.