KEEPING YOUR WELL WATER SAFE

Tips on Working Safely with Pesticides in North Carolina

CropLife Foundation

Construction features of a Drilled Well

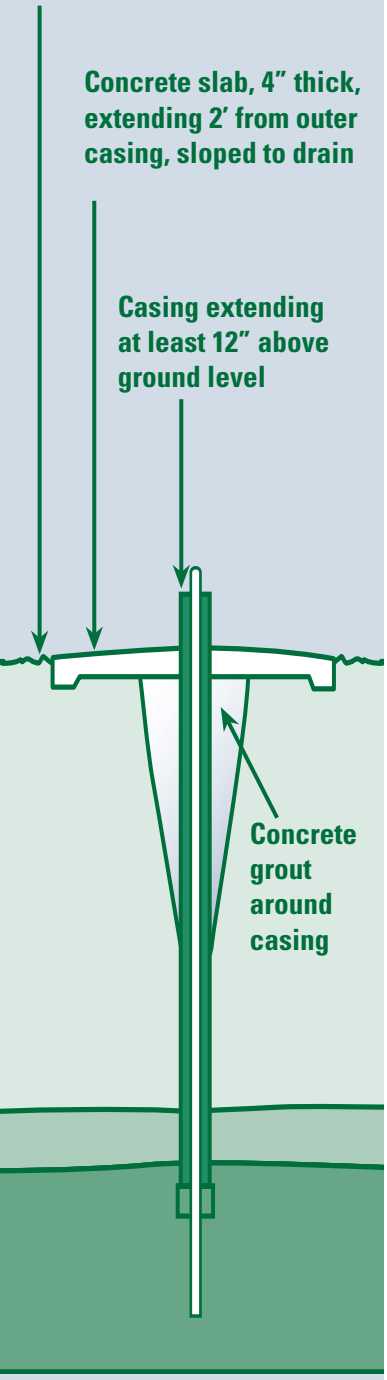

Illustration modified from: Your Water Supply Well Construction and Protection, NC Cooperative Extension Pub. AG469, R.L. Huffman and D.L. Miner.

Water wells should be checked from time to time to make sure that they are not vulnerable to contamination. The same pipe that delivers ground water to the surface can also introduce surface contaminants into the underground water supply. Contamination of the well water by pesticides can be prevented if you keep the wellhead in good condition and use pesticides responsibly. Never store pesticides or empty pesticide containers in your well house. Consider these additional points to help keep your well water clean.

Well Location

The location of a new well is usually determined by the geography of the farm. Unless otherwise protected, your wellhead should be on the highest ground available and above the flood level of any nearby stream or pond. The immediate landscape around a wellhead should slope away from the wellhead in all directions. The well should also be located away from your pesticide and fertilizer storage sheds, equipment repair shop, fuel storage tanks, or mixing/loading areas. This will help prevent contaminated runoff water or spills from entering the well. North Carolina law requires a minimum separation distance of 100 feet between a well and any source of potential chemical contamination including pesticide storage areas and buried gasoline and oil tanks. Crop fields that receive manure also must be separated by 100 feet from any well.

Well Construction

The health code covering private wells requires that the casing pipe extend 12 inches above the final grade level and that it be surrounded for 2 feet in all directions by a concrete pad that slopes away from the well to drain stormwater away from the wellhead. The pad also protects the casing and stabilizes the soil around it. Contact your county health department and the NC Department of Environment & Natural Resources (NC DENR), Groundwater Section before beginning any well construction or repairs (see Further Information below). A well contractor, certified by NC DENR, must be on site during the construction, abandonment, repair, or any alteration of any well. In addition, pump installation must be done by an N.C.-registered pump installer.

Further Information

Contact your NC DENR Groundwater Section Regional Office should you have any questions about your well or concerns about groundwater. A directory of Regional Offices is available at the following web site: http://gw.ehnr.state.nc.us. Click on the "Well Information" link within this web site for publications on well water safety, well abandonment, how to select a well contractor, and well construction rules.

(over)

North Carolina Environmental Stewardship Project of CropLife Foundation
1156 15th Street, NW, Suite 400, Washington, DC 20005, 202.296-1585

Well Inspection

Inspect well casings: Properly sized and sealed casings prevent surface water and shallow ground water from entering the well and contaminating the water source that is generally found in deeper soil and rock formations. Check the well casing for cracks or other damage and make sure that it extends at least 12 inches above the soil level. Cracks in a well casing provide a point of entry for pesticide-contaminated water in the soil around the well. The top of the casing should be sealed with a well cap or rubber grommet.

Check the integrity of the grout: The space between the well casing and the borehole walls of the well is usually sealed with a cement grout or a bentonite clay seal. Inspect this seal for signs of cracking. A tight seal around the casing is essential to prevent surface and subsurface contaminants from flowing directly down the outside of the casing and entering the well. Required well casing and grout depths vary. In most parts of the state, the well casing and grout depth must be 20 feet. On the Outer Banks, casing and grout depth must be at least 10 feet. In Union County, Stanly County, and parts of neighboring counties, the depth must be 35 feet. Check with your county health department or Regional Office of the Groundwater Section, NC DENR (see Further Information on front page).

Water testing: It is a good idea to test your well water once a year for bacteria, nitrates, and other contaminants. Yearly testing is necessary because pollutants may be entering the groundwater at a distance. Even if you do everything you can to protect your well from contamination, it may still become polluted. Testing for pesticides is particularly important if your well

- ❑ has high nitrate levels,
- ❑ is shallow or not properly cased and grouted
- ❑ has a high potential for pesticide pollution following a spill
- ❑ is downhill from fields where pesticides have been applied.

You can get well-testing help from private testing labs and most county health departments.

Technical Reviewer: Wayne Buhler, Ph.D., College of Agriculture and Life Sciences, NC State University

Well Age

Older wells may be shallower than wells drilled more recently and are more likely to be contaminated. Older wells may also have thinner casings. Even wells that are only 30 years old may have corroded casings. If you have an older well and pesticides have been used on your farm, it may be prudent to have it examined by a county health department representative, NC DENR regional groundwater specialist, or a certified well contractor.

Pesticide Management Practices

Prevent back-siphoning: Wells may become contaminated by back-siphoning from sprayer tanks during or after the filling operation if the water delivery system loses pumping pressure. To prevent back-siphoning, maintain an air break (or air gap) at the filling site on the tank, so that the water inlet pipe or hose cannot become submerged even at the highest level possible in the spray tank.

Mix, load, and rinse spray equipment away from wells: Pesticides should always be mixed and loaded far from the wellhead. Use a hose or faucet to bring water to a mixing area located away from – and downhill from – the wellhead. Sealed-concrete mixing pads or portable field mixing pads with a catch basin decrease the risk that spills or rinse water will contaminate the well or seep into the groundwater.

Prevent runoff and spills: If production areas or pesticide use areas are above the well, channel runoff from those areas away from the well. Keep an emergency spill response kit near mix/load sites and storage areas so that spills can be cleaned-up quickly. The kit should include personal protective equipment, absorbent material (such as non-chlorinated cat litter, lime, or sand), a shovel, and a drum with a lid for storing contaminated material.

Well Abandonment

Unless old wells are properly filled, sealed, and plugged, they can allow pollutants to contaminate other wells that draw from the same groundwater or aquifer. An unused well is a direct route to the ground water or aquifer that supplied it. To seal an unused well properly, you need to make sure that there is a barrier that restores the isolation of the groundwater that existed before the well was drilled or dug. A well that has been permanently closed by approved methods is considered an abandoned well. A certified well contractor should be used to abandon the well. However, well owners may abandon their own well if done according to state regulations. The requirements for abandonment differ by type of well (see Further Information for more details).