



# Sinkholes and Water Quality

## We All Live Downstream

If you live in a rural area, you probably get your water from a well or spring. For health and aesthetic reasons, you want the groundwater that supplies your home or farm to be of high quality. But groundwater can become contaminated as a result of human activities, including the misuse of sinkholes -- depressions in the land surface that occur in areas underlain by carbonate bedrock, such as limestone and dolomite. Carbonate bedrock exists in many parts of central and southeastern Pennsylvania.

An important characteristic of carbonate bedrock is that it is easily dissolved by water. Some water from rain or melting snow seeps through the soil to recharge the groundwater contained in bedrock fractures and openings between rock layers. As the water flows through these cracks, the carbonate bedrock gradually dissolves and the openings become large, creating solution channels through which water can easily flow. The dissolution of carbonate bedrock accounts for the development of sinkholes; as the bedrock beneath the soil is dissolved and carried away, the overlying soil settles or collapses to form a surface depression. These depressions vary in size and are usually cone or bowl shaped.

The soil lining the bottom of a sinkhole may be so thin that it provides little filtering of any surface runoff that may drain into the sinkhole. In some instances, streams may flow into sinkholes and disappear underground. This surface water now becomes part of the groundwater flow system. Because sinkholes provide easy access for drainage water to enter the groundwater system, it's important to keep potential water pollutants away from sinkholes. Contaminated water that drains through a sinkhole can pollute the groundwater that you (or your neighbor's) well or spring draws from. Since groundwater can flow easily through solution channels in carbonate bedrock, a sinkhole that receives contaminated water can pollute water supplies located far away from the contamination source.

If you have a sinkhole located on your property, you can do several things that will help protect groundwater quality:

- Most important, don't use sinkholes as dumping sites. Sinkholes may seem like acceptable locations to dump trash, but they're not. The water from precipitation and drainage that flows through trash-filled sinkholes carries contaminants directly into groundwater.
- Never dump rinse water from sprayer tanks or any other hazardous liquids into sinkholes. These liquids will reach groundwater easily.
- Avoid using sinkholes as outlets for drainage tiles. This water may contain contaminants -- such as pesticides and nitrate -- that have leached from the soil.

You can take several positive actions to prevent sinkholes from becoming entrance ways for groundwater contamination:

- If you have a sinkhole that contains trash, you should clean it out. This will help curb any further groundwater contamination and may discourage additional dumping.
- Keep sinkholes and the area immediately around them vegetated with trees, shrubs and grasses. This buffer of vegetation will help stabilize the area, filter contaminated runoff and provide wildlife habitat. Undisturbed sinkholes that don't receive contaminated runoff aren't a threat to groundwater quality.

Sinkholes are environmentally sensitive areas that need to be treated with care. Remember: What you see in a sinkhole may affect what you get from your water faucet.