

Groundwater Quality

What is groundwater? Why is it important? Water is the most important resource to humans. It is essential for the existence of all forms of life. Although an ocean of water covers the earth, it is important to remember that there is no new water. The earth only contains and redistributes a certain amount.

Groundwater is water below the earth's surface in rock, sand, gravel and soil. The rainfall that enters the ground keeps up the water level. Surface water and groundwater are the two main sources for drinking water. Nearly 50 percent of the U. S. population and 95 percent of rural homes depend on groundwater for their drinking and water supply. In Missouri, 67 percent of the population gets its water from surface water, while 33 percent depend on groundwater supplies.

We need clean, usable groundwater to maintain an adequate and safe supply of drinking water. So we must manage our groundwater wisely so that it does not become polluted by human activities.

How can groundwater become contaminated?

Several sources can contaminate groundwater:

- Nature can contaminate groundwater by dissolving rocks and minerals that create very high salt content in groundwater, making it undrinkable. Shallow groundwater may become contaminated with bacteria or pathogens, and as organic matter decomposes, with nitrates.
- Agriculture can contaminate water with waste from animal feedlots or confinement areas and with agricultural chemicals such as plant nutrients and pesticides.
- Industry and municipalities contaminate groundwater with wastes, runoff and sewage disposal.
- Household septic systems can contaminate groundwater.

Groundwater or well contamination?

Well water contamination can be caused by the sources listed above. However, well water may only be contaminated *locally*. Contamination comes through the walls of degraded well casings. Groundwater contamination implies a much larger land area as a contaminate source. People who work with groundwater quality usually use two broad terms to describe the origin of these sources of pollution:

Point sources — Contaminants originating and traceable to a single source, such as a leak or spill area, a leaking underground tank or a septic system near the wellhead

Non-point sources — Contaminants that cannot be traced to a single source. Examples include nitrates, which may originate from livestock, chemical fertilizers and natural occurrences in the soil.

This publication was written by Karen DeFelice, former associate extension agronomist; Nyle Wollenhaupt, former state extension agronomist; and Daryl Buchholz, former state extension agronomist. This material is based upon work supported by the United States Department of Agriculture, Extension Service, under special project number 89-EWQI-1-9203.

ALSO FROM MU EXTENSION PUBLICATIONS

- G7520 *Pesticides and the Environment*
G9181 *Agricultural Phosphorus and Water Quality*
WQ21 *Agricultural Sources of Contaminants in Groundwater and Surface Water*
WQ22 *Federal Laws Protecting Groundwater and Surface Water*

extension.missouri.edu | 800-292-0969