Groundwater Quality

hat 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 — previously named WQ23 *Groundwater Quality* — 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.

Reviewed by

Bob Broz, Extension Water Quality State Specialist, Division of Food Systems and Bioengineering

extension.missouri.edu eq23

ALSO FROM MU EXTENSION PUBLICATIONS

Agricultural Sources of Contaminants in Groundwater and Surface Water EQ21

EQ22 Federal Laws Protecting Groundwater and Surface Water

G7520 Pesticides and the Environment

G9181 Agricultural Phosphorus and Water Quality

extension.missouri.edu | 800-292-0969



UNIVERSITY OF MISSOURI Issued in furtherance of the Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with and funded in part by the U.S. Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211 • MU Extension provides equal Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211 • MU Extension provides equal opportunity to all participants in extension programs and activities, and for all employees and applicants for employment on the basis of their demonstrated ability and competence without discrimination on the basis of race, color, national origin, ancestry, religion, sex, sexual orientation, gender identity, gender expression, age, genetic information, disability, or protected veteran status • 573-882-7216 • extension missouri edu