

This fact sheet provides a summary of EPA's nitrate study. We encourage you to review the full study, posted at: <http://yosemite.epa.gov/r10/water.nsf/gwpu/lyakimagw>

Why did we do this study?

About one third of the population in the Lower Yakima Valley uses private, unregulated wells for drinking water. Between 10 and 20 percent of these wells have nitrate concentrations that exceed the national and state drinking water standard. EPA conducted this study in response to community concerns about the high nitrate levels in drinking water wells and the potential disproportionate impacts on low income and minority rural populations in the Lower Yakima Valley.

What were the study's goals?

The study's goals were to:

1. Identify places where large amounts of nitrogen are produced, stored or applied to the ground in the Lower Yakima Valley. We called these "potential sources" in our study.
2. Explore whether we could use scientific techniques to track where nitrate in drinking water wells comes from.
3. Use these techniques to trace which, if any, of the potential sources are likely contributing to the high nitrate concentrations in groundwater and residential drinking water wells.

What are the potential sources?

Our research found that livestock operations are the largest potential source of nitrogen in the Lower Yakima Valley and that most of the livestock operations in the valley are dairies. The second largest potential source is from fertilizer application -- either synthetic fertilizer, manure or both -- to irrigated crop fields. To a much smaller degree, septic systems, biosolids from municipal wastewater treatment plants, and atmospheric deposition also are sources of nitrogen.

Where were the samples collected?

We collected samples from:

- Residential drinking water wells that are:
 - Upgradient and downgradient from several dairies.
 - Downgradient from six irrigated crop fields.
 - In areas with a high density of septic systems.
- Dairy supply wells;
- Dairy sources (dairy lagoons, manure piles, and application fields);
- Six irrigated crop fields; and
- Three municipal wastewater treatment plants (used as a surrogate for septic system waste).

How were the samples analyzed?

The samples were sent to laboratories to be analyzed for nearly 200 chemicals. Many of these chemicals could be associated with the sources we sampled or are carried in water in a similar way that nitrate is carried in water. We also used scientific techniques to attempt to trace the source of high levels of nitrate in water wells.

What were the study limitations?

All research studies have limitations. In this study, there were several limitations, including incomplete information about the depths of some wells. We kept these limitations in mind as we made conclusions about the data and what it means for identifying the sources of nitrate in groundwater.

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What did we find?

Our assumption at the beginning of the study was that places where large amounts of nitrogen are produced, stored, or applied to the land could be linked to high nitrate levels in groundwater and residential drinking water wells.

To test this assumption we evaluated if specific dairies, irrigated crop fields, and areas with relatively high concentrations of septic systems could be linked with residential drinking water wells that have high nitrate concentrations.

We conducted tests on the samples we took from these sources and from residential drinking water wells.

- The data confirmed that the dairies in the study are a likely source of nitrate in drinking water wells downgradient of these dairies.
- Several of the irrigated crop fields evaluated for this study are a likely source of nitrate in down-gradient drinking water wells. The data for this finding is not as strong as it is for the dairies.
- With the information we collected, we were not able to confirm whether septic systems are a source of nitrate in drinking water wells.

What's next?

This study is part of a larger effort in the Lower Yakima Valley to reduce nitrate in groundwater and residential drinking water. EPA will continue to have a representative on the Groundwater Management Area (GWMA) committee initiated by Yakima County. EPA will support the Yakama Nation in their work to reduce groundwater contamination.

EPA is working with the dairies on next steps to provide safe drinking water to affected residents where necessary, conduct source control measures to reduce nitrate levels in groundwater and residential drinking water wells in the vicinity of their dairies, and to conduct long-term monitoring to track the progress of these efforts.

EPA is accepting written public input on the study until **November 30, 2012**.

What can you do?

EPA recommends that private well users test their drinking water once a year for nitrate and take appropriate action if nitrate levels exceed EPA's drinking water standard of 10 parts per million.

For a list of appropriate actions see the EPA fact sheet titled "Frequently Asked Questions About Nitrate and Drinking Water." Visit <http://go.usa.gov/YEZz>

Who can tell me more about the study?

For questions about the study:

Contact Marie Jennings

✉ jennings.marie@epa.gov

☎ 1-800-484-4372, ext. 1893 or 1-206-553-1893

To provide written input on the study:

Email: R10YVNNitrate@epa.gov or go to:

<http://yosemite.epa.gov/R10/WATER.NSF/GWPU/lyakimagw>