



California Regional Water Quality Control Board

Central Coast Region



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Environmental
Protection

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June 23, 2010

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Dear Madam/Sirs:

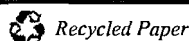
DOMESTIC DRINKING WATER WELLS AND NITRATES; URGENCY FOR NITRATE MONITORING

Section 116270 of the California Health and Safety Code states:

Every citizen of California has the right to pure and safe drinking water.

The Central Coast Regional Water Quality Control Board (Water Board) recently identified nitrate impacts to groundwater as one of our largest and highest priority water quality problems within the Central Coast Region. Although this issue is not unique to our region or California, it is particularly severe given significant agriculture-related land use activities within major portions of our most viable and vulnerable groundwater basins. The coupling and growing number of onsite wastewater disposal [septic] systems and domestic or shared/small water supply system wells in rural or suburban areas also presents an ongoing dilemma with respect to nitrate impairment in drinking water wells.

California Environmental Protection Agency



In the Central Coast Region, groundwater accounts for approximately 80% of the annual agricultural and municipal water usage. Domestic water supply for individual residences and small water supply systems is derived almost entirely from groundwater. Whereas "public water systems" defined as having fifteen or more service connections are required to conduct annual water quality monitoring for nitrate¹, individual domestic wells and water systems with two to four connections (local small or shared water systems) are generally never sampled for nitrate. In addition, "state small water systems" defined as having at least five, but not more than fourteen service connections are typically only sampled one time for nitrates pursuant to section 64213 within Title 22 of the California Code of Regulations, unless otherwise required more frequently by the local health officer.

Although the relatively high and growing incidence of public water system supply wells that exceed the drinking water standard for nitrate is well documented², an even larger number of domestic, local/shared and state small water system wells pumping groundwater from shallower water bearing zones that are more susceptible to nitrate impacts are not monitored or tracked.

In May and June of 2006, the State Water Resources Control Board sampled 181 private domestic water supply wells in Tulare County as part of the Groundwater Ambient Monitoring and Assessment (GAMA) Program Domestic Well Project³. Results of the project indicated that 41% of the domestic wells sampled had nitrate concentrations in excess of the drinking water standard of 45 mg/L - as nitrate. In comparison, an evaluation of public water supply well data indicated that 14% of the public supply wells in Tulare County exceeded the drinking water standard for nitrate. In the Central Coast Region, data indicate up to 20% of public water supply wells in various groundwater basins within the Central Coast Region have nitrate above the drinking water standard. Available water quality data also document nitrate concentrations at levels of up to ten times the drinking water standard within various groundwater basins in our region. The data indicate that an untold number of people in the Central Coast Region - likely in the thousands - are drinking water from domestic wells that does not meet the California Health and Safety Code drinking water standard for nitrate.

Although peer-reviewed studies suggest that nitrates in drinking water may be linked to increased risks of various types of cancer in humans⁴, conclusive and widely accepted epidemiological studies have yet to be presented in support of this. One study in particular suggests nitrate concentrations in drinking water below the drinking water

¹ California Code of Regulations, Title 22, Chapter 15, Article 4, Section 64432.1

² "Since 1984, approximately 8,600 of 25,000 drinking-water supply wells [in California] have been shut down because of excessive nitrate." Steven F. Carle, Brad K. Esser, and Jean E. Moran, High-resolution simulation of basin-scale nitrate transport considering aquifer system heterogeneity; *Geosphere* June 2006, v. 2, p. 195-209

³ <http://www.swrcb.ca.gov/gama/voluntary.shtml#tulare>

⁴ Nitrate is endogenously reduced to nitrite and subsequently nitrosamines in the stomach, colon and bladder. Nitrosamines are known carcinogens.

standard are associated with an elevated cancer risk⁵. Notwithstanding the current lack of conclusive epidemiological data regarding potential cancers risks, the risks associated with methemoglobinemia, or "blue baby syndrome," should be compelling enough for action given this pervasive and growing groundwater quality problem.

Given the growing severity of this problem we urge you to require nitrate sampling for domestic wells and wells for water systems with two to fourteen connections pursuant to your authority as the public health officer, the authority of your agency as the local primacy agency for regulating state small water systems and the authority of your agency for well permitting as applicable. Specifically we suggest you require:

- 1) nitrate sampling for all new [individual] domestic water supply wells with follow-up sampling as warranted based on the initial sampling results,
- 2) sampling of existing domestic wells during property transfers and lot/parcel changes or building improvements requiring a county permit, including septic system repairs and upgrades, and
- 3) require annual nitrate sampling for all water systems/wells with two to fourteen connections. We also suggest you consider implementing a voluntary domestic well nitrate sampling and public education program for existing domestic wells within your county.

Based on initial dialogue with various staff from the counties within our region, we understand that some counties are already requiring additional well or water system monitoring for nitrate. However, there appears to be no consistency from county to county and the generated water quality data are generally maintained within hard copy files instead of being proactively managed within a queryable or mapable database.

Nitrate monitoring requirements for domestic wells and water system wells with two to fourteen connections and better data management will aid in 1) the protection of the public [health] from exposure to nitrate, 2) the public making informed decisions about the quality of their drinking water supply, and 3) the identification of high risk areas subject to groundwater impacts from either point or non-point sources of nitrate loading.

We are eager to discuss this common issue with you and your staff. We look forward to discussing what your agency may already be doing in this regard and how we can collaboratively and consistently gather and manage this data to protect water quality and public health.

⁵ M.H. Ward, S.D. Mark, K.P. Cantor, D.D. Weisenburger, A. Correa-Villasenor, and S.H. Zahm, "Drinking water nitrate and the risk of non-Hodkin's lymphoma." *Epidemiology*, September 1996. (Study by National Cancer Institute, the University of Nebraska Medical Center in Omaha, and Johns Hopkins University in Baltimore)

If you have any questions regarding this matter, please contact **Matthew Keeling** at **(805) 549-3685** or mkeeling@waterboards.ca.gov, or John Robertson at 805-542-4630.

Sincerely,



Roger W. Briggs
Executive Officer

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