



HAZARDOUS WASTE  
RECORDS SECTION

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Agency for Toxic Substances  
and Disease Registry  
Atlanta GA 30333

APR 04 1995

The Honorable Randy Sanchez  
First Lt Governor of the Pueblo of San Ildefonso  
Santa Fe, New Mexico 87501

Dear Lieutenant Governor Sanchez:

Gilbert Sanchez provided the Agency for Toxic Substances and Disease Registry (ATSDR) with a copy of a March 24, 1995 letter from Ivan Trujillo of Los Alamos National Laboratory (LANL) informing you of the results of water samples taken from San Ildefonso wells on July 27-29, 1994. ATSDR has reviewed this information and would like to offer the following summary and recommendations.

Levels in several of the wells in San Ildefonso are above "safe" levels for infants. The Environmental Protection Agency's (EPA) Maximum Contaminant Level (MCL) for nitrate-nitrogen in drinking water is 10 milligrams per liter (mg/L). An MCL is a number which is associated with no adverse health effects. This level is considered a safe level for even the most sensitive populations. For example, if someone drinks water everyday for a lifetime containing nitrate at this level, there should be no ill effects. The information ATSDR received from Gilbert Sanchez shows three wells with nitrate-nitrogen levels close to 10 mg/L and three above that level. The three wells above the MCL are the Martinez Well (15.80 mg/L), the Otowi House Well (10.8 mg/L), and the Pajarito Well Pump #2 (19.0 mg/L). The three wells with levels close to the MCL are the Eastside Artesian Well (8.60 mg/L), the Pajarito Well Pump #1 (7.70 mg/L) and the Sanchez House Well (9.50 mg/L).

There are two likely sources for the elevated nitrate levels in these wells. Nitrogen-containing fertilizers, including anhydrous ammonia can raise the concentration of nitrate in water. Animal or human natural organic wastes can also raise nitrate levels. Nitrate-containing compounds in the soil from either source are generally soluble and can readily migrate with groundwater into drinking water wells.

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The well samples that have been taken so far do not show the full range of nitrate contamination that may be occurring in the drinking water wells in San Ildefonso. Discussions were held with Ron Zabrocki of the Indian Health Service on March 28, 1995. He indicated that samples for nitrates had been taken from some San Ildefonso wells during December, 1994. Two of the wells sampled on this occasion were Pajarito Wells #1 and #2 (which were also sampled in July 1994 - see above). Results from the analysis of the December 1994 samples showed levels much lower than in July of the same year. This would seem to indicate either seasonal fluctuation of nitrate levels in groundwater or differences in sampling and analytical analysis. If the differences are due to seasonal fluctuation in the use of nitrate fertilizer, then it is likely that even higher levels than those reported for the July 1994 samples are occurring at other times of the year (that is, within several weeks to a couple of months of the application of fertilizer, depending on the amount of rain). One or two samples in a year are not enough to show the full range of seasonal fluctuation. Ron Zabrocki has agreed to ask the State of New Mexico to analyze the next set of samples.

It should be noted that the levels of nitrate seen in the San Ildefonso wells are not all that different from many other wells across the United States. As discussed on page 2 of the ATSDR Case Studies in Environmental Medicine provided to you, about 2% of all wells in the United States are above the EPA MCL of 10 mg/L nitrate-nitrogen.

Even though similar levels are seen in other parts of the country, infants less than 4 months of age should not be fed formula diluted with water from wells in San Ildefonso above 10 mg/L nitrate-nitrogen. As discussed in the ATSDR Case Study in Environmental Medicine for Nitrate/Nitrite, which has been provided to you, infants less than 4 months old are especially prone to developing anemia if fed formula with high nitrate levels. In contrast, it is not likely that breast-fed infants would develop anemia from exposure to nitrates ingested by the nursing mother. (See page 4 of the enclosed copy of "Case Studies in Environmental Medicine, Nitrate/Nitrite Toxicity")

Nitrate in formula causes a specific form of anemia in infants by chemically changing hemoglobin in the blood. Hemoglobin is the part of the blood that carries oxygen throughout the body. The specific form of anemia caused by nitrates is called "methemoglobinemia."

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Until further clarification can be reached on the variation in levels of nitrates in the wells, and to act conservatively to protect public health, ATSDR makes the following recommendations:

- Parents of infants under 4 months old using water from those wells with nitrate levels above 10 mg/L should use bottled water to mix baby formula.
- Although no studies seem to indicate any danger to the fetus of a pregnant mother who drinks nitrate contaminated water at the reported levels, concerned mothers should notify their physician who can monitor and advise on an individual basis.

If you have further questions or comments, please contact Alan Parham or Richard Collins of my staff at (404)639-6068).

Sincerely yours,



Sandra Isaacs  
Acting Branch Chief  
Federal Facilities Assessment Branch

Enclosure

cc:  
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