PACIFIC INSTITUTE

The Human Costs of Nitrate-contaminated Drinking Water in the San Joaquin Valley

Executive Summary

March 2011

In Collaboration With

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

CLEAN WATER FUND

California Rural Legal Assistance Foundation
Advocates For Justice

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About the Organizations

Pacific Institute

The Pacific Institute is an Oakland-based independent nonprofit that works to create sustainable communities and a healthier planet. Founded in 1987, we conduct interdisciplinary research and partner with stakeholders to produce solutions that advance environmental protection, economic development, and social equity—in California, nationally and internationally. Our Community Strategies for Sustainability and Justice Program (CSSJ) partners with community-based organizations and coalitions to build community power to create and sustain healthy and thriving environments. Since 1995 this program has worked to overcome the common root causes to economic, environmental, and community health challenges in low-income neighborhoods and communities of color through action research that advances innovative, cross-cutting solutions developed by impacted residents.

Community Water Center

Community Water Center (CWC) is an environmental justice, nonprofit organization whose mission is to create community-driven water solutions through organizing, education, and advocacy in California's San Joaquin Valley. The Community Water Center works directly with a number of low-income, primarily Latino communities to address problems that range from chronic drinking water contamination to barriers to participation in local water governance. The Center employs three primary strategies in order to accomplish our goals: (1) educate, organize, and provide legal assistance to low-income communities of color facing local water challenges; (2) advocate for systemic change to address the root causes of unsafe drinking water in the San Joaquin Valley; and (3) serve as a resource for information and expertise on community water challenges.

Clean Water Fund

Clean Water Fund (CWF) is a national Section 501(c)(3) research and education organization that promotes the public interest on issues relating to water, waste, toxics, and natural resources. CWF's research, technical assistance, training, outreach, and educational programs increase public understanding of environmental issues and promote environmentally sound policies. Since 1974, CWF has helped people achieve cleaner and safer water, cleaner air, and protection from toxic pollution in our homes, neighborhoods, and workplaces. With a headquarters in Washington, D.C. and 17 offices in 11 states, CWF operates national campaigns as well as locally staffed community environmental and health protection programs.

California Rural Legal Assistance Foundation

CRLA Foundation is a statewide, 501(c)(3) nonprofit organization incorporated in 1981 to help rural immigrant workers and their families improve their economic conditions in California. For more than 27 years, we have worked to help people get better education, jobs that pay livable wages, habitable housing, and high quality, no-cost legal representation when they need it to ensure their civil rights. We do this by securing a just and equitable regulatory environment and legislative advocacy in the areas of education, worker safety, environment, and housing; conducting community outreach and education; and providing training and technical assistance to workers and to unions and other community-based organizations that advocate for workers and their families.

About the Project

Our four organizations collaborated to launch a community-based research process in Summer 2009 with the goal of documenting the economic, social, and potential health impacts of nitrate contamination of drinking water in the San Joaquin Valley. The project leverages the combined strength of technically rigorous research, grassroots leadership by affected communities, and seasoned policy analysis and advocacy. The new understanding generated by the research is being applied in community education and organizing, policy development, and advocacy to achieve safe and affordable water for all residents of the San Joaquin Valley.

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Technical Review Process

A panel of independent technical experts reviewed the methods and findings of this research to ensure it held up to standards used by peer-reviewed journals and is based on methods consistent with best practices in related scientific fields. We sent reviewers a draft plan for our research methods in December 2009 and received their comments and finalized the methods in June 2010. The reviewers were provided with a draft of the final report in December 2010, and all comments were addressed before publication. The technical review panel was made up of:

Paul English, Ph.D., MPH
Research Scientist, Environmental Health Investigations Branch, California Department of Public Health

Ann Lewandowski, MA
Research Fellow, University of Minnesota Water Resources Center

Isha Ray, Ph.D.
Associate Professor, Energy Resources Group, University of California at Berkeley

Executive Summary

Nitrate contamination of California's groundwater presents a preventable threat to human health and economic wellbeing that is not being addressed at the scale needed to meet current or expected future levels. The San Joaquin Valley is the epicenter of the nitrate challenge; 75% of the nitrate exceedances in 2007 occurred in water systems located in the Valley. Groundwater nitrate levels are increasing and if current trends like those in Kern County continue, the number of wells with nitrate levels above the MCL will double by the year 2020. The potentially fatal effect of nitrate exposure on infants and association between exposure and respiratory and reproductive conditions; impacts to spleen, kidney, and thyroid functions; and various forms of cancer make this an urgent public health issue.

Despite the acute health effects of nitrate contamination, some communities in the state have been waiting for more than a decade for measures to restore the safety of their drinking water. In the interim, residents in these communities must replace the contaminated tap water—by purchasing water or installing point-of-use filters—at their own expense. Among community water systems, small ones with less than 200 connections comprise the majority of systems with persistent nitrate violations, and it is widely recognized that these systems cannot afford to independently finance the projects necessary to reduce nitrates and deliver safe drinking water. These communities also tend to be low-income and have a high percentage of Latino households. Although costs to community water systems and the households they serve are significant and directly tied to nitrate contamination of groundwater, public policy and regulatory programs have to-date failed to incorporate those costs in their policy and regulatory programs.

This report provides findings from a study designed to document costs of nitrate-contaminated groundwater to households and community water systems in the San Joaquin Valley. To document costs to households, a survey was conducted in four community water systems with current nitrate violations and representative demographics. Bi-lingual trained surveyors interviewed 37 households using convenience sampling in three communities and exhaustive sampling in one system. To investigate the costs to water systems, we analyze the projects needed in the region to mitigate nitrate contamination. We compare the nitrate water projects that providers have proposed to those that have been funded in order to characterize the unmet needs.

This study finds that households surveyed have water costs above national affordability standards (i.e., 1.5% of median household income) and many lack accurate information on water quality and are consuming tap water that exposes them to unsafe nitrate levels. One third of residents surveyed used their contaminated tap water for drinking or cooking and more than half of those surveyed did not know that their water system had a nitrate problem. Spanish-speaking households were even less likely to know of the contamination. The costs of avoiding unsafe tap water by purchasing alternative water sources and/or using filters represent a significant proportion of household incomes—more than 1.5% of household income for 70% of surveyed

households. With the cost of public water service added, the average total household water costs constitute 4.6% of median household income, more than three times the affordability threshold for drinking water recommended by the U.S. Environmental Protection Agency (EPA).

The analysis of costs to community water systems finds that projects to address nitrates have substantial costs and that the vast majority of needed projects remain unfunded. The 14 small community water system projects funded by the California Department of Public Health (CDPH) Drinking Water State Revolving Fund between 2005 and 2009 to resolve nitrate contamination ranged in cost from a low of $100,000 to a high of nearly $7.5 million. Currently 100 projects to address nitrate contamination in Community Water Systems are on the CDPH waiting list, with a total cost of $150 million and an average project cost of just over $1 million. The most commonly funded project is a new well, and while this strategy is problematic due to increasing and fluctuating nitrate groundwater levels, communities often must pursue it to avoid unaffordable operational and maintenance costs of the alternatives. Consolidation, a solution encouraged by the CDPH and by the U.S. EPA, is the second most popular solution, followed by installation of treatment technology.

The findings of this report indicate several areas of needed policy changes. First, changes to required notification procedures should be considered to ensure that residents with contaminated tap water are kept informed of the problem and warned not to use the water for drinking or cooking. Next, new funding mechanisms are needed to fill the shortfall in project funding, as well as to provide interim solutions (such as point-of-use or point-of-entry systems) for users in systems that must endure long waits for solutions. Barriers to consolidation, which may be political, regulatory, and economic, should be addressed at both the state and local level. Finally, state agencies must improve both regulations and incentives to control all sources of nitrate contamination. Unless that is done, it is clear that current programs will not be able to keep up with the increasing demands as new communities are added to the list of those with unsafe drinking water.

This report represents a first effort to quantify the community costs of nitrate contamination. As such, it raises many more question than can be answered here. Several areas of additional research are indicated, including a more comprehensive economic analysis that includes health impacts and incorporates domestic well users, a more detailed analysis of the impact and effectiveness of emergency notification notices and practices, an epidemiological study of the health effects of nitrate exposure in the San Joaquin Valley, and an analysis of the impact of source control efforts.

For the full report, go to: http://www.pacinst.org/reports/nitrate_contamination/nitrate_contamination.pdf