Environmental Science and Policy 85 (2018) 40–46

Contents lists available at ScienceDirect

Environmental Science and Policy

journal homepage: www.elsevier.com/locate/envsci

Comparative case study of legislative attempts to require private well testing in New Jersey and Maine

Sara V. Flanagan[a,*], Yan Zheng[a,b]

[a] Columbia University, Lamont-Doherty Earth Observatory, 61 Route 9W, 10964 Palisades, NY, United States
[b] School of Environmental Science and Engineering, Southern University of Science and Technology, 518055 Shenzhen, China

ARTICLE INFO

Keywords:
Private well testing
Legislation
Case study
Maine
New Jersey

ABSTRACT

At present one of the greatest barriers to reducing exposure to naturally occurring arsenic from unregulated private well water is a lack of well testing. The New Jersey Private Well Testing Act (PWTA) has since 2002 required testing during real estate transactions. Due to limitations in relying on individual well owners to take protective actions, such state-wide testing regulations have been shown to make a significant contribution towards exposure reduction. This study examines the New Jersey PWTA as a case of testing requirements successfully adopted into law, and failed attempts to pass equivalent requirements in Maine for comparison. Although New Jersey's long history of drinking water quality problems due to population density, an industrial past, and vulnerable aquifers was the root of the PWTA and earlier local testing ordinances, several high-profile events immediately prior focused public and legislator attention and mobilized environmental advocacy groups to gain political support statewide. Viewed through Kingdon's Multiple Streams framework, the PWTA was the result of problem, policy, and politics streams successfully aligned during a significant and unique political window of opportunity. In Maine, where naturally occurring arsenic, not industrial contamination, is the primary concern, private sector opposition and a conservative administration resistant to government involvement in "private" well water, all played a role in blocking legislative attempts to require testing. A modest education and outreach bill without testing mandates passed in 2017 after compromise among stakeholders. For policy to be an effective tool to achieve universal well water screening, a philosophical evolution on the role of government in private water may be necessary.

1. Introduction

Despite legislative efforts to ensure safe drinking water for the public under the federal Safe Drinking Water Act (SDWA), over 44 million Americans relying on water supplies which serve fewer than 25 people or 15 households are excluded from its protections while at home (Maupin et al., 2014). The majority (> 98%) of such domestic water supplies are from groundwater sources (Maupin et al., 2014), which are vulnerable to a range of natural and anthropogenic contaminants; however, without systematic monitoring the extent of contamination and true risk to public health is unknown. A USGS study of 1400 private wells across the country found at least 1 SDWA contaminant present at concentrations greater than a Maximum Contaminant Level (MCL) or health-based screening level (HBSL) in 23% of wells tested (DeSimone, 2009). Arsenic is the most toxic and widespread of common private well water contaminants (Zheng and Flanagan, 2017); predictive modeling estimates that approximately 2.1 million people are drinking from wells with naturally occurring arsenic above the federal standard of 10 μg/L (Ayotte et al., 2017), and millions more above the MCL Goal of zero μg/L.

While many state and local governments regulate the construction, siting, and use of private wells through permitting processes, they neither regulate nor monitor water quality. Although several require water samples to be collected at the time of well construction, primarily for bacteriological analysis, most do not (Zheng and Flanagan, 2017). The majority of private wells in this country have never faced a testing requirement. Residential well water is considered a private issue, with responsibility for safety falling on millions of individuals who must be aware of threats to their drinking water, able to arrange and afford regular water testing, and committed to continuous monitoring and maintenance. Research indicates that the reasons well owners do or do not take protective actions regarding their water quality are often complex (Flanagan et al., 2015a, 2015b, 2016a, 2016b; Hexemer et al., 2008; Jones et al., 2006), and as a result, a majority in many at risk areas have not tested their wells for important contaminants such as arsenic (Flanagan et al., 2015a; Shaw et al., 2005; Flanagan et al.,

* Corresponding author.
E-mail addresses: flanagan@ldeo.columbia.edu (S.V. Flanagan), yan.zheng@sustc.edu.cn, yzheng@ldeo.columbia.edu (Y. Zheng).

https://doi.org/10.1016/j.envsci.2018.03.022
Received 15 February 2018; Received in revised form 22 March 2018; Accepted 23 March 2018

Table 1
State legislative attempts to require well testing.

State	Bill	Year Introduced	Requirements[a]	Outcome
New Jersey	PWTA	1990, 1998, 2000	1, 2, 3	Enacted 2001
Maine	LD 1775	2007	1, 3	Shelved by legislature
Maine	LD 1162	2015	2	Amended – no mandates, bill vetoed
Maine	LD 454	2017	3	Amended – no mandates, bill enacted

[a] Testing required for 1) Real estate sale, 2) New wells drilled, 3) Rental properties.

2016c).

Given the limitations in motivating individual well owners to act on their own and the self-selective nature of voluntary testing which furthers socioeconomic disparities in exposure (Flanagan et al., 2016a), there is potential for policy to make a significant contribution towards universal screening of private well water quality (Zheng and Flanagan, 2017). The New Jersey Private Well Testing Act (PWTA) has since 2002 required testing for arsenic and other contaminants during real estate transactions to ensure that home buyers and renters are aware of their drinking water quality. Homeowners who faced PWTA requirements report arsenic problems at five times the rate of those who have not been required to test. An added bonus is that families renting and buying homes are also often younger and more likely to include pregnant women and children vulnerable to arsenic health effects (Flanagan et al., 2016c). Yet New Jersey's PWTA is the exception; very few states have adopted testing requirements and several attempting similar legislation, including Maine, have failed (Table S1). Identifying the factors that contribute to or impede the adoption of such private well regulations may help enable future policy changes.

Why do policymakers adopt some policies but not others? John Kingdon argued that there are three separate "streams" – problem, policy, and politics – which must come together during critical moments, or "windows of opportunity," for significant policy change to occur (Zahariadis, 2014). The problem stream consists of the various conditions that stakeholders want addressed through government action, which policymakers find out about through indicators, focusing events, and feedback. The policy stream includes all the ideas floating around competing to win acceptance in policy networks, only a few of which ever receive serious consideration based on technical feasibility, value acceptability, and resource adequacy. The politics stream consists of the public mood, interest group advocacy campaigns, and executive or legislative turnover. A "policy entrepreneur" possesses the right knowledge, resources, and connections to bring the streams together during the brief opportunity windows opened by events in the problem or political streams. Analyzing the policy success of testing mandates in New Jersey and their failure in Maine through this framework may provide important insights.

2. Methodology

A retrospective comparative case study approach was taken to examine state-level policy decisions on private well testing, in which cases from both extremes (positive and negative outcomes) were chosen. New Jersey's successful adoption of the PWTA represents the strongest state-level testing law for arsenic in the country and was therefore selected as the primary case. Maine was selected as the contrasting case because it is one of only two states which have introduced bills to require testing including arsenic at each of the three occasions required in New Jersey (see Supplementary for details on case selection and methodology). Data were collected from relevant publicly available documents and archives, as well as from in-depth interviews with government staff and policy advocates in each state. Documentary evidence included legislative bills, voting records, written testimonies, and meeting summaries; advocate and state websites, reports, and statements; local news articles and other mass media. Interviews were conducted with two non-governmental advocates and one state agency representative in New Jersey, and one non-governmental advocate and one state agency representative in Maine. Qualitative content analysis was used to examine the case study documents and interview transcripts (Kohlbacher, 2006). Analysis followed a consistent descriptive framework and each case is reported here considering Kingdon's multiple streams framework (Kingdon, 1984). Findings from the individual studies were then compared to identify cross-case themes and lessons.

3. Results

3.1. New Jersey and the Private Well Testing Act

New Jersey has the highest population density in the country (U.S. Census Bureau, 2015); a history of heavy industry and decades of dumping waste has left a legacy of environmental pollution. Although one of the smallest states, New Jersey is home to 114 active federal Superfund sites, the greatest number in the country (U.S. Environmental Protection Agency, 2017). Despite the high population density, over 1 million residents are believed to rely on private well water for drinking (New Jersey Department of Health, 2017). Common industrial solvents, gasoline additives, and other volatile organic compounds (VOCs) occasionally reach ground and surface water supplies after leaking from underground storage tanks, septic systems, gas stations, and landfills. Reports of contamination have frequently drawn public attention to the issue. Although the PWTA was finally enacted in 2001, interest in testing legislation was not new (Table 1). Review of print media archives reveals that attempts to require monitoring of private well water date back at least 2 decades before, in step with growing awareness of the chemical contamination of groundwater.

The first real advances to require water testing were at the local level; Middlesex Borough's 1982 ordinance required that all private wells be tested for bacteria and 34 VOCs before any home sale or change of occupancy. The Ocean County Board of Health acted next with an ordinance requiring extensive testing and certification of private well water quality in new homes and during real estate transactions beginning in 1987. An early Democrat-sponsored PWTA bill to expand Ocean County's ordinance was passed by the State Assembly in 1990, but died in the Senate and was not reintroduced after a 1991 "Republican Landslide" tax revolt created veto-proof majorities in both Houses. Environmental protection programs subsequently shrank in the mid-1990s and it was only several years later after new reports of widespread contamination that private water issues began receiving media attention again.

Prompted by reports of widespread aquifer contamination and the pressure of his constituents and a vocal environmental commission in Monroe Township, Assemblyman George Geist (R-Gloucester), together with Assembly Speaker Jack Collins (R-Salem) and the support of the New Jersey Environmental Federation (NJEF), an advocacy group, reintroduced the PWTA legislation in November 1998, to expand the Ocean County model statewide. Although the bill was passed overwhelmingly by the Assembly in May 1999, no action was taken in the Senate. Passed again by the Assembly in May 2000, the bill was