

Information Disclosure and Drinking Water Quality

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In the United States, nearly 270 million people (about 95 percent of the population) obtain piped water from regulated community drinking water systems. The quality of drinking water from these community systems, which may serve anywhere from 25 to several million people, is regulated by the federal government under the Safe Drinking Water Act (SDWA). The SDWA regulates chemical, microbiological, radiological, and physical drinking water contaminants by enforcing 90 different maximum contaminant levels (MCLs), which limit the amount of contaminants that can legally be present in drinking water. For some pollutants, the SDWA also establishes treatment protocols that must be followed to reduce contamination.

U.S. taxpayers heavily subsidize compliance with the SDWA. Between 1995 and 2003, Congress appropriated \$1 billion each year for grants and below-market loans to states (which then distributed funds to water supply systems) for treatment and distribution infrastructure improvements. Nonetheless, U.S. community water systems incur tens of thousands of SDWA violations each year. For example, between 1997 and 2003, U.S. water suppliers incurred about 9,900 violations per year of the total coliform rule—the main rule governing the presence of bacteria in drinking water and the most frequently violated of the MCLs.

In 1996, the SDWA was amended, mandating, among other things, that community drinking water systems disclose information about such violations to their consumers every year, in a standard format called a consumer confidence report (CCR). This report

must provide information on the source of drinking water, any detected contaminants (even if levels are within legal limits), and any violations of drinking water standards. The CCRs were first issued in 1999, reporting violations from the 1998 calendar year. While all community water systems must compile a CCR, the method of distribution to consumers varies by system size. Suppliers serving 10,000 or more people must mail their CCRs directly to households. Those serving more than 100,000 people must mail their CCRs and make them available online. In contrast, suppliers serving fewer than 10,000 households must post hard copies of the CCRs in a public place and make them available on request, but they are not required to mail them.

The CCR rule was one of many environmental "right-to-know" provisions enacted during the 1980s and 1990s. The primary public policy goal of these right-to-know rules is to provide the public with important information about environmental quality and health. But information disclosure requirements can be seen as de facto direct environmental regulatory instruments—that is, the requirement to disclose information about environmental performance may induce improvements in environmental performance.

Our recent research suggests that information disclosure may actually accomplish this goal. In analyzing whether community water suppliers in Massachusetts incurred fewer water quality violations when they were required to issue CCRs to their customers, we examined trends in violations separately for large suppliers that are required to mail their reports and

for smaller suppliers that must only compile the data and make it available to households upon request. There is strong evidence that those water suppliers required to mail CCRs directly to customers had lower violations after the CCR rule took effect. The magnitude of this effect is quite significant. On average in Massachusetts, large water suppliers violated the SDWA about once every two years before 1998. Mailing CCRs reduced total violations for this group by between 30 and 44 percent, and reduced more



serious health violations by 40 to 57 percent.

Proponents of "information as regulation" argue that there are at least three mechanisms through which information disclosure might affect environmental quality. The first is the market mechanism: if information about firms' environmental performance is known by consumers, investors, or employees who value environmental performance, firms can face market pressure to improve. The second is the political mechanism: people may use the political system to lobby for more stringent regulation or to protest particular production practices. Finally, information disclosure programs can affect the internal decisionmaking of an organization. The act of measuring and reporting data on environmental performance may itself generate internal changes at firms that lead to improvements in environmental performance.

While our research does not directly test any of those three mechanisms, our results

are consistent with the hypothesis that the political mechanism is at work. Water suppliers required to directly mail CCRs may experience, or expect to experience, a political response and may respond by lowering violations. We would not expect the market mechanism to work in this case. There is essentially no market through which consumers can respond to information, aside from either moving to a different town (a high-cost response) or purchasing bottled drinking water, a substitution that would have only a minimal impact on demand, because drinking water constitutes a tiny fraction of household piped water consumption in the United States. The internal mechanism is unlikely, as well; water suppliers are already required to monitor and report any violations to the state, so compiling these data for their customers provides no new information to the supplier.

The evidence suggests that information disclosure requirements associated with the 1996 amendments to the SDWA resulted in

substantial decreases in drinking water violations among regulated water suppliers. In this context, mandatory information disclosure complements, but does not supplant, existing pollution control regulations. However, recent research in developing countries suggests that consumers also respond to information disclosure, potentially improving health outcomes by substituting safer water supplies. These behavioral changes occur even in the absence of mandatory water quality standards. Information disclosure can be a useful complement to more traditional environmental regulatory instruments in some settings, but further research is necessary to determine whether it may also serve as a substitute for these regulations. ■

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