

Closing the Water Quality Gap

Using policy to improve drinking water in
federally-unregulated drinking water systems



Introduction

The federal Safe Drinking Water Act¹ (SDWA) regulates the nation's public drinking water supply, safeguarding drinking water for the majority of US residents.² However, the SDWA does not apply to all drinking water sources. Privately owned wells serve approximately 12% of the US population, or 34 million residents. These smaller water systems do not meet the federal definition of a public water system and therefore are not regulated by federal law.³

Many states and localities educate owners and users of private water systems about potential risks of these federally-unregulated water systems and implement programs and policies to fill this gap in regulation.

The purpose of this fact sheet is to highlight how policy in particular can be used at the local and state levels to ensure access to safe drinking water for people who use private wells. This fact sheet defines policy; discusses the role that health departments can play in policy change; and provides examples of state and local policies. It also focuses specifically on policy changes that apply to federally-unregulated wells, which account for the majority of federally-unregulated water systems.

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This publication was supported by the Grant or Cooperative Agreement Number 5U38OT000141-03 awarded to ChangeLab Solutions and funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

Overview of Federal Safe Drinking Water Law

The federal Safe Drinking Water Act (SDWA), enacted by Congress in 1974 and amended in 1986 and 1996, regulates the nation's drinking water supply.⁴ Drinking water safety in the US has significantly improved, as a result of SDWA's requirements for routine monitoring, testing, and maintenance of public drinking water systems.⁵ Drinking water regulations have broad impacts because they affect most of the population every single day. In fact, two thirds of the water consumed at home and one half of the water consumed outside of the home is tap water.⁶

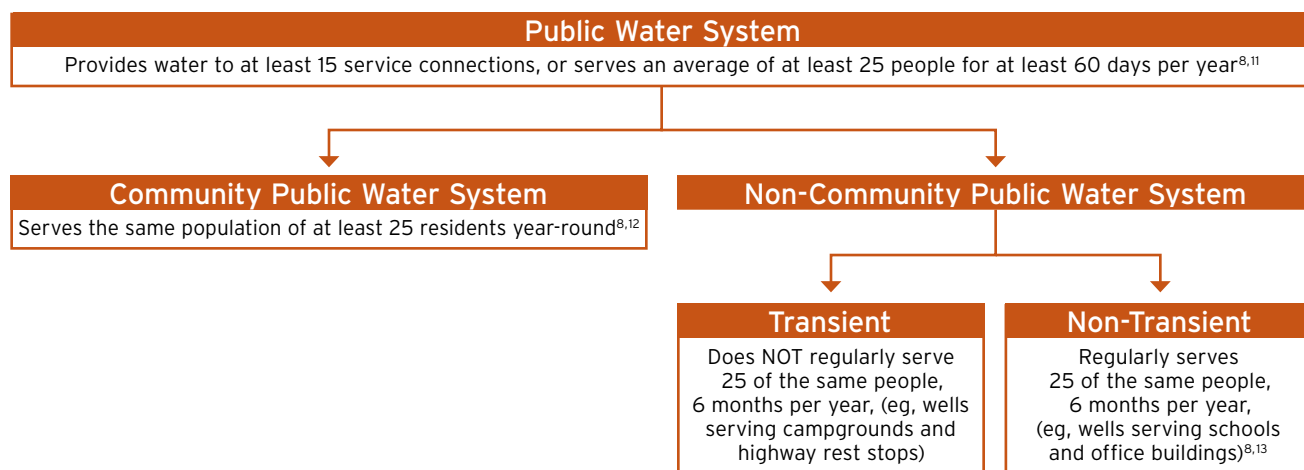
The SDWA authorizes the US Environmental Protection Agency (EPA), state environmental agencies, and public water systems to work together to ensure that the country's 151,000 public water systems meet these standards.^{7,8} The EPA sets national health-based standards to protect against nearly 100 contaminants that may be found in drinking water.⁹ States, territories, and tribal nations have the primary authority for enforcement, provided that they have adopted standards at least as stringent as the EPA's and are able to enforce the standards.^{4,10} States ensure public drinking water systems test for contaminants, review plans for system improvements, conduct on-site inspections, provide training and technical assistance, and take action against water systems that are not meeting standards.⁷



**One study found
1 in 5 private wells
are contaminated**

Federal Definition of a Public Water System

The SDWA only regulates water systems that meet the federal definition of a public water system.



The SDWA does not regulate systems that serve fewer than 25 individuals or have fewer than 15 year-round residential connections.⁷ Private wells account for the vast majority of federally-unregulated water systems.³ Other systems – such as springs, cisterns, and hauled water – are commonly used in some parts of the country.¹⁵ Note, however, that a private well might meet the definition of a public, non-community water system (non-transient or transient) as defined above, in which case it would be subject to the SDWA.¹⁶

Several studies highlight the health risks that unregulated drinking water systems pose. A study published in 2009 revealed that more than 1 in 5 sampled private wells were contaminated at unsafe levels.¹⁷ During 1971 to 2006, the percentage of outbreaks associated with private water sources increased, while the percentage of outbreaks associated with public water sources decreased.¹⁸



COLLABORATION FOR SAFE DRINKING WATER

Access to safe drinking water is not just an environmental health issue. It is also critical to chronic disease prevention. Sugar-sweetened beverages account for 47% of added sugars consumed by Americans, and nutrition experts recommend substituting water for sugary beverages to reduce the risk of obesity, diabetes, and heart disease.* Public health practitioners who focus on chronic disease prevention can be strong allies to environmental health practitioners, and vice versa. Consider reaching out to these colleagues to learn more about their interest in and approach to safe drinking water, and find opportunities to support one another's efforts.

* US Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. Washington D.C.: Office of Disease Prevention and Health Promotion; 2015.

What Is Policy?

Policy can be an effective tool for improving the safety of federally-unregulated water sources. When people hear the word “policy,” they often think of legislation. Ordinances passed by a city council and laws enacted by a state legislature are clear examples of policy. These aren’t the only types of policy, though. For example, private contracts, organizational agreements, and agency regulations are all types of policy.

Policy can be used to change the physical environment, community norms, and the way organizations and systems operate. It has the potential to affect people’s decisions and behaviors across a large population. Although policy is just one way to improve health outcomes, it can often achieve broad results more efficiently, and at a lower cost to government, than other types of interventions. Policies that have accountability and enforcement mechanisms built in can be more effective than programs or practices.

Policies come in many shapes and sizes. In its strongest form, a policy is:

- a written statement that reflects decisions of a public body or private organization;
- binding and enforceable; and
- broadly applicable to a geographic area, type of institution, physical space, and/or group of people.

In addition, well-designed policies are evidence-based, feasible, and created in partnership with people, groups, and organizations that may be affected.

Types of policies

- Legislation
- Ordinances
- Laws
- Contracts
- Organizational agreements
- Agency regulations

For the past several decades, environmental health have protected the public's health with policy. In fact, the SDWA is a prime example of federal policy that has had significant public health impact. Many more examples exist:

- Federal and state policies¹⁹ banning the use of lead in gasoline, paint, drinking water conduits, food and beverage containers, and other products dramatically reduced blood lead levels of children in the US, particularly low income children of color.²⁰
- Food safety policies reduce the number of Americans who are hospitalized or die from foodborne illnesses each year.²¹ For example, regulations adopted by the federal Food and Drug Administration and US Department of Agriculture between 1997 and 2012 have reduced the overall incidence of infection by six common foodborne pathogens by 22%.²¹
- Clean air policies, such as the federal 1990 Clean Air Act Amendments that control emissions to reduce air pollution, have been shown to produce significant public health gains.²² An EPA study showed that the Clean Air Act prevents adult and infant mortality, chronic bronchitis, heart disease, asthma exacerbation, emergency room visits, and lost work and school days.²²



What's the difference between policies, programs, practices, and education campaigns?

Policy change can sometimes be confused with programs, practices, and education campaigns, which many states and localities implement as part of safe drinking water initiatives. Examples of the distinction between policy and non-policy interventions are outlined in the chart below.

NOT POLICY	POLICY
PROGRAM: Local health department hosts a community event and invites residents to bring samples of their well water for free testing.	A city council passes a local ordinance requiring all private well owners to test their well water once per year.
PRACTICE: A state health department establishes a partnership with a well testing laboratory. The laboratory sends well testing results to the health department so it can monitor and track trends.	A state legislature passes legislation requiring testing of private wells upon property transfer and requires test results to be reported to a state agency.
EDUCATION: A state health department develops and disseminates educational materials about well construction best practices to certified well drillers.	A state legislature passes legislation requiring well drillers to be certified by the state and to participate in regular training courses in order to maintain certification.

In each of the above examples, policy has some advantages over non-policy interventions. In the first example, the water testing event is voluntary and would likely have a limited reach. The policy, on the other hand, would apply to all residents in the city. In the second example, the absence of a policy means that laboratory or agency leadership could decide to end the partnership with no accountability. Having a policy in place would institutionalize this practice and ensure it is maintained even if staff or leadership changes.

Non-policy interventions can support or reinforce an existing policy.

For example, suppose a city passed an ordinance requiring all private well owners to test their water annually. The local health department might still host a community water testing event to increase residents' knowledge of the local ordinance and help them understand and comply with the policy.

Non-policy strategies can lay the groundwork for passing a new policy.

Suppose a city did not have an ordinance requiring private well owners to test their water annually. By hosting a community water testing event, the local health department could educate community members about potential risks posed by unregulated drinking water systems. As a result, residents might be more likely to understand and support the need for a new policy. Programs and practices can play a key role in building momentum for eventual policy change. They can serve as a

testing ground for new ideas, yield important data, shed light on what works, bring new partners into the fold, and raise awareness about an issue.

Policy change often does not happen overnight. It requires long-term commitment and planning. Health department staff can think about how current programs and practices could be part of a larger strategy leading to policy change.

What's the role of health departments in working on policy?

The **10 Essential Environmental Public Health Services** is a framework created by CDC to identify a process to protect and improve environmental public health.²³ Policy development and enforcement are key services and competencies of health departments. Environmental health practitioners already conduct many of the activities presented in this framework – from monitoring health data to developing strong partnerships with diverse stakeholders. As the graphic indicates, these activities can lead into and support policy development and enforcement.



Here are some examples of how health departments can connect their existing public health services to policy change:

- Collect and disseminate data on groundwater contaminants that communicates potential risks to private well users and demonstrates the need for policy interventions

- Provide expertise on safe drinking water to policymakers
- Build partnerships with key stakeholders, like well drillers and landlords, and discuss ways to ensure the safety of drinking water for all residents
- Educate the public about the risks of private well water, laying the foundation for public support for a policy change
- Provide free water testing for low-income residents to support implementation of well testing requirements

Health department staff should always follow their department's policies and procedures on communicating with policymakers.

STEPS FOR WORKING ON POLICY

To support state and local program improvement and professional development aligned with the Essential Environmental Health Service of policy development, the CDC, working with numerous partners, has developed a training course on policy development. The course covers the following process that health departments can use when developing policy to protect the public's health:

- 1 Identify potential new policy or policy change based on available data including gaps in existing policies, problems recognized in the field, health inequities, and health risks.
- 2 Clearly articulate to management the problems identified and how policy change will address those problems.
- 3 Advocate to managers within the agency chain-of-command for the proposed policy change. This should be supported by data showing how the new policy or policy change would reduce health risks and provide health benefits to the public.
- 4 Meet with groups, professions, organizations, and individuals who may be impacted by the new policy or policy change.
- 5 Work to educate the impacted community as to why the policy is important and necessary.
- 6 Seek input and if possible, support from stakeholders who may be impacted by the policy.
- 7 Be the leader or part of the team that drafts the new policy or policy change.
- 8 Serve as a resource for agency leadership, the board of health, and policy-makers to answer questions and provide necessary information as requested.

This information was developed by Centers for Disease Control and Prevention (CDC) and National Network of Public Health Institutes (NNPHI). It is part of Safe Water Program Improvement, an online learning curriculum for environmental health professionals that will be available for free on the Tulane Learning Management System.

How Can Policy Be Used to Improve the Quality of Private Well Water?

A common starting point for policy change initiatives is to look for examples of how other states and localities have used policy to solve similar problems. This section highlights a range of examples of state and local policy approaches to regulate drinking water and make it safe for consumption.

Adopt water quality and testing standards for water sources not covered by SDWA.

States and localities can adopt water quality and testing standards that apply more broadly than the federal standards and can choose to expand, or otherwise amend, their definition of a public water system to subject smaller systems to regulation.⁷

EXAMPLE: Whereas the SDWA defines public water systems as those with 15 or more service connections,²⁴ **Washington** passed a state law defining public water systems as “any water system that serves more than one household, or serves a commercial establishment.”²⁵ It further subdivides public water systems into two categories: Group A and Group B. Like the SDWA definition, Group A public water systems are defined as those with 15 or more service connections.²⁵ Group B public water systems are generally smaller water systems that provide drinking water to 2 to 14 service connections.²⁵ Although Group B water systems are not subject to federal law, they must nonetheless meet state and local requirements for water quality and operations.²⁶

EXAMPLE: Enforcement is an important way to ensure that a policy has its intended impact. In **Pierce County, Washington**, the local health department uses a variety of education and outreach tools that enhance enforcement of Washington state testing requirements for private wells that serve 2 to 14 service connections. Well owners sometimes struggle to comply with state regulations because of time constraints and the inconvenience of working with water testing laboratories. Staff explain that testing drinking water ensures it is safe for human consumption and acts as an insurance mechanism to keep well users healthy.⁴⁵ The local health department also regularly sends

well owners postcards to remind them of testing requirements. Finally, officials stringently enforce local building and land use regulations, which state, “[a]pplications for building permit or land use that propose a new well, or [an application] that includes the use of an existing well, as its source of potable water may not be approved if the well or well site is subject to known or potential sources of contaminants.”²⁷

Ensure new wells are constructed properly.

A local well construction ordinance can establish uniform standards and requirements that all new wells must meet. An ordinance may include provisions related to: standards of construction; certification requirements for well drillers; permitting requirements for new wells; and requirements for well completion, repair, and abandonment. Importantly, ordinances should include an enforcement mechanism, giving a local agency the authority to take action if a well fails to meet the standards. Ordinances can be updated as needed to reflect the best available evidence.

EXAMPLE: A local ordinance in **Cerro Gordo County, Iowa**, establishes a comprehensive regulatory scheme for private wells.²⁸ The ordinance includes uniform minimum standards for well siting and construction, along with information about permitting, contractor registration, and enforcement and penalties.

Establish a consistent well identification system to create a database of private wells.

Having a database of private wells in the area is an important first step for developing a management program for private wells. Creating the database entails having a well identification system and mechanisms for gathering and updating well information.

EXAMPLE: In **New Mexico**, state law authorizes the office of the state engineer to require well identification tags on private wells and to have the well owner maintain the tag.²⁹

EXAMPLE: At the local level, municipalities can build and maintain a database of wells by requiring well drillers to obtain a permit before doing work on a new or existing well. In **Shelby County, Tennessee**, well drillers must apply for a permit from the Shelby County Health Department before installing, modifying, repairing, or abandoning a well.³⁰

UNDERSTANDING PREEMPTION

Before proposing new local policies, it is important to determine whether the local government has the authority to do so. In some cases, state law will override – or preempt – a locality’s authority to enact certain policies. Preemption is a legal doctrine that provides that a higher level of government may limit, or even eliminate, the power of a lower level of government to regulate a certain issue.

Under the US Constitution’s “Supremacy Clause,” federal law governs over state or local law. If a state or local law conflicts with a federal law, the federal law trumps the lower-level law. Similarly, if a city council, local board of health, or other local government entity passes a law that conflicts with a state law, the state law generally prevails.

In the context of drinking water, the federal Safe Drinking Water Act does not preempt states from setting standards with respect to the regulation of private wells. The language allows states, territories, and tribal nations to regulate private wells, provided they adopt standards at least as stringent as the EPA’s and are able to enforce the standards.

State law may, however, preempt local authority to pass ordinances related to private wells.

Localities should consult with a government attorney to determine the relevant sources of authority governing private well testing and to understand the preemption landscape in their jurisdictions.

For more information about preemption, check out Understanding Preemption, a fact sheet series on preemption and policy for public health practitioners. Available at: www.changelabsolutions.org/publications/understanding-preemption

While the agency that permits a well to be drilled will have some information about the well (e.g., its location and possibly well construction data), several entities may have additional information about wells, such as testing history data. These data are often not compiled in a centralized database.

EXAMPLE: The **Florida Unique Well Identification Program (FLUWID)** was established to simplify the identification and exchange of well information between state agencies and other stakeholders.³¹ Through this program, wells are assigned a unique alphanumeric code, which serves as the well's primary identification number. Interested users can use the code to query multiple agencies' water well databases for information about construction permits, well completion reports, and water quality sampling testing results.³¹ While FLUWID is a voluntary program and not a legal mandate, this type of program could be codified in state law to facilitate the collection and sharing of relevant information.

Require regular testing of well water samples.

The public health benefits of routine monitoring and testing are significant. Well owners receive vital information about the quality of their drinking water supply, and they learn about appropriate methods to treat their water when necessary. In addition, state or local governments receive important data on water quality in wells throughout the community. These data provide valuable insights into groundwater quality, regional trends, and potentially vulnerable areas. State and local policies can require testing of newly constructed wells, as well as testing existing wells upon property sales and home rentals.

EXAMPLE: Oregon state law requires testing of domestic wells upon property transfer and, equally important, it requires test results to be reported to both the Oregon Health Authority (OHA) and the buyer.³² Among localities in Oregon that require testing, many only require disinfection (such as shock chlorination) when a sample returns positive for coliform bacteria.

Require well drillers to complete continuing education courses.

As technology and construction methods improve, it is critical for well drillers to stay up-to-date on the latest well construction best practices. One way to ensure this is to require drillers to receive ongoing training as a condition of maintaining their well driller license.

EXAMPLE: In **New Mexico**, licensed well drillers are required to complete a minimum of 8 continuing education credit hours during each 2-year licensing period.³³ The courses must be pre-approved by the Office of the State Engineer and cover topics including proper well drilling techniques, basic groundwater geology, and using global positioning system technology to accurately describe well locations.

EXAMPLE: In **North Carolina**, every certified well contractor, which includes well drillers, must obtain 2 continuing education units every year for the first 3 years of the contractor's certification.³⁴

EXAMPLE: **Wisconsin** state law requires licensed well drillers to earn 6 continuing education credits each year in order to renew their license.³⁵ Wisconsin's Department of Natural Resources evaluates courses and approves the number of credits for each course.

Use data to tailor policies to local circumstances.

Data collected by health departments can provide valuable insights into groundwater quality, regional trends, and potentially vulnerable areas. Different localities will be subject to different environmental influences (such as natural disasters or proximity to areas where sewage discharges, mining, or agricultural uses occur). There is no one-size-fits-all policy solution that addresses each unique locality's circumstances.



EXAMPLE: A statewide survey in **Iowa**, conducted between 2006 and 2008, showed 48% of wells in the state had arsenic present in the water, and 8% had levels exceeding the Environmental Protection Agency's drinking water standard for public water supplies.³⁶ Concerned by these findings, the **Cerro Gordo County** Department of Public Health formed an interdisciplinary team to learn more about the presence of arsenic in water wells throughout the county. The study found arsenic throughout the county, primarily in groundwater from wells drawing from a specific aquifer.³⁷ To address the issue, the Cerro Gordo County Board of Supervisors adopted a policy that requires all new wells to be tested for arsenic, and that requires all new wells to be drilled into a deeper, distinct aquifer.²⁸

EXAMPLE: The **Nebraska** Grout Task Force (which included representatives from the Nebraska Department of Health and Human Services, the Nebraska Well Drillers Association, the University of Nebraska-Lincoln Conservation and Survey Division, the Nebraska Department of Environmental Quality, and industry grout suppliers) conducted a multi-year Nebraska Grout Study.³⁸ They assessed the performance of grout approved by the State of Nebraska for well construction over a 2-year period, under varying conditions. The results were surprising: bentonite slurry grout did not perform adequately as a sealing material in the unsaturated zone.³⁹ These findings brought attention to grouting vulnerabilities and provided insights into which types of grout are suitable for various conditions.⁴⁰ Although no policy changes have been implemented in Nebraska yet, the findings from the study directly informed policy change in **California**, which issued a notice to exclude the use of bentonite slurries as a sealing material for the construction and the destruction of wells.⁴¹

Designate funding for private well testing efforts.

A common barrier to well testing is cost. Well owners and users may be unwilling to pay for the initial testing, and even more reluctant to pay for subsequent testing or measures to remove contaminants from the water, if contaminants are discovered. Health departments can subsidize the cost of well testing to ensure that cost does not prevent well owners and users from learning about the safety of their drinking water.

EXAMPLE: The **Iowa** arsenic survey highlighted above led to policy change at the state level. As a result of findings indicating the presence of arsenic in the groundwater from certain wells, the Iowa Department of Health amended regulations governing its Grants to Counties Program.^{42,43} This change allows counties to use state grant funds to test for arsenic in private wells at free or reduced cost to well owners.^{43,44}

Next Steps for Policy Change

State and local health departments can use policy to improve the quality of federally-unregulated drinking water that comes from private wells. How can health departments further explore the ideas presented in this fact sheet?

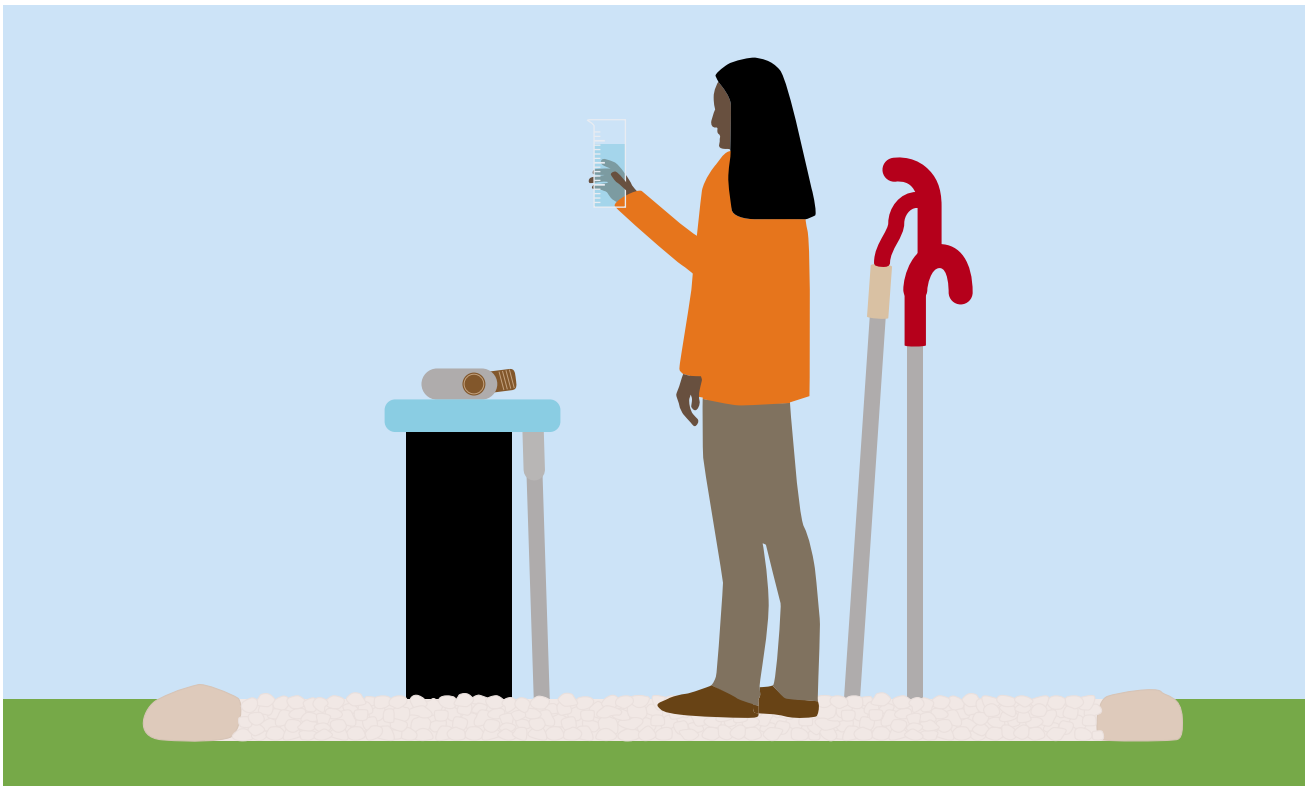
LOCALITIES can:

- Identify data sources about water quality and testing, determine gaps in knowledge about private water sources, and consider possible approaches to filling in those gaps by setting up data collection systems.
- Analyze available data to determine possible water quality concerns in the jurisdiction, with a particular focus on inequities in access to safe drinking water.
- Discuss water quality and testing needs and concerns with community stakeholders, including residents (particularly those experiencing health inequities), well drillers, leaders of institutions (eg, hospitals, schools, universities, businesses).
- Conduct a policy scan to identify applicable federal, state, and local policies that address water quality.
- Identify possible interventions, including policies, that may address problems identified through data analysis and community engagement.

STATES can:

- Identify state-wide data sources about water quality and testing, determine gaps in knowledge about private wells, and consider possible approaches to filling those gaps by setting up data collection systems.
- Analyze available data to determine possible state-wide water quality concerns, with a particular focus on inequities in access to safe drinking water.

- Share data and analysis results with localities. Support localities in collecting and analyzing their own data.
- Provide a federal and state policy scan to localities to help them understand existing water quality policies. Share information about preemption, if applicable.
- Share best practices from localities within the state or outside of the state to provide a range of intervention options.
- Serve as a resource to state decision makers about water quality in the state, gaps in knowledge, and interventions that are needed to ensure equitable access to safe drinking water.



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