

WATER WORKS



**A Guide to Improving Water Access
and Consumption in Schools to
Improve Health and Support Learning**

Authors

Anna Grummon, BA, Karla Hampton, JD, Ariana Oliva, BA, Claire Brindis, DrPH, and Anisha Patel, MD, MSPH, MSHS.

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Note

While we have attempted to provide the most up-to-date information and website URLs at the time of publication, some information may have changed.

ACTION 2 - SERVE SAFE AND APPEALING WATER

Once you have gained the support of key stakeholders and formed a “water committee”, the next step in creating a comprehensive school water program is to ensure students have access to safe and appealing drinking water. This might include improving existing water sources (e.g., fixing broken fountains, retrofitting existing fountains, or making sure existing water sources stay clean). Or, you may elect to install new water delivery sources, either to replace older units or to feature in addition to existing sources. Because many students, families, and school staff may not trust tap water supplies^{1,2}, it is important to also test drinking water, treat it when necessary, and publicize these efforts to the school community. In this section, we present:

- guidance on how to decide where to serve water
- steps to test school drinking water for contaminants and remediate water quality problems
- different types of water delivery options and vessels for serving water

DECIDE WHERE TO SERVE WATER

Federal law requires that schools offer students free water in places where meals are served.³ Schools might meet this requirement by serving water from any one of a number of different water delivery sources, many of which are discussed in greater detail below. If your school does not yet comply with this requirement, priority should be given to providing free water in the cafeteria or food service areas. In addition to offering water in the cafeteria, you may also want to offer water in areas where students say they would like improved access.

Areas To Consider Offering Water

- Cafeteria or food service areas
- Indoor gymnasium
- Outdoor physical activity areas (blacktop, fields)
- Common areas and hallways
- Classrooms, including temporary and portable structures



(1) Patel, A.I., Shapiro, D.J., Wang, C., & Cabana, M.D. Sociodemographic characteristics and beverage intake of children who drink tap water. *Am J Prev Med*. 2013;45(1): 75-82.

(2) Sebastian RS, Wilkinson Enns C, Goldman JD. *Drinking Water Intake in the U.S.: What We Eat In America, NHANES 2005-2008*. Food Surveys Research Group Dietary Data Brief No. 7. September 2011. <http://ars.usda.gov/Services/docs.htm?docid=19476>. Accessed February 24, 2014.

(3) Healthy, Hunger-Free Kids Act of 2010, Pub. L. No. 111-296, 124 Stat 3183 (2010). http://www.fns.usda.gov/cnd/Governance/Legislation/CNR_2010.htm.

Conduct a Needs Assessment and Talk to Key Stakeholders

Needs assessment is a process for determining gaps between current and desired conditions. You can conduct a needs assessment by taking an inventory of the existing water sources at the school, including assessing how appealing these sources are (e.g., whether the water source kept clean, whether the water clear and cold). Additionally, surveys and focus groups can be used to solicit input from students and staff regarding their attitudes toward current drinking water sources, preferences for where new water sources could be added, and what type of water sources should be installed. If your school already conducts surveys or assessments with students or staff, you might be able to add some questions about water to these surveys. Below are some key questions to consider when choosing locations for new water sources in schools.

Key Questions to Consider When Choosing Locations for New Water Sources

- How many new water sources can be added (what are the budgetary constraints)?
- Is the school in compliance with federal law that free water be available in areas where meals are served or eaten? (If not, complying with the law should be prioritized).
- What areas of the school, if any, lack appealing water sources?
- What areas of the school have the highest student traffic during the day?
- Where are existing tap water lines?
- Where do students and staff want new water sources?

Resource Spotlight

The following resources will help you conduct a needs assessment to determine where to install new water sources. (Refer to the **Resources** supplemental material for a detailed list of resources, including weblinks).

- **Harvard School of Public Health: *Water Audit Tool***
- **University of Washington: *Water Inventory***



Improve or Retrofit Existing Water Sources

This implementation guide provides detailed information on choosing a *new* water source to install in schools. However, some schools may choose to retrofit or repair existing fountains instead of purchasing new water sources.¹

Improve Existing Water Sources

The appeal of existing water sources often can be greatly improved with regular cleaning and maintenance. Work with your school's facilities and/or custodial staff to develop a cleaning and maintenance schedule for the school's water sources. You can also increase the appeal of existing water sources by posting artwork, signs, or posters on or near the water delivery source.



Cleaning your school's water fountains can improve their appeal



Louisville Water Company, the municipal water supplier in Louisville, KY, posted their branded "pure tap" signs above fountains at local schools to promote water consumption.
Source: <http://www.louisvillepuretap.com/>

Retrofit Existing Water Sources

If your school has traditional drinking water fountains, these units can often be retro-fitted to increase their appeal and/or accessibility. For example, schools can retrofit existing fountains to add water bottle filling stations. More information on retrofitting can be found in the supplemental material *Traditional Fountains, Fountains with Bottle Fillers and Stand Alone Bottle Fillers*.



Bellevue Union School District in Santa Rosa, CA, retrofitted their fountains to add a bottle filler next to the traditional drinking fountain. The District also installed wall-mounted cup dispensers to provide cups to students to use if they did not bring a reusable water bottle.²

(1) Harvard Prevention Research Center (Forthcoming). Keep It Flowing: A Practical Guide to School Drinking Fountain Planning, Maintenance, and Repair.
(2) Case Studies. Water in Schools website. http://waterinschools.org/case_studies/. Accessed February 24, 2014.

TEST WATER QUALITY AND REMEDIATE WATER QUALITY PROBLEMS

Once you have decided where to install new water delivery sources, it is important to ensure the water in these locations is free from contaminants and safe to drink. The procedures for testing drinking water quality at schools will vary based on several factors, including:

- the source of the school's tap water (i.e., a public water system vs. own water supply)
- the geographical location of the school
- the age of the school (e.g., older schools are more likely to have plumbing containing lead).

Contact the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline¹ or your local Drinking Water Program District Office² for more information regarding the types of water quality testing your school should conduct.

Determine the Source of Your School's Drinking Water

The procedures your school should follow to ensure the drinking water is safe differ depending on the source of the school's water. Most schools get water from either a municipal water system (i.e., a water utility or water supplier such as the San Francisco Water Department), or from a private well. To find out where your school gets its water, contact your school's principal or facilities staff. This guide focuses on schools that receive water from a municipal water system.³

Supplemental Material

Once you determine the source of your school's water, the supplemental material *Ensure the Quality of the Drinking Water in Schools: Initial Steps* will guide you through the first steps toward ensuring the water at your school is safe to drink.

Determine What Contaminants to Examine

Work with your Drinking Water Program District Office to determine what contaminants your school should examine.

Resource Spotlight

The Environmental Protection Agency (EPA) guide *Drinking Water Best Management Practices for Schools and Child Care Facilities Served by Municipal Water Systems* provides detailed information on best practices for ensuring that your school provides high-quality drinking water, including information that will help you determine what contaminants you should examine. (Refer to the *Resources* supplementary material for a detailed list of resources, including weblinks).

Test for Lead

While the specific contaminants your school needs to examine will vary depending on characteristics of your school site, the EPA recommends all schools test drinking water outlets for lead contamination. It is important to ensure that the water at school is free of lead because exposure to lead can cause lowered IQ, learning disabilities, attention and behavioral problems, impaired growth, and hearing loss. Children are most susceptible to the effects of lead because their bodies and brains are still developing. Even if the drinking water your school receives from your water supplier or well meets federal and state standards for lead, your school's water may still have elevated lead levels. Lead may leach into the water supply from plumbing materials such as fixture or solder, particularly in schools built before 1986, when Congress passed the Safe Drinking Water Act. You should test for lead in all water sources used for cooking or drinking. You can use the supplemental material *Test For and Remediate Lead in School Drinking Water* to learn the steps required to ensure the drinking water at your school is free of lead contamination.

(1) Call toll free at 1-800-426-4791 to speak with an Information Specialist.

(2) State of California Department of Public Health Drinking Water Program District Offices. <http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf>. Updated February 11, 2014. Accessed February 24, 2014.

(3) If your school receives drinking water from its own water source (e.g., from a private well), see also: Environmental Protection Agency. *Drinking Water Best Management Practices for Schools and Childcare Facilities Served by Their Own Drinking Water Source*. <http://water.epa.gov/infrastructure/drinkingwater/schools/upload/epa816b13001.pdf>. Published April, 2013. Accessed February 24, 2014.

Determine Which Water Sources You Will Examine

Once you have identified what contaminants you need to test for, you will need to determine which water sources need to be examined. Although ideally schools should test all water outlets used for cooking or drinking, this may not be feasible at all schools due to cost concerns. At a minimum, it is important that you test the water supplying any new drinking water sources your school plans to add. It is best to test these outlets before you install the new drinking water source(s) so that you can determine if the new water source needs a filtration or treatment device. Additionally, once you have tested and remediated the water sources at your school, you can promote these sources as safe to students and school staff.

EPA-Recommended Priority Sample Sites:

- drinking fountains
- kitchen sinks
- classroom combination sinks and drinking fountains
- home economics room sinks
- teachers' lounge sinks
- nurse's office sinks
- sinks in special education classrooms
- any other sink used for consumption (e.g., sinks near a coffeemaker or where cups are provided)

Remember to also examine any outlets that will provide water to new water sources your school plans to add.

Resource Spotlight

The Environmental Protection Agency manual *3Ts for Reducing Lead in Drinking Water in Schools* provides detailed information on testing for and remediating lead in school drinking water. Refer to the **Resources** supplementary material for a detailed list of resources, including weblinks.



Select a Laboratory

All testing should be completed by an EPA-certified laboratory. To find an EPA-certified lab in your area, contact your state drinking water program or EPA's Safe Drinking Water Hotline (see the **Resources** supplementary material for more information, including weblinks). When selecting a laboratory, you might consider the following factors:

- How much will the testing cost? Are there discounts available (e.g., to schools or non-profit organizations or for bulk orders)?
- Will the laboratory collect the samples for you, or will you or a staff member need to collect them?
- How long does it take for testing to be completed?

You can also contact your municipal water supplier or local public health department, as these agencies can sometimes assist with water quality testing at schools.

Supplemental Material

The supplemental material *San Francisco Bay Area Environmental Protection Agency (EPA) Certified Water Quality Testing Laboratories* provides contact and cost information for EPA-certified labs in the San Francisco Bay Area.

Remediate Water Quality Problems

If testing reveals water quality problems (e.g., the presence of lead or other contaminants), you will need to remediate these problems. You may want to devise both short- and long-term strategies for remediation. Work with your local Drinking Water Program Office¹ to develop your remediation plan.

Short-term Water Quality Remediation Strategies:

- Install point-of-use filtration or treatment systems for the affected outlets
- Flush affected water outlets (allow water to run for 30 seconds to 2 minutes)²
- Shut off the problem outlets
- Provide bottled water in place of tap water

Long-term Water Quality Remediation Strategies:

- Replace fixtures and associated pipes and fittings
- Reconfigure plumbing so that water supplied for drinking or cooking is redirected to bypass sources of contamination

Refer to the **Resources** supplemental material for more information about remediation strategies.

Choose a Point-of-Use Filtration or Treatment System to Remediate Water Quality Problems

If testing reveals water quality problems, one short-term remediation strategy is to filter the affected outlets. Work with your facilities department to find and install a filter or treatment device that is certified to remove the specific contaminant(s) detected in your school's water. A full list of approved treatment devices is available (sorted by contaminant) from the California Department of Public Health.³ Note that for treatment devices to work effectively, they must be properly installed and maintained. For example, if you do not change the filters in the treatment device regularly, contaminants may build up and release bursts of extremely high levels, causing much more serious exposure.⁴



Many contaminants can be removed from drinking water using a filter like this one, which reduces the amount of lead, cysts, and asbestos in the water.

(1) State of California Department of Public Health Drinking Water Program District Offices. <http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf>. Updated February 11, 2014. Accessed February 24, 2014.

(2) Flushing outlets may not remove any or all contaminants, but is often an effective measure to remove lead from water. Follow-up samples must be taken to determine whether flushing removes contaminants. Refer to EPA resources (e.g., "3Ts" manual) for more information on flushing.

(3) See: <http://www.cdph.ca.gov/certlic/device/Pages/watertreatmentdevices.aspx> or call (916) 449-5600.

(4) What can I do if my water is unsafe to drink? Community Water Center. http://communitywatercenter.org/wp-content/uploads/2013/12/CWC_What-can-I-do-if-my-water-is-unsafe-to-drink_2013.pdf. Accessed February 24, 2014.

Report Results

Schools should inform students, parents, school staff, and other stakeholders about the results of the water testing and, if tests show quality concerns, what steps the school is taking to remediate the problem. Your school should also make copies of the water testing results available to the public, either by keeping copies in the school administrative offices and/or by posting results online.

Ways to Communicate Water Testing Results and Remediation Efforts

- Letters (e.g., mailed directly to parents, placed in school staff mailboxes)
- Parent and staff newsletters
- Presentations at community, parent-teacher association (PTA), school board, or staff meetings
- Email, listserves and school website

Resource Spotlight

Los Angeles Unified School District (LAUSD) Office of Environmental Health and Safety maintains a website describing how LAUSD manages lead in school drinking water. Included in the website are sample letters to parents describing district efforts to provide lead-free drinking water; such letters could be adapted to meet your school's needs. Refer to the **Resources** supplementary material for a detailed list of resources, including weblinks.

SELECT A WATER DELIVERY OPTION

Once you have determined where to install new water delivery options and have ensured the safety of the water at this outlet, your next step is to decide what type of water delivery option your school would like to install.

Water delivery options can be categorized into three main types of water sources:

- Tap water dispensers
- Point of use water machines
- Traditional water fountains, water fountains with bottle fillers, and stand alone bottle fillers

Each type of water delivery option has its own benefits and considerations, reviewed in more detail below. Key questions to consider when choosing a water delivery option include:

- How much does the delivery option cost to purchase, install, use, and maintain?
- What installation and plumbing are required?
- Will the unit be installed outdoors or indoors?
- How long will the unit last?
- Does the unit require electricity?
- Does the unit require frequent cleaning or maintenance?
- Can the unit chill water?
- Will students need a cup or reusable bottle to get water from the unit?
- What type of unit do students and staff prefer?

Tap Water Dispensers

Tap water dispensers are refillable containers with a spout for students to self-serve tap water. Units are filled from an existing tap water source such as a kitchen sink.

Benefits:

- Low cost
- Water can be chilled by adding ice or putting container in fridge overnight before serving
- Can be filled up from a water source in a central location in the school and transported to area of use
- No electricity needed to use units
- No additional plumbing needed
- Many schools already have such dispensers on hand (e.g., for sports teams or staff meetings)

Considerations:

- Larger dispensers are heavy when full (a utility cart is useful for transport)
- More labor-intensive than other options because staff need to fill the dispenser with water daily (or more often) and clean it weekly
- Students must have vessel (e.g., cup, reusable bottle) to get water from the dispenser
- Some units may contain Bisphenol A (BPA), a chemical that can cause adverse health effects



Examples of Tap Water Dispensers

Point of Use Water Machines

Point of Use Water Machines are bottleless water coolers that hook into a tap water line. Students press a button to dispense water.

Benefits:

- Some units can chill water
- Volume discounts may be available
- Some units can be rented
- Some units are compatible with filtration systems
- Hook directly into tap water line so they do not need to be filled like tap water dispensers
- Minimal maintenance and cleaning required

Considerations:

- Higher upfront costs compared to tap water dispensers
- May require professional installation, sometimes at additional cost
- Require electricity, which incurs (sometimes significant) additional cost
- Some units do not drain excess water automatically and staff must manually empty drip tray
- Students must have a cup or reusable bottle to get water from machine



Examples of Point of Use Water Machines

Traditional Water Fountains, Fountains with Bottle Fillers and Stand Alone Bottle Fillers

Schools may also elect to install traditional drinking water fountains, drinking fountains that also include a station for filling water bottles, or stand alone bottle fillers (a station for filling water bottles without a traditional drinking fountain spout).

Benefits:

- Long-lasting
- Some units are refrigerated (offer chilled water)
- Some units are compatible with filtration systems
- Hook directly into tap water line so they do not need to be filled like tap water dispensers
- Some units operate with gravity and don't require electricity
- Minimal maintenance and cleaning required

Considerations:

- Upfront costs are more expensive than tap water dispensers and point of use water machines
- Requires professional installation
- Stand alone bottle fillers may not be accessible to students unless cups or reusable water bottles are also provided; fountains and combination units (fountain with a bottle filler) increase accessibility



Example of a Traditional Water Fountain



Examples of Fountains with Bottle Fillers



Example of a Stand Alone Bottle Filler

Supplemental Material

The following supplemental materials provide detailed information on each type of water delivery option, including information on specific examples of each type (cost, where you can purchase, specific considerations for that unit):

- ***Overview of Drinking Water Delivery Options***
- ***Tap Water Dispensers***
- ***Point of Use Machines***
- ***Traditional Fountains, Fountains with Bottle Fillers, and Stand Alone Bottle Filler Options***

CHOOSE VESSELS TO SERVE WATER

For many of the water delivery options described above, students must have a vessel to obtain water from the unit. Providing students with a vessel ensures they can easily access the water source and is likely to increase water consumption. There are two main types of vessels schools can provide: reusable water bottles and cups, and single-use cups.

Reusable Water Bottles and Reusable Cups

Reusable water bottles and cups provide an easy and eco-friendly way for students to get water at school. Reusable bottles also allow students to carry water with them throughout the day. Bottles and cups can be kept on-site (e.g., in the cafeteria or classrooms) or students can bring them to/from school. If kept on-site, schools should take responsibility for cleaning the vessels. See the supplemental material *Reusable Water Bottles* for detailed information about specific factors to consider when purchasing water bottles for students' use.

Single-Use Cups

Although reusable water bottles are an environmentally friendly way for students to access water in schools, in some schools there may not be a culture of using reusable water bottles (that is, students may not be in the habit of carrying water bottles with them, may lose or forget bottles, etc.). Providing single-use cups next to tap water dispensers, water bottle fillers, and point-of-use water machines is an easy way for students to serve themselves water and may increase water consumption. See the supplemental material *Single-Use Cups* for more information on what to consider when purchasing cups, including more detailed information about specific products (e.g., brand, size, cost).

Reusable Water Bottles and Reusable Cups vs. Single-Use Cups

Advantages of Providing Reusable Bottles or Reusable Cups

- More environmentally friendly (reduces waste)
- Can be sold (e.g., schools can sell at cost to finance their purchase, or can sell as a fundraiser)
- Can brand them with school logo, health messages, etc.
- Students can bring water with them throughout the school day

Disadvantages of Providing Reusable Bottles or Reusable Cups

- May have a greater upfront costs than disposable cups
- Must be provided for each entering class
- Either students must remember to bring bottle/cup each day, or school must provide a place to store them and a means to clean them

Advantages of Providing Single-Use Cups

- Ensures students have access to water sources even if they do not remember to bring a reusable bottle
- Can brand them with school logo, health messages, etc.

Disadvantages of Providing Single-Use Cups

- Less environmentally friendly (generates more waste)
- Can create mess if students do not throw away cups after use
- Cups have to be continually supplied, which can be costly

