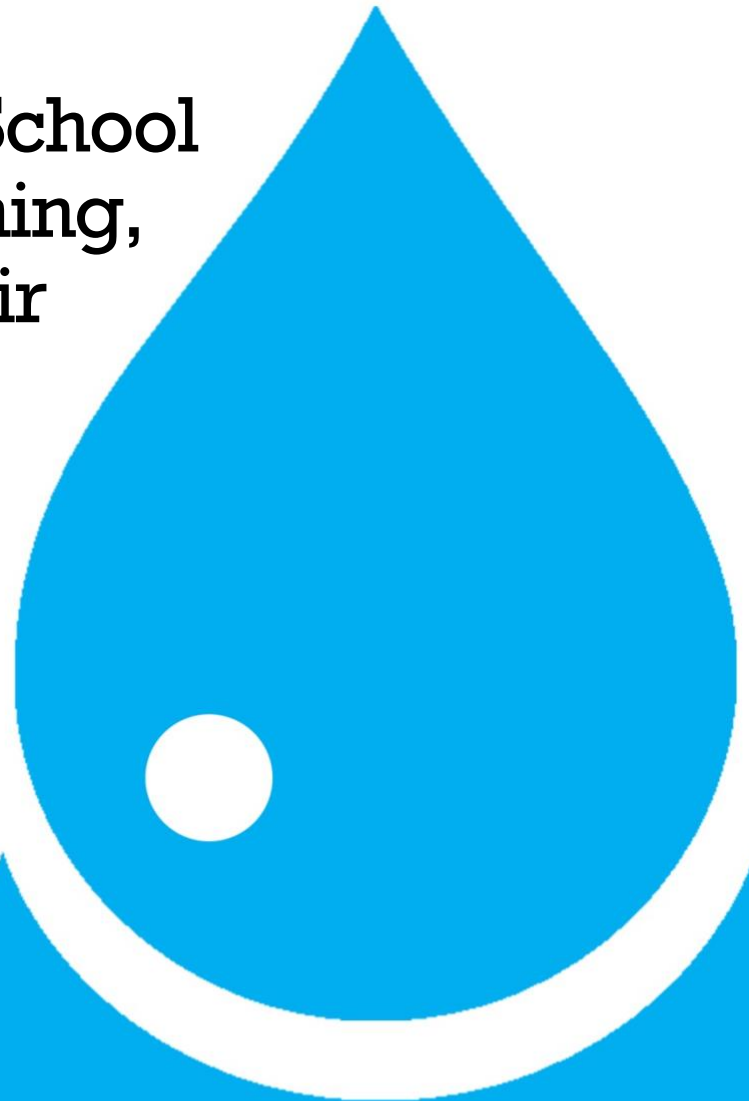


Keep It Flowing: A Practical Guide to School Drinking Water Planning, Maintenance, & Repair



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Executive Summary

It is an exciting time for water in schools! The Healthy, Hunger-Free Kids Act of 2010 contained the first national standard for drinking water provision during school mealtimes, and work is underway to ensure water is freely available to children throughout the school day. Proper hydration keeps kids performing at their best academically, is the healthiest substitute for sugary drinks, and is important for oral health. This guide addresses the practical side of drinking water in schools by outlining the steps needed to provide adequate numbers of properly maintained drinking fountains and tap water dispensers in school buildings.

Who can use this guide?

This guide is designed for the people who make our nation's schools run day in and day out. They include state and local school officials, school facilities and maintenance personnel, the school building planning and design community, child health advocates and parents.

How to use this guide?

This guide is organized to mirror the typical school organizational structure. It addresses state and tribal agencies and organizations, districts, school boards and local education authorities and schools. The state, tribal and district sections focus on policy and oversight, and the school section focuses on implementation and maintenance. We


hope that when you open this guide you can go directly to the section you are interested in and find relevant information on drinking fountain infrastructure, maintenance and repair for your state, tribal, school district or individual school.

What this guide does not cover

There are school buildings in the United States that do not have access to reliably safe tap water. This typically occurs when there is a problem with the local public water supplier or when a school building draws its water from a contaminated well. Schools without access to safe drinking water face unique challenges that are beyond the scope of this guide. Much of the information in this guide, however, is transferrable to schools reliant on bottled water sources.

Key recommendations

School drinking water depends on a reliable source of safe drinking water, properly maintained plumbing infrastructure and clean and well-maintained fixtures for students to access when they need a drink. Drinking water infrastructure construction, maintenance, repair and cleaning depend on policies to support water access and implementation at the state, school district,

 **Key terms**

Access:	The ability to obtain free and safe drinking water within a convenient distance of any location on school grounds.
Quality:	Factors that impact whether water is safe to drink and appealing to students, teachers and staff.
Promotion:	Campaigns and policies designed to increase student water consumption.

and individual school levels. The following are key recommendations from this guide to ensure access to safe and appealing drinking water in schools.

State and tribal agencies and organizations

- **Include water access in plans to build, renovate or repair school food service areas:** School building standards usually mirror state plumbing code requirements for drinking fountains. Plumbing codes typically do not specify fountain placement in food service areas. In order to support compliance with federal nutrition regulations requiring that water be made available during mealtimes, school building standards and individual school plans should require drinking water delivery options in food service areas (see Box 2, p. 10).
- **Administer comprehensive school drinking water infrastructure inventories:** In order to ensure adequate access to fountains, a comprehensive inventory of drinking fountains, bottle-fillers and other tap water delivery options (see Box 1, p. 5) should be conducted in all school buildings and then integrated into reporting requirements for periodic follow-up assessment.
- **Institute and oversee a uniform, routine water quality testing protocol:** The core goal of state, tribal and local plumbing, sanitary and environmental codes for drinking water is to ensure that only potable water flows through pipes accessible to the public for consumption. Uniform, statewide and tribal standards for periodic water quality monitoring ensure routine testing and compliance with water quality standards in all school buildings.

Districts, school boards and local education authorities

- **Address drinking water in school wellness policies:** School wellness policies provide districts the opportunity to create policies and programs to promote drinking water. Language that supports drinking water access and promotion can be added to existing wellness policies.



- **Use sustainability programs and projects to promote water and to support drinking fountain maintenance efforts:** School-aged children are interested in how to conserve water, reduce waste and improve recycling. Drinking fountain projects are popular with students looking to reduce plastic bottle waste and are a great way to promote drinking water.

- **Establish water fountain cleaning best practices:** When water fountains are dirty and contain trash, children are less likely to use them. Uniform guidelines stating the

number of fountain cleanings per day and how to conduct them can help maintain a consistent level of cleanliness (see Box 3, p. 14).

- **Integrate drinking fountain maintenance into existing pest management systems:** Integrated Pest Management (IPM) focuses on prevention to minimize environments that will attract pests. Effective IPM denies pests access to food, water and shelter and requires routine inspection. Poorly maintained drinking fountains can be a source of moisture where pests and mold can breed. To minimize this, drinking fountains can be incorporated into inspection protocols (see Box 4, p. 17).

Schools

- **Serve safe and appealing water:** Schools can meet the hydration needs of students at mealtimes and during the school day with: traditional drinking fountains, bottle-fillers, other tap water dispensers, and pitchers and cups (see Box 1, p. 5). Schools can maximize existing infrastructure, and upgrade or add new equipment to meet demand.
- **Maintain drinking fountains in good, clean working order:** Students simply do not want to drink from poorly maintained, dirty drinking fountains. Standard operating procedures for fountain cleaning and maintenance keep drinking fountains clean and working properly (see Box 5, p. 18). School maintenance and custodial staff are crucial to implementing best practices for fountain upkeep.
- **Conduct annual maintenance planning:** Annual plans describe the overall scope of work for the year and include specific work items, schedules for completing the items, and the resources required. Drinking fountains should be included in annual maintenance plans to make sure schools are in compliance with minimum requirements for fountains under the applicable plumbing code and that they are kept in good repair.
- **Manage trash and recyclable materials associated with drinking water provisions:** Providing water during mealtimes can require the use of cups. Recyclable cups can be integrated into existing recycling programs or may require some additional custodial planning. Schools can use a variety of creative and engaging strategies to promote recycling and minimize trash.

Timing is everything!

The goal of this guide is to lay out concrete steps to take when opportunities to improve school drinking water emerge. For example, when districts and individual schools revise their wellness policies drinking water language can be incorporated. At the state level, when school building standards are revised provisions can be added to optimize drinking water availability. We encourage you to review the guide to get ideas for how to get involved, and to reference back when opportunities to champion school drinking water present themselves.



Box 1: Water Delivery Options*

Tap Water Dispensers

Refillable containers with a spout for students to self-serve tap water



Fountains, Fountains with Bottle-Fillers & Standalone Bottle-Fillers

Traditional drinking water fountains with or without a bottle-filler feature and standalone bottle-fillers



Point-of-use Water Machines

Bottle less water coolers that hook into a tap water line. Students press a button to dispense water



*Adapted from Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning (2014), available at <http://waterinschools.org/pdfs/WaterWorksGuide2014.pdf>.

State and Tribal Agencies and Organizations

State and tribal agencies and organizations set minimum standards for their schools, provide oversight, and disseminate information. This section provides tools, information and resources relevant to planning and implementation of school water access by state and tribal education agencies and state and tribal organizations.

Relevant Policies

Federal legislation requires schools participating in the National School Lunch Program to make drinking water available to children at no charge during meal service where meals are served.

Plumbing, sanitary, and/or environmental codes require that water dispensed from plumbing fixtures is safe for human consumption.

Action Steps

Ensure plans for school building renovation, repair, and construction address water access in food service areas.

Administer school drinking water infrastructure inventories.

Ensure fountain accessibility.

Institute and oversee a uniform, routine water quality testing protocol.

Work with professional associations.

Access

Ensure plans for school building renovation, repair, and construction address water access in food service areas.

The United States Department of Agriculture (USDA) promulgated rules interpreting the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) to require that “potable water [be made] available to children at no charge in the place where lunches are served during meal service...and in the cafeteria during breakfast meal service.”⁽¹⁾ The vast majority of state plumbing codes do not specify fountain placement in school food service areas. State school building standards typically simply reference state plumbing code requirements for drinking fountains. In order to ensure adequate access to drinking water, school building standards and individual school plans should include the placement of fountains and other tap water delivery options (see Box 1, p. 5) in food service areas.

- Amendments to the Richard B. Russell National School Lunch Act in the Healthy, Hunger-Free Kids Act of 2010, Public Law 111-296, established the requirement for making potable water available to children in the National School Lunch Program (NSLP) and the Child and Adult Care Food Program (CACFP). You can find guidance on this requirement at: <https://www.fns.usda.gov/cn/water-availability-during-nslp-meal-service> and additional resources on making water available in schools at <https://www.fns.usda.gov/cn/resources-making-potable-water-available-schools-and-child-care-facilities-0>
- Appendix 1: State Plumbing Codes Standards for School Drinking Fountains provides minimum drinking fountain requirements.
- Appendix 2: Fountain Placement Recommendations describes high priority areas for fountains.
- Healthy Eating Design Guidelines for School Architecture by Huang TT, et al. (Prev Chronic Dis 2013;10:120084) contains a list of design strategies to encourage water consumption in Domain 7 of the article's table. http://www.cdc.gov/pcd/issues/2013/12_0084.htm#table1_down

Administer comprehensive school drinking water infrastructure inventories.

Facilities maintenance inventory guidelines for many states, tribes and individual school districts contain minimal reporting requirements for drinking fountains. Some states request that districts conduct yearly inventories of school facilities, but do not focus on school plumbing. States can request that districts conduct a supplemental, comprehensive inventory of drinking fountains, bottle-fillers and other tap water delivery devices, and then conduct routine reporting. This information also can be used to assess compliance with the water provision requirement of the HHFKA by providing data about the number of schools with tap water delivery devices in food service areas. State-level leadership is needed to ensure that all schools are included, and that problem areas are identified and remediated.



- EPA, 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities: A Training, Testing, and Taking Action Approach. <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water>

Ensure broad drinking fountain accessibility.

Accessibility standards, such as those contained in the Americans with Disabilities Act (ADA), ensure that all children will be able to use fountains. The age and height of children also should be taken into consideration. For example, fountains in elementary schools should be lower since children may not be able to comfortably use an adult-sized fountain.

- Department of Justice, 2010 ADA Standards for Accessible Design is the latest version of ADA compliant design standards and addresses drinking fountains in sections 102, 211, 602, and 36.403.

http://www.ada.gov/2010ADASTandards_index.htm

Quality

Establish a routine water quality testing protocol.

The core goal of federal and state water laws and regulations is to ensure that only potable water flows through pipes accessible to the public for consumption. Protecting young children from contaminants like lead is especially important due to their lower blood volume. The United States Environmental Protection Agency (EPA) provides resources about drinking water quality in schools. State departments of environmental protection, health, and/or education also have information concerning water quality issues such as lead or coliform. Schools should fully comply with all applicable water quality laws. Uniform standards for periodic water quality monitoring ensure routine testing in all school buildings. For example, New York state has enacted legislation outlining a statewide protocol for school water testing and quality monitoring.

- EPA, 3Ts for Reducing Lead in Drinking Water
<https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water>
- Find a list of regional and state agency contacts for programs related to drinking water quality in schools and childcare facilities at the following location.
<https://www.epa.gov/dwcapacity/voluntary-school-and-child-care-lead-testing-and-reduction-state-grant-program-contacts>
- Appendix 3: Public Health Law 1110 – New York State Department of Health.

Professional Associations

School building design, management and maintenance professional organizations

National, regional, and state facilities design and management organizations can be key partners in your state. Professional organizations provide members with a voice in the debates concerning school facilities, access to information, and professional development. These organizations can be key partners to develop design standards and to disseminate drinking water information to school facilities and maintenance leaders.

- Appendix 4: Professional Associations describes the types of organizations.
- American Institute of Architects, Committee on Architecture for Education is a group of architects and allied professionals concerned with the quality and design of all types of educational, cultural, and recreational facilities.

<http://network.aia.org/CommitteeonArchitectureforEducation/home>

Districts, School Boards, and Local Education Authorities

This section provides tools, information and resources relevant to drinking water infrastructure maintenance, planning, repair and promotion at the local, school district level.

Relevant Policies

Federal law requires National School Lunch Program (NSLP) participants have a wellness policy, which can include policies on water access and promotion.

Action Steps

Assess plumbing code and HHFKA water provision compliance.

Ensure school building renovation, repair and construction plans require water access in food service areas.

Pick the right equipment for your schools.

Find out where your water comes from.

Understand key characteristics of water quality.

Institute a water quality testing protocol to address the needs of school buildings in the district.

Amend wellness policies to promote drinking water.

Use sustainability programs and projects to promote water and to support drinking fountain maintenance efforts.

Establish drinking fountain cleaning best practices.

Integrate drinking fountain maintenance into existing pest management systems.

Access

Assess plumbing code and HHFKA water provision compliance.

Unlike fire codes and sanitary codes, plumbing codes do not trigger routine inspections after a school building is built. Therefore, school districts are responsible for assessing compliance with the applicable plumbing codes. This can be done through annual school plumbing inspections. The information gathered in food service areas can be used to assess compliance with the water provision requirement of the HHFKA.

- Appendix 1: State Plumbing Codes Standards for School Drinking Fountains provides minimum drinking fountain requirements.
- Appendix 2: Drinking Fountain Inventory Form provides a tracking tool for school drinking water infrastructure that can be used during periodic inspections.

Ensure school building renovation, repair, and construction plans require water access in food service areas.

Federal legislation now requires NSLP participants to provide drinking water to students during meals in the place where meals are served. The vast majority of state plumbing codes do not specify fountain placement in school food service areas. State school building standards typically simply reference state plumbing code requirements for drinking fountains. In order to ensure adequate access to drinking water, school building standards and individual school plans should include the placement of fountains and other tap water delivery options in food service areas. School districts can include fountain placement language in their requests for proposals or bids when they undertake new school construction or major renovation (see Box 2, p. 10).

- Appendix 1: State Plumbing Codes Standards for School Drinking Fountains provides minimum drinking fountain requirements.
- Appendix 2: Fountain Placement Recommendations describes high priority areas for fountain placement.
- Healthy Eating Design Guidelines for School Architecture by Huang TT, et al. (Prev Chronic Dis 2013;10:120084) contains a list of design strategies to encourage water consumption in Domain 7 of the article's table.
http://www.cdc.gov/pcd/issues/2013/12_0084.htm#table1_down



Box 2: Sample water language to include in requests for proposals or bids for school food service design construction, repair and renovation.

All proposals shall include a plan to provide ready access to potable water and cups in dining areas.

Ready access is achieved by providing adequate numbers of tap water delivery options and cups in convenient locations so that all children can easily obtain water during the allotted meal time.

Plans are encouraged to provide the adequate number of fixtures using more than one tap water delivery option, e.g. two fountains with bottle-fillers and cup dispensers in the seating area and one tap water dispenser with cup dispenser on each serving line.

Pick the right equipment for your schools.

Different water delivery options (see Box 1, p. 5) may be better suited for various locations within a school building. For example, a vandal resistant fountain is likely the best choice in low traffic areas. Fountains in high traffic areas might need to include a bottle-filler to minimize wait time and maximize children's access to water. Districts and schools can work together with maintenance staff and students to decide which fountain units will work best and fit the students' preferences.

- Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning (2014) contains detailed descriptions of tap water delivery options and equipment prices.
<http://waterinschools.org/pdfs/WaterWorksGuide2014.pdf>

Quality

Find out where your water comes from.

Where school water comes from determines who is responsible for monitoring water quality before it enters school pipes and can impact its appeal. There is surface water and ground water.⁽²⁾ Surface water like a reservoir is open to the atmosphere. Ground water is pumped from underground sources. Water can come from a regional authority, local distributor, or a well on school property. Schools that draw water from wells are responsible for ensuring that the water is potable before it enters the school building. Some schools also use bottled water coolers from a private distributor in place of or to supplement plumbed drinking fountains.

- The Centers for Disease Control and Prevention (CDC) provides information on drinking water sources and treatments.
<https://www.cdc.gov/drinking-water/about/index.html>
- EPA provides information about the public water systems that are regulated by EPA.
<https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information-system-sdwis-federal-reporting>
- EPA, Consumer Information for individual consumers has information about Consumer Confidence Reports and an online search tool to obtain a copy and more.
<https://www.epa.gov/ccr/ccr-information-consumers>

Understand key water characteristics.

Knowing the characteristics of school tap water can help facilities and maintenance decide what methods to use to reduce odor and other issues that impact its appeal to students. Perfectly safe water that is warm, has an off-taste or is not clear is simply unappealing to many students (and teachers and staff!) Certain water characteristics such as color, taste, odor, turbidity, and temperature are associated with specific issues. Knowing what the problem is will help you determine the best solution.⁽³⁾ If there are any concerns at all about the safety of a school's

drinking water for whatever reason, please contact the local water authority, health department or a water quality testing professional.

- Appendix 5: Key Characteristics of Water Quality contains information about water color, taste, odor, turbidity and temperature.
- CDC, What Causes Tap Water Contamination contains information about water quality and links to resources.
<https://www.cdc.gov/drinking-water/causes/index.html>

Institute a water quality testing protocol to address the needs of school buildings in the district.

Ongoing water quality testing may be needed in districts where water quality is a concern. The EPA has a wealth of resources for school water quality monitoring. The following are examples of district water quality sampling programs and their public reporting systems:

- EPA, 3Ts for Reducing Lead in Drinking Water
<https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water>
- DGS Water Sampling Results for DC Public Schools.
<https://dgs.dc.gov/page/water-sampling-results-dc-public-schools>
- Seattle Public Schools, Drinking Water Quality Program webpage contains water quality annual reports, links to the district water quality policy and an FAQ sheet.
<https://www.seattleschools.org/departments/finance/risk-management/environmental-health-issues-and-water-quality/drinking-water-quality-program>
- Lead in Drinking Water at LAUSD Schools.
<https://www.lausd.org/Lead-Drinking-Water>

Promotion

Amend wellness policies to promote drinking water.

School wellness policies provide schools and districts the opportunity to create policies and programs to promote drinking water. To date, few schools incorporate drinking water into their school wellness plans.^(4,5) Language that supports drinking water access and promotion can be added to existing wellness policies for schools or districts.

- Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning (2014) provides model language that can be used by schools.
<http://waterinschools.org/pdfs/WaterWorksGuide2014.pdf>



- ChangeLab Solutions provides Model Wellness Policy Language for Water Access in Schools, a resource helping schools and other community advocates incorporate drinking water priorities into their wellness policies.
<https://www.changelabsolutions.org/product/model-wellness-policy-language-water-access-schools>

Sustainability

Use sustainability programs and projects to promote water and to support drinking fountain maintenance efforts.

Schools that conserve natural resources save money and provide a healthier environment for students. Poorly maintained drinking fountain infrastructure can lead to wasted water, mold, and pest issues. School-aged children are interested in how to save water and improve recycling. Drinking fountain projects are popular with students looking to reduce plastic bottle waste. Organizations such as Green Ribbon Schools and the US Green Building Council provide resources and examples of sustainability projects. These groups also have awards and certification programs (such as LEED) that verify the “green” status of buildings. Below are links to environmentally friendly building programs and school sustainability projects centered on drinking water.

- Alameda County Health Department, Healthy Living for Life webpage links to the “Tap into Health Water Promotion Toolkit,” a case study of a water campaign that used environmental and health messaging (see materials under “Water Campaign”), and a variety of other water promotion and survey tools.
<https://www.yumpu.com/en/document/view/33444204/tap-into-health-water-promotion-toolkit-healthy-livingfor-life>
- US Green Building Council, LEED webpage provides information about LEED standards and the certification process.
<http://www.usgbc.org/leed>
- The Green Strides School Sustainability Resource Hub is a website that is available for schools to access free resources on healthy, safe, sustainable, 21st learning environments and environmental sustainability education. Resources and webinars on the website are aligned with the three Pillars of the U.S. Department of Education Green Ribbon Schools (ED-GRS) recognition award.
<https://greenstrides.org>
- WaterSense at Work is a compilation of water-efficiency best management practices that can help schools and school districts to understand and manage their water use, establish an effective water management program, and identify projects and practices that can reduce facility water use.
<https://www.epa.gov/watersense/best-management-practices>

Maintenance Planning and Integrated Pest Management

Conduct annual maintenance planning.

Annual planning helps facilities maintenance and operations anticipate and plan projects in a cost-effective manner.⁽⁶⁾ Annual plans describe an overall scope of work and include specific work items, completion schedules, and required resources.⁽⁶⁾ Drinking fountains should be included in annual maintenance plans to make sure they are kept in good repair.

- School Facilities Maintenance Task Force et al., Planning Guide for Maintaining School Facilities (2003) is a comprehensive guide to school facilities maintenance and repair planning.
<http://nces.ed.gov/pubs2003/2003347.pdf>
- Example of a comprehensive maintenance plan approved by a local board of education that describes a strategy for maintaining public school facilities.
[https://www.boarddocs.com/mabe/fcps/Board.nsf/files/9SJTY7F550B/\\$file/01%2014%2015%20Comprehensive%20Maintenance%20Plan-Annual%20Update_backup.pdf](https://www.boarddocs.com/mabe/fcps/Board.nsf/files/9SJTY7F550B/$file/01%2014%2015%20Comprehensive%20Maintenance%20Plan-Annual%20Update_backup.pdf)

Issue a standard operating procedure for routine drinking fountain cleaning and maintenance.

When water fountains are dirty and contain trash, children are less likely to use them.⁽⁵⁾ A standard operating procedure with the number of fountain cleanings per day and how to conduct them can help maintain a consistent level of cleanliness (see Box 3).

Box 3: Drinking fountain maintenance and cleaning protocol

Every two hours:

Inspect fountain, throw away any trash or debris that has collected, and wipe down units as needed.⁽⁷⁾

Daily Duties:

Disinfect fountains.⁽⁸⁾

Dry floors surrounding fountains to ensure that water is not left pooling on the floor overnight.

Remove graffiti from fountain units (if applicable).

Weekly Duties:

Remove lime build-up.

Monthly Duties:

Check fountains for leaks and excessive sweating on the outside of the fountain unit.⁽⁹⁾

Once a year:

Update annual maintenance plan to include any repairs or replacements pertaining to drinking fountains.

Once every 3-5 years:

Conduct in-depth drinking fountain inventory.

Integrate water maintenance into existing pest management systems.

Integrated Pest Management (IPM) focuses on prevention to minimize environments that will attract pests.⁽¹⁰⁾ Effective IPM denies pests access to food, water and shelter and requires routine inspection and remediation. Poorly maintained drinking fountains can be a source of moisture where pests and mold can breed. To minimize this, drinking fountains can be incorporated into inspection and remediation protocols (see Box 4, p. 17).

- EPA, Integrated Pest Management Overview webpage provides a useful overview of IPM and links to resources.
<https://www.epa.gov/ipm/introduction-integrated-pest-management>
- EPA website that includes links to all regional and tribal program contacts for IPM resources.
<https://www.epa.gov/ipm/epas-approach-integrated-pest-management-schools>
- EPA website with tools and resources to help schools develop and implement IPM plans.
<https://www.epa.gov/ipm/integrated-pest-management-tools-resources-support-ipm-implementation>

Schools

This section provides tools, information and resources relevant to drinking water infrastructure maintenance, planning, repair and promotion by individual schools with an emphasis on daily fountain maintenance.



Action Steps

Serve safe and appealing water.

Amend wellness policy to promote drinking water.

Maintain drinking fountains and tap water dispensers.

Integrate water maintenance into existing pest management systems.

Manage trash and recyclable materials associated with water provision.



Resources

Steps to sanitize and remove lime build-up from a drinking fountain.

Steps to sanitize a bottled water cooler or dispenser.

Drinking fountain troubleshooting and repairs.

Access

Serve safe and appealing water.

There are a number of ways to meet the hydration needs of students during mealtimes and throughout the school day. These include traditional drinking fountains, bottle-fillers, tap water dispensers and pitchers and cups (see Box 1, p. 5). Schools should maximize existing infrastructure, upgrade where necessary and add new equipment to modernize and meet demand.

- Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning (2014) contains a wealth of information about how to serve water using a variety of tap water delivery options.
<http://waterinschools.org/pdfs/WaterWorksGuide2014.pdf>

Promotion

Amend wellness policies to promote drinking water.

School wellness policies provide schools and districts the opportunity to create policies and programs to promote drinking water. To date, few schools incorporate drinking water into their school wellness plans.^(4, 5) Language that supports drinking water access and promotion can be added to existing wellness policies for schools or districts.

- Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning (2014) provides model language that can be used by schools.
<http://waterinschools.org/pdfs/WaterWorksGuide2014.pdf>
- ChangeLab Solutions, Model Wellness Policy Language for Water Access in Schools.
<https://www.changelabsolutions.org/product/model-wellness-policy-language-water-access-schools>

Routine Maintenance and Repair

Integrate drinking water delivery maintenance into existing pest management systems.

Integrated Pest Management (IPM) programs focus on prevention to minimize environments that will attract pests.⁽¹⁰⁾ Effective IPM requires routine inspection and remediation. Poorly maintained drinking fountains can be a source of moisture where pests and mold can breed. To minimize this, drinking fountains can be incorporated into inspection and remediation protocols (see Box 4).

- EPA, Integrated Pest Management in Schools webpage provides a useful overview of IPM and links to resources. <https://www.epa.gov/ipm/epas-approach-integrated-pest-management-schools>
- California Department of Pesticide Regulation, School IPM Homepage is an example of a state IPM program. <http://apps.cdpr.ca.gov/schoolipm/>
- IPM Institute, The Business Case for IPM (Sept. 2011) describes a number of school IPM success stories. http://www.ipminstitute.org/school_ipm_2015/ipm_business_case.pdf

Steps to sanitize and remove lime build-up from a drinking fountain.

Fountain maintenance may be governed by plumbing and sanitary codes and is essential to ensure school drinking fountain access. Children simply don't want to take a drink from a dirty or broken fountain. Over time, drinking fountains can have lime build-up that needs to be removed to keep fountains looking clean and functioning properly. Some maintenance procedures recommend scrubbing off lime build-up every time units are cleaned while others suggest removing lime build-up every few days.⁽⁷⁾ How often a school decides to have custodial staff remove lime build-up will depend on their cleaning schedule and availability (Box 5, p. 18).

Recreation Management, How To: Keep Drinking Fountains Clean provides basic information and special considerations for maintaining fountains in outdoor recreation areas.
<http://www.recmanagement.com/features.php?fid=200511fe01&ch=21>



Box 4: Sample IPM Policy Language for Drinking Fountains⁽⁹⁾

Drinking Fountains

Use insulated fountain units and make sure seals are maintained to minimize fountain sweating and moisture build-up.

Clean water spills by the end of the day to ensure water isn't left puddled overnight.

Repair leaks to ensure that water is not dripping.

Effective on ants, cockroaches, dampwood termites, formosan termites, drywood termites, subterranean termites, misc. wood destroying insects, and misc. insects.

• **Box 5: Instructions to disinfect a drinking fountain and remove lime build-up***

Materials

- ▶ Personal protective equipment as needed, spray bottles of disinfectant cleaner and descaler, lint-free cleaning cloths, pads, sponges, grout brush.

Preparation

- ▶ Wear appropriate personal protective equipment.
- ▶ Properly dispense the appropriate cleaning solution into spray bottles.
- ▶ Take equipment to assigned area.

Procedure

Daily Cleaning of drinking fountains

- ▶ Check the water flow.
- ▶ Spray some disinfectant cleaner solution on the inside surfaces of the mouthpiece and protective guard.
- ▶ Using the grout brush, scrub the inside and outside of the mouthpiece/protective guard.
- ▶ Rinse the mouthpiece and protective guard with water.
- ▶ Damp wipe drinking fountain surfaces.

Removing lime build-up on drinking fountains

- ▶ Spray descaler onto the bowl and back of the drinking fountain.
- ▶ Use a clean, lint-free cloth saturated with the lime remover solution. Apply to the surfaces with the lime build-up. Let stand for the length of time recommended on the label.
- ▶ Wring out all excess solution from the cloth. Wipe the surface clean with the cloth. If necessary, use the brush or hand pad to remove hard build-up.
- ▶ Thoroughly rinse the surfaces with clean water.
- ▶ Wipe dry with a clean, lint-free cloth.
- ▶ Wipe up any chemical/water spills on the floor.

Clean up

- ▶ Clean all equipment.
- ▶ Return all equipment and supplies to the appropriate area.
- ▶ Let soiled cleaning cloths dry out then bag for laundry.
- ▶ Remove your personal protective equipment and wash your hands.

Safety

- ▶ Always use the cleaning chemical exactly as directed by the label and following all recommended safety precautions.
- ▶ Be sure to wipe up any cleaning solution spills or water from the floor.
- ▶ Be careful not to get the cleaning chemical on any surface for which it is not intended in order to avoid damage.

*Adapted from 'Green' Cleaning Guidelines by the Iowa State University Facilities Planning and Management Custodial Services Department. ⁽⁸⁾

Steps to clean and sanitize a bottled water cooler or dispenser.

Bottled water coolers and dispensers that are not properly maintained can pose a health risk to children and attract pests. Schools should follow the cleaning instructions provided by the manufacturer for any units in use. Below are links to step-by-step cleaning and sanitizing instructions for water coolers that give some insight into how to maintain bottled water coolers in a sanitary condition:

- Drink More Water, How to Clean and Sanitize Your Bottled Water Cooler
<http://www.drinkmorewater.com/technology/clean-water-cooler>

Drinking fountain troubleshooting and repairs.

Sometimes even the best maintained fountain will break down or spring a leak and require repairs. Below are links to troubleshooting and repair guides for drinking fountains:

- Drinking Fountain Doctor, Drinking Fountain Troubleshooting
<http://www.drinkingfountaindoctor.com/troubleshooting-guide>
- Drinking Fountain Doctor, Elkay and Halsey Taylor Troubleshooting Guide
<http://www.drinkingfountaindoctor.com/elkay-halsey-taylor-troubleshooting>

Waste Management and Recycling

Manage trash and other recyclable materials associated with water provision.

Many schools may provide water in cups to students during mealtimes. Recyclable cups can be integrated into existing recycling programs or may require some additional maintenance planning. Schools have used a variety of creative and engaging strategies to promote recycling programs and minimize trash.

- The Green Strides School Sustainability Resource Hub is a website that is available for schools to access free resources on healthy, safe, sustainable, 21st learning environments and environmental sustainability education. Resources and webinars on the website are aligned with the three Pillars of the U.S. Department of Education Green Ribbon Schools (ED-GRS) recognition award.
<https://greenstrides.org>
- Boston Public Schools, describes efforts to reduce the amount of waste generated by building occupants and reduce the amount of non-recyclable waste.
<https://bostongreenschools.org/zero-waste>
- King County Department of Natural Resources and Parks, Solid Waste Division (Seattle, WA), Campaigns to Reduce Lunchtime Waste describes ways schools can get students to reduce trash and recycle in food service areas.
<https://your.kingcounty.gov/dnrp/library/solid-waste/Programs/green-schools/green-team-lunchroom-waste.pdf>
- Portland Public Schools (Portland, ME), Cafeteria Recycling/Composting Initiative webpage provides links to the various elements of a comprehensive food service waste reduction effort.
<https://www.pps.net/waste>

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APPENDICES

Appendix 1: State Plumbing Codes for School Drinking Fountains (2012)⁽¹¹⁾

State	Ratio of Fountains to Students	% Fountains That Can Be Replaced with Non-Plumbed Water Sources
Alaska	1 per first 150 and 1 per each 300 thereafter	None
Alabama	1 per 100	50%
Arkansas	1 per 30	None
Arizona	1 per 50 (K-8); 1 per 100 (9-12)	100%
California	1 per first 150 and 1 per each 300 thereafter	None
Colorado	1 per 100	50%
Connecticut	1 per 100	50%
Delaware	1 per 100	50%
Florida	1 per 100	50%
Georgia	1 per 100	50%
Hawaii	1 per 100	50%
Iowa	1 per 100	50%
Idaho	1 per first 150 and 1 per each 300 thereafter	None
Illinois	1 per 75	100%
Indiana	1 per 75	100%
Kansas	1 per 100	50%
Kentucky	1 per 75	100%
Louisiana	1 per each 3 classrooms with at least one per floor	None
Massachusetts	1 per 75	None
Maryland	1 per 100	50%
Maine	1 per first 150 and 1 per each 300 thereafter	None
Michigan	1 per 100	50%
Minnesota	1 per 100	50%
Missouri	No Statewide Code Identified	No Statewide Code Identified
Mississippi	No Statewide Code Identified	No Statewide Code Identified
Montana	1 per floor	Individual case-by-case basis
North Carolina	1 per 100	None
North Dakota	1 per 100	100%
Nebraska	1 per first 150 and 1 per each 300 thereafter	None
New Hampshire	1 per 40	None
New Jersey	1 per 100	None
New Mexico	1 per 100	50%
Nevada	1 per 100	50%
New York	1 per 100	50%
Ohio	1 per 100	50%
Oklahoma	1 per 100	50%
Oregon	1 per floor	None
Pennsylvania	1 per 100	50%
Rhode Island	1 per 100	50%
South Carolina	1 per 100	None
South Dakota	1 per first 150 and 1 per each 300 thereafter	None
Tennessee	1 per 100	50%
Texas	1 per 100	50%
Utah	1 per 100	50%
Virginia	1 per 100	50%
Vermont	1 per 100	50%
Washington	1 per first 150 and 1 per each 500 thereafter	None
Wisconsin	1 per 100	50%
West Virginia	1 per 100	50%
Wyoming	1 per 100	None

Appendix 2: Fountain Placement Recommendations

Recommended Fountain Placement	Rationale
Outdoor activity areas ⁽¹²⁾	Children need access to water while playing outside so they don't become dehydrated.
Social/public areas ⁽¹²⁾	Fountains should be placed in high traffic areas such as hallways and cafeterias so students will see the fountains and use them. Fountains and filling stations in eating areas should be placed so as not to interrupt the flow of students during peak food service times. School officials also should be mindful of any hallway closures that may occur during the school day. A drinking fountain in a high traffic hallway that his closed for part of the day is not adequately available to students.
Near existing plumbing, drainage, and electricity ⁽¹³⁾	It is less costly to install water fountains near existing building infrastructure such as plumbing, drainage and electricity required by the new fixture.
Adequate space to accommodate the units without having to open solid walls ⁽¹³⁾	It is less costly to install a drinking fountain in areas where major construction and demolition does not need to be done to make room for the unit.
Adequate space around units to comply with accessibility laws ⁽¹⁴⁾	Accessible fountains require sufficient space so that students in wheelchairs can access them.
On or over appropriate flooring ⁽⁷⁾	Even the best-kept fountains will have some leaks, condensation or overflow at some point. Carpeted areas are harder to clean and dry than a hard floor and wood flooring may be compromised by water incursions. Damp carpet and wood also can attract pests and breed mold.

Appendix 3: Public Health Law 1110 – New York State Department of Health

Section 1.

Section 1110 of the public health law, as added by chapter 296 of the laws of 2016, is amended to read as follows:

§ 1110. School potable water testing and standards.

1. In addition to school districts already classified as a public water system under parts school districts already classified as a public water system under parts regulations may, from time to time, be amended, every school district and board of cooperative educational services shall conduct **triennial** first-drawn tap testing of potable water systems to monitor for lead contamination in each occupied school building under its jurisdiction as required by regulations promulgated pursuant to this section. The testing shall be conducted and the results analyzed by an entity or entities approved by the commissioner.
2. Where a finding of lead contamination is made, the affected school district shall: (a) continue first-drawn tap water testing pursuant to regulations promulgated pursuant to this section; (b) provide school occupants with an adequate supply of safe, **free to the school occupants**, potable water for drinking as required by rules and regulations of the department until future tests indicate lead levels pursuant to regulations promulgated pursuant to this section; and (c) provide parents or persons in parental relation to a child attending said school with written notification of test results.
3. The commissioner, in consultation with the commissioner of education, shall promulgate regulations to carry out the provisions of this section. Notwithstanding any other provision of law to the contrary, the regulations promulgated with regard to lead levels shall be consistent with the requirements for those school districts classified as a public water system under parts 141 and 142 of title 40 of the code of federal regulations as such regulations may, from time to time, be amended; **provided, however, that the lead action level is exceeded if the concentration of lead is greater than 0.005 milligrams per liter.**
4. Each school district and board of cooperative educational services conducting testing pursuant to subdivision one of this section and each school district classified as a public water system under parts 141 and 142 of title 40 of the code of federal regulations, as such regulations may, from time to time, be amended, shall make a copy of the results of all such testing, **including laboratory reports**, and any lead remediation plans available to the public on its website and any additional means as chosen by such district. A copy of the results of all testing shall also be immediately transmitted to the department and state education department in a format to be determined by the commissioner and to the county department of health in the local jurisdiction of the school building. The commissioner of education, in conjunction with the commissioner, shall publish a report **triennially** based on the findings from the tap water testing conducted according to the provisions of this section. Such report shall be sent to the commissioner, the governor, the temporary president of the senate, and the speaker of the assembly and shall be made available on the department's and state education department's websites.
5. **Expenses for remediation under this section and any regulations promulgated thereto shall be fully reimbursable from funds appropriated through the department of environmental conservation for clean water infrastructure projects.**

§ 2. This act shall take effect one year after it shall have become a law. Effective immediately the commissioner of health may make regulations and take other actions necessary to implement this act.

Note: Underlined sections are new or revised.

https://www.health.ny.gov/environmental/water/drinking/lead/docs/phl_1110.pdf

See also:

New York State Department of Health: Lead Testing of School Drinking Water.

https://www.health.ny.gov/environmental/water/drinking/lead/lead_testing_of_school_drinking_water.htm

New York State Department of Health Lead Testing in School Drinking Water Program Guidance Manual.

<https://www.health.ny.gov/environmental/water/drinking/lead/docs/leadtestinginschoolsguidancedocument.pdf>

Appendix 4: Professional Associations

School building design, management and maintenance organizations provide members with a voice in the debates concerning school facilities, access to information, and opportunities for professional development. The National School Plant Management Association (NSPMA) provides leadership and collaboration for facility managers in K-12 public schools throughout the country.⁽¹⁵⁾ There also are state organizations such as the Ohio Education Association and the Educational Plant Maintenance Association of Maine. These organizations are natural partners to improve drinking water access and quality in primary and secondary school buildings.

Types of Organization

There are three main types of school facilities management organizations:

- School plant management associations represent a wide range of school operations personnel. The National School Plant Management Association represents School Plant Managers, Facilitators and Directors across the United States and promotes excellence in education through professional facility management.⁽¹⁵⁾
- Associations of school business officials represent the school business management and operations community including finance, accounting, payroll, human resources, risk management, transportation, child nutrition, maintenance and operations, information technology, purchasing and facilities.⁽¹⁶⁾ For example, the Association of School Business Officials International's mission is "to provide programs and services to promote the standards of school business management practices, growth, and the effective use of educational resources."⁽¹⁶⁾
- Facilities building and engineering associations are varied. They include the Council of Educational Facility Planners International, the Association for Facilities Engineers, and the American Institute of Architects' Committee on Architecture for Education. Some organizations are focused on architecture or engineering of new buildings and reconstructing old buildings while others focus on the project commission process and creating procedures and protocols for building and repairing schools.

Within each type of organization, the size of the state or regional chapter varies greatly as does the number of resources and publications they provide to their members. All of these organizations represent an opportunity to engage with the school facilities design, management and maintenance community to address water in schools.

Appendix 5: Key Characteristics of Water Quality

The following chart is for informational purposes only. If there are any concerns at all about the safety of a school’s drinking water for whatever reason, please contact the local water authority, department of health or a water quality testing professional.

Characteristic	What It Means and What It Tells Us	Mitigation Steps
Color	The color of drinking water is primarily a concern for aesthetic reasons. ⁽¹⁷⁾ Unclear water creates the impression that it is dirty or unsafe for drinking. ⁽¹⁷⁾ An off-colored sample of water can indicate the presence of mold or algae, which can be harmful when consumed. ⁽¹⁷⁾	<ul style="list-style-type: none"> • If water is brownish in color, the cause is most likely iron, which is not harmful. Run water for 15 minutes or until the rust color dissipates.⁽¹⁸⁾ • If water looks cloudy or milky, the cause is most likely air bubbles. If water is put into a vessel and allowed to sit for a few minutes, the water should settle back to a normal color.⁽¹⁸⁾
Taste and Odor	Humans evaluate water quality by taste and smell. An off-taste does not necessarily mean water is not safe to drink. There may be different mineral contents that change the flavor of the water or leaves and other organic materials might have fallen into the water supply imparting a taste or smell. ⁽¹⁷⁾	<ul style="list-style-type: none"> • Filter water through a carbon filter to remove tastes.⁽¹⁹⁾ Other types of filtering systems such as reverse osmosis and faucet-mounted can also be used to improve the taste and odor of water.⁽¹⁹⁾ • Filters require routine servicing and state water laws and regulations should be consulted prior to installing in buildings that serve school children.
Turbidity	Turbidity refers to how well light transmits through a cup of water. If water is very turbid, there is a lot of material and the water will appear very cloudy or have solid objects in it. If water is very turbid, it can be a sign of deteriorating infrastructure, which can pose health risks. ⁽¹⁷⁾	<ul style="list-style-type: none"> • Turbid water tends to reflect systematic problems such as deteriorations in the pipes and distribution system.⁽¹⁹⁾
Temperature	Water temperature is important for a pleasant drinking experience. People prefer to drink cold water rather than warm or tepid and are more likely to use fountains that supply well-chilled water. ⁽⁵⁾	<ul style="list-style-type: none"> • If fountain water is warm, it is possible that the thermostat, relay, or overload needs to be fixed. • The problem may be more serious such as a coolant leak or a problem with the cooling component. Consult the maintenance manuals for your fountains and call a refrigeration technician if the problem is beyond a simple repair.⁽²⁰⁾

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Contact hprc@hsph.harvard.edu for more information.

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