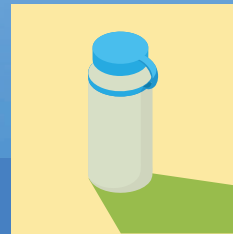




Developing State Policy Recommendations for Safe Drinking Water Procurement in Child Care Centers and Schools



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Author: Cara L. Wilking, JD

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EXECUTIVE SUMMARY

Access to safe and appealing drinking water in child care centers and schools is a key strategy to build healthy habits that children will use for life to maintain a healthy body weight and to support overall health. This study sought to identify and summarize state-level policies in twenty states for drinking water quality and access in public schools and licensed child care centers. This information was then used to generate individual state profiles and general policy recommendations to achieve increased drinking water consumption by children and to ensure drinking water is safe and appealing. The guiding principles behind these policy recommendations are to ensure that safe, potable drinking water is made available at no cost to children throughout the day. The state profiles and policy recommendations can be used to assess current policies for drinking water access and quality and to determine which policy recommendations are relevant to the needs of a particular state's schools and child care centers. The state profiles and policy recommendations also can be used as points of comparison and sources of ideas during the policymaking process.

RESEARCH METHODS

State-level policies that relate to drinking water quality and access in licensed child care centers and public schools were reviewed and summarized in individual state profiles and a summary report. The following twenty states were selected to capture geographic diversity, states with a high child population, and states with a history of water quality issues: Florida, Georgia, Illinois, Maryland, Massachusetts, Michigan, Minnesota, North Carolina, New Jersey, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Virginia, Washington and Wisconsin.

One legal researcher reviewed and summarized state policies relevant to drinking water quality and access in public schools and licensed child care centers that were adopted and/or in effect as of June 2017. The following state policy domains were included:

- Child care licensing regulations
- School building standards
- School nutrition standards
- School sanitation standards
- School facilities inventory requirements
- School joint purchasing provisions
- Food safety codes
- Plumbing codes
- Childhood lead poisoning prevention program regulations



LICENSED CHILD CARE CENTERS

Various state policies apply to drinking water in licensed child care centers. General drinking water availability in child care centers is primarily governed by child care center licensing regulations. How drinking water is made available to children, e.g. via drinking fountains or disposable cups, is addressed in child care licensing regulations, provider handbooks and, where applicable, food service codes. Child care centers participating in the federal Child and Adult Care Food Program must comply with that federal program’s minimum standards for drinking water availability and any additional state-level requirements. The following table summarizes the key findings and policy recommendations for how states currently address and can improve drinking water access and quality in licensed child care centers.

**KEY STATE POLICY FINDINGS AND RECOMMENDATIONS
FOR DRINKING WATER IN CHILD CARE CENTERS** (June 2017)

	KEY FINDINGS	POLICY RECOMMENDATIONS
When to Offer and Serve Water	Child care licensing provisions for water availability range from general requirements to make drinking water “freely available” to specific requirements that water be served and offered to children at various points during the day.	Clearly address water access throughout child care licensing regulations to ensure that water is: <ul style="list-style-type: none"> • served during meals and snacks • accessible during and after active indoor and outdoor play, and • available during field trips.
How to Provide Water	How water is provided can be governed by child care licensing provisions, food codes and state plumbing codes. Licensing provisions typically address the use of drinking fountains or disposable cups, but other methods of providing water like the use of pitchers or water dispensers, and individual reusable water bottles were rarely addressed.	Licensing agencies can utilize a multi-faceted approach that allows for the use of: <ul style="list-style-type: none"> • drinking fountains • bottle filling stations • pitchers, and • water containers. <p>This approach should also specify guidelines for proper, sanitary use of:</p> <ul style="list-style-type: none"> • reusable cups • disposable cups, and • reusable water bottles. <p>All licensing standards should be aligned with applicable food codes and plumbing codes.</p>
Ongoing Water Quality Monitoring at the Tap	Few of the states reviewed require child care centers to conduct water quality monitoring at the tap. Of the three states identified that do have a formal policy for water quality monitoring in licensed child care centers, only one state utilizes a health-based standard for lead in drinking water.	As a condition of licensing, require that all drinking water used in child care centers: <ul style="list-style-type: none"> • Meets a health based standard for lead in drinking water (e.g. the American Academy of Pediatrics recommends a standard of 1 ppb). • Is tested for lead and other contaminants of local concern as a condition of initial and renewal licensing.



PUBLIC SCHOOLS

Drinking water availability in public schools is primarily governed by state plumbing codes, and school facilities standards. Drinking water quality may be subject to state policies requiring monitoring at the tap. Schools participating in the National School Lunch Program (NSLP) and other federal child nutrition programs also must comply with federal minimum standards for drinking water availability during mealtimes. The following table summarizes the key findings and policy recommendations for how states currently address and can improve drinking water access and quality in public school buildings.

**KEY STATE POLICY FINDINGS AND RECOMMENDATIONS
FOR DRINKING WATER IN PUBLIC SCHOOLS** (June 2017)

	KEY FINDINGS	POLICY RECOMMENDATIONS
Making Water Available Throughout the School Day at No Cost to Students	<p><i>Water at no cost to students:</i> State-level school nutrition policies have not been widely used to require access to drinking water throughout the school day at no cost to students.</p> <p><i>Drinking Fountains:</i> State plumbing codes and school building construction requirements for drinking fountains in school buildings typically require a set ratio of fountains to students (e.g. 1 per 100 students), but are rarely otherwise tailored to the unique needs of students in school buildings.</p> <p><i>Cups:</i> Research shows that children drink more water when provided with a cup. None of the states reviewed have an affirmative requirement that cups be provided for water during mealtimes.</p>	<p><i>Water at no cost to students:</i> Enact a clear statewide policy requiring that drinking water be available at no cost to students during:</p> <ul style="list-style-type: none"> • the school day, and • activities held on school grounds outside of regular school hours <p><i>Drinking Fountains:</i> Ensure that policies for school drinking fountains address:</p> <ul style="list-style-type: none"> • adequate access during peak cafeteria usage times • fountain access in areas commonly used beyond the regular school day • weather appropriate fountains in outdoor spaces • an adequate number of plumbed, bottle filling stations to meet the needs of the student body <p><i>Cups:</i> Include in school nutrition standards a statewide requirement that cups for drinking water be available in food service areas during mealtimes.</p>
Water Quality	<p>Ten of the twenty states reviewed have a policy for water quality monitoring at the tap in public school buildings. These policies vary widely in terms of whether they are:</p> <ul style="list-style-type: none"> • voluntary or mandatory • adequately funded • one-time, snapshot testing or ongoing monitoring, • utilizing a health-based standard for lead in drinking water, and • administered through a publicly accessible, statewide reporting system 	<p>The following are key considerations for states that may adopt a statewide testing program or refine an existing program:</p> <ul style="list-style-type: none"> • Apply a health-based lead action level (e.g. the American Academy of Pediatrics recommends a standard of 1 ppb). • Utilize plumbing system surveys to identify sources of potential lead contamination that can be immediately addressed with point-of-use filtration and scheduled for permanent removal regardless of whether snapshot testing produces an actionable lead level. • Utilize actual school facilities data to determine funding needs for ongoing testing and remediation. • Make testing results data publicly available through a centralized system.

<p>Joint Purchasing</p>	<p>States generally permit joint purchasing whereby a school district can participate in a purchasing collaborative to expand the range of products available, and reduce the price of items sought.</p>	<p>Encourage purchasing collaboratives to create model contracts and negotiate competitive prices for:</p> <ul style="list-style-type: none"> • cups • clear reusable water bottles • water filters and filter servicing • durable equipment like bottle filling stations and water dispensers
<p>Information Gathering Systems</p>	<p>Accurate school facilities data is necessary to assess the scope and cost of water quality and access improvements needed in public school buildings. Seven of the states reviewed for this study periodically collect statewide school building condition information including plumbing system information.</p>	<p>Revise state school building condition survey instruments to include questions about:</p> <ul style="list-style-type: none"> • the school water supply • plumbing systems • water quality monitoring, and • the condition of drinking water outlets

CONCLUSION

There remain important policy gaps as to fundamental issues of tap water safety and drinking water access in schools and child care centers. Statewide testing programs for public school buildings vary widely and child care center policies for testing at the tap remain rare. Health based standards for lead in drinking water have yet to be widely adopted in policies applicable to drinking water in schools and child care centers. A number of policy opportunities were identified, including policies to better provide drinking water at no cost to students during meal times and to accommodate the use of reusable water bottles in child care centers. Such policy approaches can be refined, replicated and expanded upon to improve overall drinking water access and quality in these vitally important settings for child health.

INTRODUCTION

Access to safe and appealing drinking water in child care centers and schools is a key strategy to build healthy habits that children will use for life to maintain a healthy body weight and to support overall health.¹ Informed by a review of state-level drinking water policies for licensed child care centers and public schools in twenty states, this report provides examples of state-level policies for access to and the quality of drinking water in these settings. The policies identified were used to generate policy recommendations to inform state-level efforts to improve drinking water quality and access. The guiding principles behind these policy recommendations are to ensure that safe, potable drinking water is made available at no cost to children throughout the day.

BACKGROUND

Putting Water on Par with Other Beverages

This report describes state policies that can be adopted and implemented to ensure children have access to safe, potable and appealing drinking water in schools and at licensed child care centers.

Increased access to safe drinking water has gained attention through national drinking water promotion campaigns like Drink Up, and federal requirements in the National School Lunch Program (NSLP) and the Child and Adult Care Food Program (CACFP) that participating sites make potable drinking water available to children.²

Tap water is subject to a distinct set of laws and regulations as compared to packaged beverages like milk, juice and bottled water (Table 1). For example, milk and plain water are the only two required beverages in the NSLP and the CACFP (with the exception of breastmilk or infant formula for infants), yet the two are subject to different policy requirements for how they are produced, handled, and delivered to children (Table 1). Table 1 compares state policies and food service practices for packaged beverages versus tap water when made available in food service areas during school meals.

STATE POLICY PROFILES

[California](#)
[Florida](#)
[Georgia](#)
[Illinois](#)
[Maryland](#)
[Massachusetts](#)
[Michigan](#)
[Minnesota](#)
[North Carolina](#)
[New Jersey](#)
[New York](#)
[Ohio](#)
[Oklahoma](#)
[Oregon](#)
[Pennsylvania](#)
[South Carolina](#)
[Texas](#)
[Virginia](#)
[Washington](#)
[Wisconsin](#)

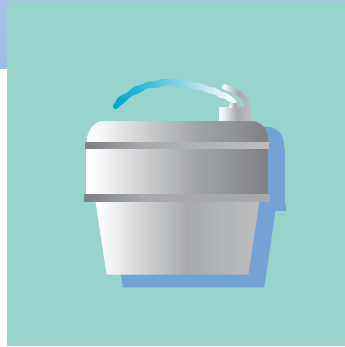


TABLE 1: State Policies & Food Service Practices for Beverages Available During School Meals

	PACKAGED BEVERAGES (e.g. milk, juice, bottled water)	TAP WATER (e.g. from a public water supplier)
Source	State food codes require that packaged beverages come from an “approved source.” For example, typically bottled water must be produced by a supplier that meets state and federal processing and quality standards. ³	State food codes require that plumbed drinking water come from an “approved source” where it is treated according to applicable water quality standards (e.g. a regulated public water supplier or well water that meets water safety standards). ⁴
Delivery	Packaged beverages must be delivered to schools in a safe and sanitary condition (e.g. fresh milk must be delivered chilled to prevent spoilage). ⁵	Drinking water is piped to school buildings through public water distribution systems. It circulates through service lines on school property and then through the school building’s plumbing system. ⁶
On-Site Handling	State food codes require that packaged beverages are received by school food service and kept under proper sanitary conditions to prevent contamination and spoilage. ⁷	There is no universal system of comprehensive oversight of tap water quality after it enters school buildings where water may become contaminated. ⁸
Serving to Students	State food codes require that beverages be served in a sanitized reusable cup, an individual sealed container like a milk carton, or via a single-use, disposable cup. ⁹	Plumbed water can be made available to children without cups via a traditional, plumbed drinking fountain as per state plumbing codes. ¹⁰ Or water can be served from a sanitary water dispenser to fill a receptacle like a cup or water bottle in accordance with food codes. ¹¹

Ensuring Water is Safe to Drink

Schools and child care centers can get their water from a public water supplier or an on-site water supply such as a well.¹² Public water suppliers are subject to a range of federal and state drinking water laws and regulations to ensure water is safe when it enters the water distribution system.¹³ On-site wells also are subject to laws and regulations to ensure proper construction and ongoing water quality monitoring.¹⁴ However, at present, monitoring water quality when it actually reaches the end-user through a fountain or faucet, after it has passed through the distribution system, is a major gap in federal and state water quality oversight.¹⁵

Drinking water quality was brought into sharp focus in 2015 by national media coverage of the water contamination crisis in Flint, Michigan and its aftermath.¹⁶ In 2014, high levels of toxic lead and other contaminants were released when Flint changed its municipal water source and failed to implement corrosion controls to prevent contamination as water was piped through water mains and the water distribution systems of private and public buildings, including school buildings, citywide.¹⁷ Children were lead poisoned and a number of people died from Legionnaires disease.¹⁸ Flint is a tragic and extreme example of water quality crises that have occurred in school districts over the past several decades.¹⁹ Prior lead contamination crises in Los Angeles, Baltimore, Boston, Seattle, Washington D.C., and Philadelphia did not lead to statewide, systematic policy changes.²⁰ Since Flint, states are beginning to enact statewide legislation to require sampling to test for lead in school and child care drinking water and remediation.²¹ Such state policies represent a promising shift away from reactive responses to high profile water quality crises, and towards more proactive and long-term policy solutions to ensure ongoing water quality.

RESEARCH METHODS

This study sought to identify and summarize state-level policies for drinking water quality and access in public schools and licensed child care centers. This information was then used to generate policy approaches that can be refined and duplicated by states to achieve increased drinking water consumption by children and to ensure drinking water is safe and appealing.

State Selection

State-level drinking water policies for licensed child care centers and public schools in twenty states were reviewed and summarized (Table 2). States were selected for geographic diversity, high child population, history of protracted water quality issues, and presence of large school districts that have improved food quality through creative procurement solutions.

CA	FL	GA	IL	MD	MA	MI	MN	NC	NJ
NJ	OH	OK	OR	PA	SC	TX	VA	WA	WI

Child Care Policies

One legal researcher identified state-level drinking water policies for licensed child care centers that had been adopted and/or were in effect as of June 2017. Licensed child care centers are typically defined as ongoing care for non-school age children. Policies unique to family child care and school-age programs were not included in this review. Policies were identified through state agency websites and policy compilations (the Appendix lists existing policy compilations that were used to inform the legal research). Policies were verified using the Lexis Advance legal database.

A 2015 Environmental Law Institute (ELI) review of drinking water quality in child care²² and additional research was used to select the following policies for review:

- Child care center licensing regulations and handbooks or manuals with agency commentary
- State food service codes (where applicable to child care centers)
- Statutes and regulations requiring water quality monitoring at the tap in child care centers
- State childhood lead poisoning prevention program enabling legislation and implementing regulations
- State plumbing codes

Search terms and research questions on the subjects of water access and water quality were generated for each policy type, and findings were summarized in state policy profiles.

State policies for public water systems and private water supplies (e.g. wells) are described in the environmental literature and were covered in depth by the 2015 ELI review [Drinking Water Quality in Child Care Facilities: A Review of State Policies](#).²³ They were only included in this survey when incorporated by reference in the policies identified above and were not reviewed independently.

School Policies

One legal researcher identified state-level policies relevant to drinking water quality and access applicable to public schools that had been adopted and/or were in effect as of June 2017. Policies unique to charter schools, public-pre-K programs, and private schools were not included. A state policy framework was generated through a review of the literature on school drinking water access and quality. The following policies were reviewed:

- State food service codes
- State school nutrition standards for providing drinking water at no cost to students
- Statutes and regulations requiring water quality monitoring at the tap in school buildings
- State childhood lead poisoning prevention program enabling legislation and implementing regulations
- School building standards contained in statutes, regulations and/or school construction manuals
- School sanitation regulations
- State plumbing codes
- Statewide school facilities inventory laws, regulations, and summary reports
- Joint purchasing statutes applicable to schools

These policies were identified, verified and reviewed using the same process described above for child care center policies.

State-level nutrition policies regarding sales of bottled water in vending machines and at school events were not included in this review, because the USDA's Smart Snacks Rule has been in effect since the 2014-2015 school year and broadly allows sales of bottled water.²⁴

KEY FINDINGS & POLICY RECOMMENDATIONS

This section presents key findings and policy recommendations from the twenty-state review. Policy recommendations are intended to provide a starting point for state policies and modeled after language identified in the review that was unambiguous and easily ascertainable for the purpose of ongoing policy enforcement.

LICENSED CHILD CARE CENTERS

This section describes key findings and policy recommendations for water availability and quality in licensed child care centers. At the state policy level, drinking water availability in child care centers is governed by child care center licensing regulations.²⁵ How drinking water is made available to children, e.g. via drinking fountains or disposable cups, is addressed in child care licensing regulations and provider handbooks and, where applicable, in food service codes. Child care centers participating in the CACFP must comply with that federal program's minimum standards for drinking water availability and any additional state-level requirements.



When to Offer and Serve Water

Key Findings: Child care licensing provisions for water availability range in specificity from general requirements to make drinking water “freely available” or “readily available” to more specific requirements that water be served with meals and snacks; be offered between meals; and that water be made available during and after outdoor play. Table 3 provides examples of how states incorporate these provisions into various aspects of licensing standards.

TABLE 3: EXAMPLES OF WATER ACCESS IN CHILD CARE LICENSING STANDARDS	
Nutrition	Water must be “served at every snack, mealtime, and after active play.” ²⁶ “Drinking water shall be offered at least once between meals and snacks to children less than three (3) years of age.” ²⁷
Routines for Children	“As they feel the need children shall be allowed to...get a drink of water.” ²⁸
Transportation and Field Trips	“The center shall make provisions for providing children on field trips with adequate...water.” ²⁹
Space Requirements	Outdoor spaces must “provide access to...drinking water during play times.” ³⁰

Policy Recommendations: Drinking water availability should be clearly addressed throughout child care licensing regulations. The following policy elements can be used to bolster drinking water availability in licensed child care centers:

- Serve water during all meals and snacks.³¹
- Make water easily accessible for children who can drink by themselves.³²
- Allow children to drink water as they feel the need.³³
- Make water available during play and activity times at on-site outdoor spaces.³⁴
- Offer water after active play.³⁵
- Offer water at least once between meals and snacks.³⁶
- Ensure an adequate supply of water is available during field trips.³⁷



How to Provide Water

Key Findings: How water is provided to children can be governed by child care licensing regulations and provider handbooks promulgated by the agency in charge of licensing. It can also be subject to food codes and state plumbing codes. Child care licensing regulations often simply state that child care centers are to make water available through “drinking fountains or disposable cups.”³⁸ Other methods of providing water like pitchers and cups or a closed water container with a spigot were not widely addressed in the states reviewed. In the states reviewed, the use of reusable water bottles as an alternative to disposable cups was rarely addressed.

Table 4 contains Maryland’s comprehensive licensing standards for providing water to children in a sanitary manner, and Ohio’s guidance to providers on how to utilize reusable water bottles in licensed child care centers.

TABLE 4: Examples of Child Care Center Licensing Regulations for How to Provide Water	
Maryland	Drinking water shall be supplied by: <ol style="list-style-type: none"> 1. An angle-jet drinking fountain with mouthguard; 2. Licensed bottled water in the original container; 3. Running water supply with individual single service drinking cups; or 4. Another method or source approved by the licensing agency. During meals and snacks, water may be served family-style from a pitcher if the water is poured into the pitcher directly from one of the supply sources listed above. ³⁹
Ohio	“Water containers that are labeled with the child’s name can be used all day, but must be cleaned and sanitized before used again on another day.” ⁴⁰

In general, policies specifying how to provide children in care with drinking water should be age appropriate and aligned with food safety principles. Ensuring that single-serve or disposable drinking cups are not reused is important to protect child health. Clear guidance is needed for the use of reusable water bottles, as disposable cups are an expense and generate waste that many child care providers may want to minimize throughout the day.



Policy Recommendations: The following policy approaches can be used in child care center licensing regulations to clarify the use of reusable water bottles, ensure that disposable cups are available in case they are needed, and provide clear standards for how to make water available through fountains and other water containers:

- Drinking water can be made available via drinking fountains, pitchers, and water containers and served in reusable cups, disposable cups and reusable water bottles.
 - If drinking fountains are not at a child-accessible height, utilize anchored steps or a broad-based platform.⁴¹
 - Disposable cups shall be available for children in the event that a reusable cup or a reusable water bottle is not available.
 - Disposable cups must be discarded after each use.
 - Reusable cups must be sanitized between each use.
 - Reusable water bottles labeled with a child’s name can be used all day, and must be sanitized before use again on another day.⁴²
- Drinking water can be made available through a water container so long as the container is properly cleaned and sanitized, kept securely closed, and designed so that water can only be withdrawn by water tap or faucet.⁴³
- Pitchers:
 - Pitchers must be filled directly from a sanitary source of drinking water.⁴⁴
 - During adult-supervised family-style meals and snacks an adult may re-fill a child’s drinking cup from a pitcher without touching the child’s cup.⁴⁵
 - Children may only be permitted to use a pitcher with adult supervision and a clean cup. No refills into a previously used cup are permitted.⁴⁶

Water Quality

Key Findings: Water quality is subject to a range of policies including child care center licensing regulations, state food service codes, and standalone water quality monitoring policies. These policies can regulate: the water supply in general; water quality monitoring at the tap; and the use of water filters.

The Water Supply

Water quality oversight in child care facilities currently focuses on the water supply before it enters individual building plumbing systems and can be subject to child care licensing regulations and/or state food codes. Centers that use a regulated public water supply typically are considered to have an “approved source” of drinking water requiring no additional oversight. As a condition of licensing, centers with a private water supply, e.g a well, typically are required to provide proof of compliance with applicable water quality laws and regulations and may be required to conduct annual sampling for nitrates and coliform. If a center with a well prepares and serves food on-site and is required to obtain a retail food license, it typically must provide proof of compliance with applicable water safety standards and annual water sampling.⁴⁷

Water Quality Monitoring at the Tap

There is no safe level of lead exposure and lead in drinking water can contribute to a child’s lead burden from other sources of lead poisoning like paint, soil and dust.⁴⁸ It is estimated that lead from drinking water contributes from 14 to 20% or more of total lead exposure.⁴⁹ The widely used allowable limit for lead in drinking water of 15 ppb is derived from federal law, but is not a health-based standard.⁵⁰ The American Academy of Pediatrics recently endorsed a standard of 1 ppb of lead in drinking water from drinking water outlets used by children.⁵¹ A standard of 5 ppb would align tap water with the current standard for commercially bottled drinking water.⁵²

Existing licensing provisions for drinking water quality use terms that are not clearly defined such as “safe drinking water,”⁵³ and typically do not require routine tap water monitoring when water comes from a public water supplier. Despite the heightened risk to very young children from lead, to date, state legislatures have focused on water quality monitoring for lead in school buildings as opposed to child care centers.⁵⁴ Few states require water quality monitoring for lead in licensed child care centers. Table 5 provides three examples of such policies.

TABLE 5: EXAMPLES OF POLICIES TO TEST FOR LEAD IN DRINKING WATER IN LICENSED CHILD CARE CENTERS AS OF JUNE 2017

	Washington ⁵⁵	New Jersey ⁵⁶	Illinois ⁵⁷
Effective Date	May 2017	March 2017	On or before Jan 1, 2018
Mandatory	Yes	Yes	Yes
Covered Centers	All centers	All centers that receive water from a community water system	All centers built prior to 2000
Lead Action Level	15 ppb	15 ppb	Subject to rulemaking (The current recommended limit for lead in school drinking water is 5 ppb)
Drinking Water Outlets to be Tested	All fixtures used for cooking or drinking	All fixtures used for cooking or drinking and at least 50% of all other indoor faucets	Subject to rulemaking
Frequency	Upon initial licensing and at least every six years thereafter	Upon initial licensing, renewal application (every 3 years), relocation of an existing licensed center, and, in the discretion of the Office of Licensing, at any other time	Upon initial licensing and renewal
Completion Schedule for Initial Testing	Previously licensed centers have six months to complete initial testing	Not specified	Subject to rulemaking

Water filters

As more point-of-use water filters (filters attached to an individual faucet or drinking fountain) are being used to improve water taste and to reassure providers and parents of water quality, it will be important to have clear policies about proper filter servicing and maintenance applicable to all child care centers. At present, water filters are addressed in food service codes, but not all states require child care centers that prepare and serve food to obtain a food service license. Many centers may only serve food prepared off-site, and filters can be used outside of the food service area where food codes do not apply. State food codes are modeled after the FDA Food Code and commonly require that water filters be: made of safe materials; replaceable; and changed as per the manufacturer's instructions or as necessary to prevent device failure due to local water conditions. In addition, records of filter changes are to be kept on file.⁵⁸

Policy Recommendations: The following approaches can be used to develop licensing regulations and, where applicable, food code provisions to improve water quality at child care centers:

- Water used for drinking, infant formula and food preparation shall meet a health-based standard for lead (e.g. the AAP's 1 ppb or 5 ppb as is required for bottled water).⁵⁹
- As a condition of licensing, all child care centers shall test all drinking water outlets for lead. Outlets with elevated lead levels must be taken out of service immediately and parental notification is required. Proof of remediation is to be provided in a timely manner.
 - Ongoing monitoring approaches
 - Retest all outlets at specified intervals (e.g. licensing renewal or annually)⁶⁰
 - Require retesting at specified intervals if the building receives water via a lead service line and/or the plumbing profile of the building poses an ongoing risk of elevated lead levels in drinking water.⁶¹
- When using tap water directly from a drinking water outlet, use only cold water for drinking and food preparation.⁶²
- Outlets used for drinking water and food preparation shall be flushed after 48 hours of non-use.⁶³
- Where in use, replaceable water filters shall be changed in accordance with the manufacturer's instructions or as necessary to prevent device failure based on local water conditions, and records of filter changes shall be kept and made available for review.⁶⁴

PUBLIC SCHOOLS

At the state policy level, drinking water availability in public schools is primarily governed by school nutrition policies, state plumbing codes, and school facilities standards. Schools participating in the NSLP and other federal child nutrition programs also must comply with federal minimum standards for drinking water availability. This section describes key findings and policy recommendations for: water availability at no cost to students; water quality; joint purchasing of drinking water equipment supplies; and public school facility information gathering systems.

Making Water Available Throughout the School Day at No Cost to Students

State School Nutrition Standards

Key Findings: State nutrition policy could be used to clearly and comprehensively address drinking water in schools. Nationwide participation in the NSLP means that not all states have their own binding school nutrition standards. Table 6 provides two examples of how state school nutrition policy has been used to go beyond the minimum nutrition requirements set out in the NSLP.

Massachusetts	Schools shall “make readily available plain, potable water to all students during the day, at no cost to the students.” ⁶⁵
California	All schools, regardless of participation in federal nutrition programs like NSLP, must provide access to free, fresh drinking water during mealtimes in school food service areas. ⁶⁶

Policy Recommendation: Enact a clear statewide policy such as:

- Potable drinking water shall be available at no cost to students throughout the school day and during activities held on school grounds outside of regular school hours.

Drinking Fountains

Key Findings: The number and placement of drinking fountains required in school buildings is primarily addressed in state plumbing codes. The most common state plumbing code standard used is a simple ratio of one drinking fountain per 100 building occupants. Table 7 provides examples of how some of the states reviewed incorporate school-specific provisions into their state plumbing codes and how drinking fountains are addressed in school construction planning manuals.

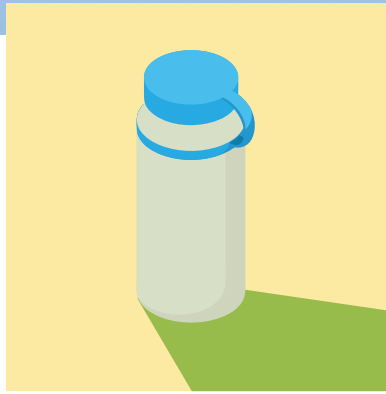
TABLE 7: Examples of School-Specific Drinking Fountain Policies

Theaters, cafeterias, gyms, outdoor stadiums	<p>The NC State Plumbing Code requires that:</p> <ul style="list-style-type: none"> • Drinking fountains must be provided in K-12 theaters, cafeterias, gymnasiums, outdoor stadiums and bleachers • Fountains serving theaters, cafeterias and gymnasiums must be within 200 ft. of the entrance and cannot be locked off during afterschool use of those rooms.⁶⁷
	<p>The SC Dept. of Education’s 2014 South Carolina School Facilities Planning and Construction Guide specifies that:</p> <ul style="list-style-type: none"> • Water coolers or an alternate source of free water is required in all cafeterias serving free or reduced meals. • Gymnasium and auditorium lobbies must have a minimum of one fountain/cooler located in each area.⁶⁸
Outdoor fountains for cold weather states	<p>The Ohio Facilities Construction Commission’s Ohio School Design Manual recommends that new schools provide an outdoor, freeze-proof, exterior-wall-mounted drinking fountain that is push-button-activated and ADA compliant.⁶⁹</p>
Pre-K and kindergarten classrooms	<p>NJ’s State Board of Education regulations for educational facilities planning requires that public pre-K and kindergarten classrooms are equipped with a bubbler or water fountain.⁷⁰</p>
General accessibility	<p>The WA State Plumbing Code requires that school drinking fountains be located on an accessible route.⁷¹</p>

Policy Recommendations: Incorporate school-specific standards for drinking fountain density and placement into existing state policies that apply to school buildings to address the following:

- Adequate plumbed drinking water access in cafeterias during peak usage times⁷²
- Access to fountains in areas commonly used beyond regular school hours like gymnasiums and auditoriums
- Weather-appropriate fountains in outdoor spaces
- Age-appropriate, sanitary sources of drinking water in pre-K and kindergarten classroom

Depending on the state regulatory structure, these policies can be incorporated into state building codes, school facilities standards, or school construction and planning guides.



Bottle Filling Stations

Key Findings: Bottle-filling stations allow students to fill a cup or a reusable water bottle in a sanitary manner.⁷³ They can be integrated into a traditional drinking fountain or be a stand-alone unit, and may be chilled and incorporate a water filter. Permissible plumbed water dispensers or bottle filling stations are defined in model plumbing codes that are adopted in the majority of states.⁷⁴ Of the states reviewed, only Washington has specific provisions requiring the use of bottle filling stations in school buildings (Table 8).

TABLE 8: School Bottle Filling Stations in the State Plumbing Code	
Washington	<p>The WA State Plumbing Code requires the following in schools with more than 30 occupants:</p> <ul style="list-style-type: none"> • Provide at least one bottle filling station on each floor. This bottle filling station may be integral to a drinking fountain.⁷⁵ • If more than two drinking fountains per floor are required, bottle filling stations can substitute for up to 50 percent of the required number of drinking fountains.⁷⁶

Policy Recommendation: States that want to ensure all newly constructed schools and schools undergoing major renovations have bottle filling stations can amend their state plumbing codes and school construction standards to require a specified number of bottle filling stations in school buildings. Placement requirements can be per story and/or per specified school building area such as in cafeterias, high-traffic areas, and adjacent to gymnasiums and outdoor spaces.

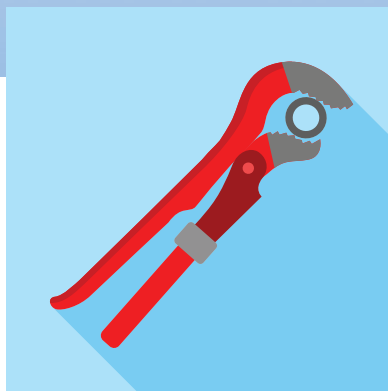


Cups

Key Findings: As discussed above, children in child care are routinely provided cups for water. Access to cups should carry through to primary and secondary school to reinforce healthy beverage routines ingrained in child care. Research shows that children drink more water when provided with a cup.⁷⁷ None of the states reviewed have an affirmative requirement that cups for water be provided to children during mealtimes or at bottle filling stations.

Policy Recommendation: The following policies approaches can be used to require the use of cups:

- In food service areas, cups with a specified minimum capacity (e.g. 8 oz.) shall be provided during mealtimes.⁷⁸
- Cups shall be provided at all bottle filling stations that do not include a traditional drinking fountain spigot.⁷⁹



Fountain Maintenance

Key Findings: To remain sanitary and usable by students, school drinking fountains require routine cleaning and adequate water pressure. Fountains may fall under general school maintenance statutes and regulations, school sanitary code regulations, and/or voluntary maintenance standards for school districts developed by the state department of education. When fountains are specifically addressed, provisions focus on regularly scheduled cleaning and adequate water pressure (Table 9). Fountains in food service areas also fall under state food codes that typically require plumbing systems be maintained in “good repair.”⁸⁰

TABLE 9: Examples of Fountain Maintenance Provisions	
Florida	The FL Dept. of Education’s State Requirements for Educational Facilities requires: <ul style="list-style-type: none"> • Drinking fountains be “in an operational condition at all times.”⁸¹ • School boards must schedule and prescribe methods for daily cleaning and disinfection of drinking fountains.⁸²
North Carolina	The NC sanitary code for schools requires that “fountains shall be provided with adequate water pressure, properly regulated, kept clean and in good repair.” ⁸³

Policy Recommendations: Due to the widespread use of drinking fountains to provide free water in food service areas,⁸⁴ state food codes should clearly address their use. Food codes should require routine cleaning and sanitizing of these fixtures as is required for all other food service equipment.

States with statewide school maintenance or sanitation standards for school buildings can require daily cleaning and sanitizing of fountains and water pressure checks at specified intervals to ensure children can get a drink in a sanitary manner.

Joint Purchasing

Key Findings: The cost of durable equipment like bottle filling stations or water dispensers and ongoing supplies like cups and water filters can be a barrier to expanded water access. Creative procurement approaches whereby schools work in unison to build demand for and procure products like local produce and high quality meat have been used successfully across the country.⁸⁵ The states surveyed permit joint purchasing whereby a school district can participate in a collaborative to expand the range of products available, and reduce the price of items sought. Joint purchasing is also permissible under the NSLP and other child nutrition programs.⁸⁶

Recommendation: Encourage purchasing collaboratives to create model contracts and negotiate competitive prices for cups, clear reusable water bottles, water filters and filter servicing, and durable equipment like bottle filling stations and water dispensers.

Water Quality

Like child care centers, water quality oversight in schools currently focuses on the water supply before it enters the water distribution system and can be subject to school building standards or state food codes. Schools that use a regulated public water supplier typically are considered to have an “approved source” of water requiring no additional oversight. Schools with a private water supply must comply with applicable water quality laws. State food codes require water be from an approved public water supplier, and, if water is from a private supply, proof of compliance with applicable water safety standards and annual sampling can be required.⁸⁷ States are beginning to enact more comprehensive water quality monitoring requirements for public schools, and the increased use of water filters to address water quality problems at the tap necessitates an examination of policies for their use in school buildings.

Water Quality Monitoring at the Tap

Key Findings: Ten of the twenty states reviewed have taken action to test school drinking water for lead. Table 10 describes how these policies and programs vary widely from state to state. Half of those identified are voluntary, one-time programs; two are mandatory, one-time testing requirements; and three are mandatory, ongoing testing requirements.

TABLE 10: STATEWIDE LEAD IN WATER TESTING APPROACHES IN BRIEF AS OF JUNE 2017	
CA	Voluntary, one-time program for up to five free samples per school building
MA	Voluntary, one-time grant program for schools wishing to test
MI	Voluntary, one-time funding of \$950/school building for testing and remediation
OH	Voluntary, one-time funding of up to \$15,000 for pre-1990 school buildings
OR	Voluntary testing as part of a Healthy & Safe Schools Plan
IL	Mandatory, one-time testing for pre-2000 elementary school buildings
VA	Mandatory, one-time testing and remediation by all school boards
MD	Mandatory, ongoing testing at all schools with certain exemptions
NJ	Mandatory, ongoing testing of all schools
NY	Mandatory, ongoing monitoring of all drinking water outlets at all schools

One-time snapshot testing is important to gain a baseline for results, and to identify and remediate actively contaminating fixtures. New Jersey was the only state reviewed to specifically require a plumbing survey of each facility to identify water flow, plumbing materials in use (including the service line, piping, solder and fixtures), and drinking water filters in use as part of its testing regime.⁸⁸ Ongoing testing can ensure water safety over time as approaches to water treatment and corrosion control change, but so long as sources of lead remain in service lines and school plumbing systems they will pose a threat to child health.

As summarized in Table 11, Illinois and Michigan were the only two states in the review that apply a health-based action level of 5 ppb for lead. There was a large range in available funds for schools in states that allocated a set amount of funding for testing (Table 11). For example, eligible Ohio schools can receive up to \$15,000 per school building whereas Michigan schools are limited to \$950 per building (Table 11). To date, these laws and regulations for lead testing of school water have not been used to address lead service lines, with the exception of New Jersey’s plumbing survey requirement.

TABLE 11: DETAILED EXAMPLES OF LEAD TESTING IN WATER POLICIES FOR PUBLIC SCHOOLS AS OF JUNE 2017

	Mandatory Testing	Covered Entities	Outlets to Test or Allowable Expenses	Lead Action Level	Ongoing Monitoring	Program Duration
CA	No	Schools that use a public water supplier	Up to five free lead in drinking water samples per K-12 building	15 ppb	No	Ends Nov. 1, 2017
OH	No	Pre-1990 buildings	Up to \$15,000 per eligible school to use for testing and fixture replacement materials	15 ppb	No	Ends Aug. 31, 2017
NY	Yes	All schools	All drinking water outlets	15 ppb	Yes, in 2020 and every five years thereafter	Ongoing
IL	Yes	Pre-2000 school elementary school buildings (up to grade five)	<ul style="list-style-type: none"> • All drinking water outlets • Sinks in classrooms with children under the first grade 	5 ppb	No	Ends Dec. 31, 2018
MI	No	All schools	Up to \$950 per school building for testing, fixtures, filters, plumbing assessments, or technical assistance	5 ppb	No	Ends Sept. 30, 2017

Policy Recommendations: Policies for water quality monitoring at the tap should have as an ultimate goal the removal of both manifest and latent hazards to the quality of school drinking water. It remains to be seen how the range of approaches adopted by states will succeed or fail in achieving this goal. As these policies are implemented it will be important to determine: which school districts choose participate in voluntary-testing programs; the scope of contamination identified through voluntary versus mandatory programs; steps taken to address contamination once it is identified; and the overall costs of testing and remediation. In light of the current policies identified by this review, the following are key considerations for states that may adopt a statewide testing program or refine an existing program:

- Apply a health-based lead action level.
- Utilize plumbing surveys to identify sources of potential lead contamination that can be immediately addressed with point-of-use filtration and identified for permanent removal regardless of whether snapshot testing produces an actionable lead level.
- Use plumbing surveys and other available plumbing maintenance cost data to accurately determine funding needs for ongoing testing and remediation.
- Make testing results data publicly available through a centralized system.

Water Filters

Key Findings: Point-of-use water filters used on individual drinking water outlets like bottle filling stations in schools can improve the taste of water. Filters can reassure students and their parents that water is safe to drink, and protect against periodic water treatment changes that can cause contamination. At present, water filters used for food service operations are addressed in food codes, but filters integrated into fountains or bottle filling stations in other parts of the school building are not subject to specific ongoing oversight after installation. State food codes are modeled after the FDA Food Code and commonly require that water filters be: made of safe materials; replaceable; changed as per the manufacturer’s instructions or as necessary to prevent device failure due to local water conditions; and records of filter changes are to be kept on file.⁸⁹

Policy Recommendations: States with statewide school maintenance or sanitation standards for school buildings can require that:

- All water filters are to be made of safe materials; replaceable; changed as per the manufacturer’s instructions or as necessary to prevent device failure due to local water conditions; and records of filter changes are to be kept on file.



Information Gathering Systems

Key Findings: Identifying sources of possible water contamination in school buildings such as lead service lines, lead solder and old fixtures is vital to assessing threats to water quality and to calculating the costs of remediation. Improving overall water access can also be informed by school facility data. For example, identifying how many school cafeterias have bottle filling stations, traditional drinking fountains, and other water dispensing equipment, as well as the age and overall condition of existing drinking water infrastructure is important. These data points can be obtained if properly surveyed. Seven of the states reviewed for this study periodically collect statewide building condition information that includes plumbing system information. Table 12 provides two examples of such information gathering systems.

TABLE 12: EXAMPLES OF STATEWIDE SCHOOL PLUMBING SYSTEM DATA COLLECTION	
CALIFORNIA	<p>The CA Office of Public School Construction evaluates the condition of school buildings as part of the funding allocation process for the state’s School Facility Program and the Deferred Maintenance Program and uses the following repair standards for drinking fountains:</p> <ul style="list-style-type: none"> • Fountains appear to have been cleaned each day that school is in session • Drinking fountains are accessible • Water pressure is adequate • A leak is not evident • There is no moss, mold, or excessive staining on the fixtures • The water is clear and without unusual taste or odor. • Other⁹⁰
NEW YORK	<p>The NY State Education Dept. collects a Building Condition Survey of each occupied school building every five years.⁹¹ The 2015 survey instrument required reporting of:</p> <ul style="list-style-type: none"> • Whether drinking water was provided from a public water supplier or an on-site well • What types of pipes are used in the water distribution system (“lead” is a response option) • Overall condition of the water distribution systems • Overall condition of plumbing fixtures • Year of last major plumbing or water system reconstruction or replacement, expected remaining useful life, and estimated cost of replacement⁹²

Policy Recommendations: States that do not incorporate detailed plumbing system information into their statewide facilities inventories can do so by revising their survey instruments to include questions about school water supplies, plumbing systems, and drinking water outlets. A detailed set of school plumbing system questions for inclusion in school facilities surveys is provided in the ChangeLab Solutions report [How State Plumbing Codes Can Increase Access to Drinking Water in Schools](#) (2014).

INTEGRATING DRINKING WATER INTO STATE CHILDHOOD LEAD POISONING PREVENTION PROGRAMS

As discussed above, lead exposure from drinking water in schools and child care settings can contribute to a child’s overall lead burden. Many states currently have in place childhood lead poisoning prevention programs to address dangerous lead exposure from contaminants like lead paint. In 2016, the US EPA suggested that states integrate “drinking water with cross-media lead reduction efforts” in order to leverage existing programs working to reduce lead from paint, dust, soil and other sources.⁹³

Key findings: At present, when included in the childhood lead poisoning prevention regulatory framework, water sampling at a child-occupied facility like a child care center or a school frequented by a poisoned child is typically optional or not specifically addressed. In the twenty states reviewed, when drinking water was included as a lead hazard, a non-health based standard for lead in drinking water (e.g. 15 ppb) was used.

Policy Recommendation: In order to remediate lead in drinking water as a potential source of cumulative harm, states could require that their childhood lead poisoning prevention programs conduct water sampling in all child-occupied facilities such as schools and child care centers frequented by a child with a confirmed case of lead poisoning, and require remediation if lead in drinking water exceeds a health-based standard for lead. It is important to note that because such testing would be conducted once a child is poisoned, it should not be used in place of proactive testing policies.



CONCLUSION

A paradigm shift is needed in child care centers and schools to equalize the state of drinking water and other available beverages like milk, juice and bottled water. Existing state policies provide a wealth of examples of policy approaches to provide safe drinking water that can be replicated and expanded upon to improve overall access and quality. These include:

- Integration of drinking water throughout child care licensing standards to address safe and adequate drinking water access throughout the day
- A clear policy for the use of reusable water bottles in child care
- Mandatory testing for lead in drinking water as a condition of child care licensing
- Integration of drinking water into state childhood lead poisoning prevention programs
- School facilities and plumbing code standards requiring drinking fountains in school cafeterias and adjacent to gymnasiums
- A plumbing code requirement that new school buildings have bottle filling stations
- Voluntary and mandatory water quality testing in school buildings that use a health-based lead action level for lead in drinking water
- Clear requirements for the use of water filters
- Statewide collection of detailed school water system and plumbing data.

APPENDIX: State Policy Compilations

<p>Child Care Center Licensing Statutes & Regulations</p>	<p>Public Health Law Center, Healthy Child Care (last updated 2016), http://www.publichealthlawcenter.org/resources/healthy-child-care</p> <p>National Center on Early Childhood Quality Assurance, U.S. Department of Health and Human Services, Administration for Children and Families, National Database of Childcare Licensing Regulations, https://childcareta.acf.hhs.gov/licensing</p> <p>Nemours State Policy Review on Obesity Prevention: Early Childhood Education in, Trust for America’s Health & Robert Wood Johnson Foundation, The State of Obesity 2016 (2016), http://stateofobesity.org/resources/</p>
<p>Childhood Lead Poisoning Program Policies</p>	<p>National Conference of State Legislatures, Lead Hazards Project, State Lead Statutes(2017), http://www.ncsl.org/research/environment-and-natural-resources/lead-hazards-project.aspx</p>
<p>Plumbing Codes</p>	<p>UpCodes, General Building Codes (2017), https://up.codes/codes/general</p> <p>Bracken Engineering, Building Codes in Effect by State (Mar. 2016) (on file with the author)</p>
<p>School Nutrition Policies</p>	<p>Pew Charitable Trusts, State & National School Snack Policies (last updated 2015), http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2015/01/state-and-national-school-snack-policies</p> <p>Bridging the Gap, State Laws for Snack Foods and Beverages, Provide Free Drinking Water – 2012-2013 (2014), http://foods.bridgingthegapresearch.org/#ng9s/2012</p>
<p>Water Quality Monitoring Policies for Schools and Child Care Centers</p>	<p>National Drinking Water Alliance, Interactive Map: Tap Water Contamination (2017), http://www.drinkingwateralliance.org/new-map</p> <p>National Conference of State Legislatures, Environmental Health Legislation Database (2017), http://www.ncsl.org/research/environment-and-natural-resources/environmental-health-legislation-database.aspx</p>
<p>Retail Food Codes</p>	<p>U.S. Food & Drug Admin., State Retail and Food Service Codes and Regulations by State (last updated Jan 26, 2017), http://www.fda.gov/Food/\GuidanceRegulation/RetailFoodProtection/FoodCode/ucm122814.htm</p>
<p>Joint Purchasing</p>	<p>National Joint Powers Alliance, State Legal References, http://www.njpacoop.org/cooperative-purchasing/state-legal-references</p>

ENDNOTES

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