Reducing Lead in Drinking Water:

A TECHNICAL GUIDANCE FOR MINNESOTA'S SCHOOL AND CHILD CARE FACILITIES

MINNESOTA

DEPARTMENT OF EDUCATION

DEPARTMENT OF HUMAN SERVICES

DEPARTMENT OF HEALTH

Reducing Lead in Drinking Water: A Technical Guidance for Minnesota's School and Child Care Facilities

Original: 1989

In 1989, MDH developed its first guidance document addressing lead in school drinking water based on the information in the 1988 EPA Lead Contamination Control Act.

Revisions: April 2018, March 2019, May 2021, April 2024

All previous versions are superseded by this 2024 guidance. Technical guidance revised to incorporate changes made to the Environmental Protection Agency guidance, ***3T's: Training, Testing and Telling*** now known as ***3T's: Training, Testing and Taking Action*** and additional modifications to conform with requirements of Minnesota Statutes as adopted in 2023.

A listing of applicable references is located at the end of this technical guidance in the order they appear in the document.

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Introduction

What is the Purpose of this Technical Guidance?

This technical guidance is designed to assist Minnesota's public school districts, charter schools, Head Start programs and child cares referred to as early care and education settings (ECES) in minimizing the exposure of students and staff to lead in drinking water. It also contains the model plan for lead testing of school and child care drinking water as required under MN State Statute 121A.335 and MN Statute 145.9273.

Minnesota Statutes, section 121A.335 requires schools to either adopt the technical guidance outlined in this document or develop and adopt an alternative plan that accurately and efficiently tests for the presence of lead in water in public school buildings serving students such as the 3Ts (Training, Testing, and Taking Action) guidance created by the United States Environmental Protection Agency. The statute further directs that this technical guidance be based on "standards established by the United States Environmental Protection Agency (EPA)" and current Minnesota Department of Health (MDH) guidance. In addition to describing required aspects (planning, testing, remediating, reporting), this document also presents flexible guidance that ECES can use in meeting their individual needs most efficiently.

The Minnesota Department of Education (MDE), Minnesota Department of Human Services (DHS), and MDH intend that facility staff consult this technical guidance when testing for lead in drinking water and implement activities when needed to reduce exposure to lead. Facilities are responsible for adopting and retaining the model plan or alternative plan and test results records, as well as making those results available to MDH, parents and the public per applicable statutes.

Who is Required to Use this Technical Guidance?

Public and charter schools: This technical guidance is intended for use by all public school districts and charter schools subject to requirements of Minnesota Statutes, section 121A.335. School administrators, school boards and others in positions of governance should review this technical guidance before conducting testing.

Child care facilities: In Minnesota, licensed or certified child care providers must test for lead in drinking water. For the purposes of Minnesota state testing requirements "licensed or certified child care provider" means a child care center licensed under Minnesota Rules, chapter 9503,

or a certified license-exempt child care center under chapter 245H. Additionally, MDH recommends that all child care providers test for lead, including family child care providers.

Head Start programs: Head Start programs that are also child care centers must follow the Minnesota child care statutes for testing and are also subject to the federal Office of Head Start (OHS) policies regarding testing for lead in drinking water. Using this technical guidance will help Head Start programs meet the OHS requirements for lead in water testing.

Other facilities serving children: MDH recommends that other facilities such as family child care providers, private schools, community centers, or other locations serving infants, preschoolers, and children test for lead to identify and reduce lead in drinking water. If a building or business is occupied by children for a large portion of the day or children would receive a significant proportion of their drinking water from the facility, then testing for lead regularly is encouraged.

Special considerations

If your ECES has its own well and it has been classified as a Nontransient Noncommunity Public Water System (NTNC PWS), additional lead testing must be completed for federal Safe Drinking Water Act (SDWA) compliance. Please contact MDH at 651-201-4700 if you have questions about SDWA lead testing.

If your ECES is served by a Community Public Water System (CPWS), i.e. municipality, you should contact your CPWS to learn more about lead in your water supply before testing your facility. Learning if a lead service line is present or reviewing the annual Consumer Confidence Report which describes the water quality can be helpful in planning your program. It's important to develop a working relationship with your CPWS, including having a coordinated communications plan if lead is detected.

Health Information

Why Worry About Lead?

Lead is a toxic material known to be harmful to human health if ingested or inhaled. Research has shown that exposure to lead is associated with adverse mental, physical, and behavioral effects on children. The current scientific consensus is that there is no safe level of lead exposure. More background can be found at Centers for Disease Control and Prevention - Childhood Lead Poisoning Prevention. Therefore, any blood lead level can have negative health effects. While water is just one potential source of exposure to lead in the environment, reducing lead in ECES drinking water can decrease an individual's overall exposure.

Health Risks of Lead

While we have known that lead is toxic for many centuries, there has historically been a level of exposure presumed to be "safe." Over the years, the safe level has been reduced based on new research, but it was always there. However, in 2012, the Centers for Disease Control and Prevention dramatically changed the way lead toxicity is assessed. Instead of setting a safe level, the new approach acknowledges the fact that there is no currently known safe level of lead exposure and recommends a primary prevention approach (i.e., preventing a problem before it occurs) to reducing risk.

Children

Children are more susceptible to lead exposure because their bodies absorb metals at higher rates than the average adult. Children younger than six years old are most at risk due to their rapid rate of growth and ongoing brain development. Exposure to lead can cause damage to the brain, nervous system, red blood cells, and kidneys. Lead also has the potential to cause lower IQs, hearing impairments, reduced attention span, hyperactivity, developmental delays, and poor classroom performance.

The damage from lead exposure in children is permanent. Fortunately, the impacts of lead exposure can be minimized with good nutrition, a stimulating education, and a supportive environment.

Adults

High blood lead levels in adults have been linked to increased blood pressure, poor muscle coordination, nerve damage, decreased fertility, and hearing and vision impairment. Pregnant women and their fetuses are especially vulnerable to lead exposure since lead can significantly harm the fetus, causing lower birth weight and slowing normal mental and physical developments.

The MDH Lead Program has more information on the health impacts of lead on children and adults.

Common Sources of Lead

There are a number of pathways of exposure to lead in the environment. While this guidance focuses on lead in drinking water at ECES, it is important to reduce exposure from all potential sources of lead. These include:

- Lead-based paint in older homes (i.e., built before 1978). This is the most common source for childhood lead poisoning;
- Lead-contaminated dust and soil;
- Imported spices, cosmetics, and medications contaminated with lead;
- Pottery or ceramics with lead glazes;
- Exposure through lead dust from a household member who has a job or hobby that involves lead, such as construction or shooting firearms;
- Swallowing items that contain lead, such as fishing sinkers; and
- Corrosion of plumbing materials including brass, solder, and pipes.

While water is not typically the most prominent source of lead exposure for an individual, reducing lead in drinking water can help in lowering an individual's overall exposure.

How Does Lead Get into Drinking Water?

Lead found in drinking water comes primarily from materials and components associated with the water distribution system and plumbing. While public water distribution systems may have lead components, the highest concentrations of lead are typically found nearest to the tap.

Lead may be present in various materials in a building's plumbing system such as lead solder, brass fixtures, valves, and lead pipes. Corrosion of these materials allows lead to dissolve into the water passing through the plumbing system. The amount of corrosion depends on the type of plumbing materials, water quality characteristics, electrical currents, and how water is used. The longer water remains in contact with lead materials, the greater the chance lead can get into the water.

Why is Lead a Special Concern for ECES?

Children are more vulnerable to lead

Children typically have higher intake rates for environmental materials (such as soil, dust, food, water, air, paint) than adults. They are more likely to play in the dirt and put their hands and other objects in their mouths. Children tend to absorb a higher fraction of ingested lead than adults, which can slow the normal physical and mental development of their growing bodies. In addition, the physical and behavioral health effects from lead can impact student success and classroom performance. While the most vulnerable age for lead exposure is for children less than six years old, the brains of school-age children are still developing and can be significantly impacted by lead exposure.

Plumbing materials and water use patterns at ECES

Lead levels in the water within the plumbing system of ECES can vary greatly from tap to tap. Plumbing materials influence the amount of lead in drinking water due to the variety of materials in the system (e.g., lead or copper pipes, lead solder, and brass fixtures). The amount of time and usage patterns the water is in contact with various materials in the plumbing system may have a significant effect on the concentrations found as well. The "on-again, off-again" water use patterns of most ECES can contribute to elevated lead levels in drinking water. Water that remains stagnant in plumbing overnight, over a weekend, or during a vacation has longer contact with plumbing materials and therefore may contain higher levels of lead.

What Can Be Done to Reduce Lead Levels in Drinking Water?

This section is relevant to any tap used for drinking water or food preparation. These are best practices in reducing lead concentrations and can be used at home, school, or at work.

When evaluating the best approach for protecting against lead exposure in schools and child cares, it is important to balance a number of factors:

- Current research has not identified a safe level of exposure to lead;

- Lead is still present in many areas of the environment, making it very difficult to eliminate all exposure;
- The risks of developing irreparable damage from lead in water increase with higher concentrations of lead and longer exposure times;
- ECES buildings across the state are very different, being old/new, big/small, busy/limited, targeted/multi-purpose, which impacts the likelihood of lead exposure; and
- Local facilities have the best understanding of their buildings and how they are used; they can work with parents, students, teachers, and administrators to come up with the best approach for their specific situation.

An effective response to lead in water must consider all of the factors listed above.

Use only cold water for drinking and food preparation

Use only cold water for drinking, preparing food, and making baby formula. Hot water releases more lead from pipes than cold water. The water may be warmed before use in formula.

Let it run before use

Running water at a tap, prior to using it for drinking or food preparation, will typically help reduce lead levels in the water. This works by removing the water that has been in the longest contact with the plumbing materials, thus removing the water with the highest concentration of lead. The amount of time and frequency to let it run will be unique to each building. The only way to know if lead has been reduced after letting it run is to check with a test.

Routine maintenance

Building water systems require routine maintenance to function properly. Steps to help reduce the presence of lead in your water include:

- Clean faucet aerators on a quarterly basis - more often if debris buildup is observed - as lead-containing materials may accumulate in aerator screens.
- Use only certified lead-free materials when performing plumbing work. More information can be found in How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products.
- Follow the manufacturer's recommendations for water softener settings to ensure an appropriate level of hardness. The hardness of the incoming water may have to be determined by asking your water supplier or having a sample analyzed.
- If there are fixtures that have disrupted water flow or low pressure, make sure to repair, remove, or replace as necessary. Fixtures that are no longer operational can cause areas of stagnant water allowing lead levels to rise and be pulled into neighboring fixtures.
- Hot water fixtures should be hot and cold water fixtures should be cold. If water never gets cold, evaluating and fixing broken mixing valves may be necessary.

- Maintain any other water devices such as boilers, recirculating systems, or hot water heaters. Proper maintenance of all your water systems can prevent corrosion and other water quality concerns.
- Label all fixtures with intended use such as cleaning only, not for drinking, etc. Post any necessary procedures in plain language and consider using pictures for small children.

Test the water for lead

The only way to determine how much lead may be present in drinking water is to have the water tested. Each tap or fixture providing water for drinking or food preparation must be tested at least every five years. Some form of lead hazard reduction should be implemented for taps where lead is found at or above 5 parts per billion (ppb). Detailed instructions on testing water for lead and recommended lead hazard reduction options are found later in this document.

Water management planning

A water management strategy for maintaining water daily and after extended breaks and closures can help ensure consistent water quality and minimize risks of lead getting into drinking water. A water management plan not only prevents risk of lead but maintains water quality and may help reduce risk of other contaminants such as legionella. MDH can provide general consultation, but the local facilities are in the best position to understand and implement an effective strategy for their specific situation. EPA has guidance, Ensuring Drinking Water Quality in Schools During and After Extended Closures (PDF) for ECESs to reduce lead exposure.

Regulations and Guidance

Due to lead's health effects and the special circumstances that make lead a concern in ECES, a number of legal requirements and guidance materials exist that are applicable to reducing lead in ECES drinking water.

Table 1 displays the statutes and regulations (enforceable), and guidance (not enforceable) applicable to schools and child cares. Each statute, regulation or guidance is explained in detail in the sections following the table.

Table 1: Regulations and Guidance Governing Lead in ECES Drinking Water

Name	Type	Effective Date	Applicability
Minnesota Statute 121A.335	State Statutory Requirement	2018/2023	All public and charter schools in Minnesota
Minnesota Statute 145.9273	State Statutory Requirement	2023	Licensed child care providers- child care centers
Head Start Policy and Regulations Memo ACF-IM-HS-23-01	Office of Head Start Policy	2022-2023	Head Start programs
Lead and Copper Rule, Revisions, and Improvements (SDWA)	Federal Law and Rule	1991/2007/ 2021/2023	Directly applies to schools served by their own water source (e.g., well) and serving 25 or more people. Requires PWS to engage with schools and child cares.
Lead Contamination Control Act	Federal Law and Rule	1988	All schools
Reduction of Lead in Drinking Water Act (SDWA)	Federal Law and Rule	2014/2020	All schools
3Ts (Training, Testing and Taking Action formerly Training, Testing and Telling).	Federal Law and Rule	1994/2006/ 2018	All schools

MN State Statute 121A.335 - Lead in School Drinking Water

Minnesota State Statute 121A.335 requires public and charter schools to have a plan for efficiently and accurately testing for lead in drinking water using the technical guidance/model plan developed by MDE and MDH or by adopting an alternative plan. The law applies in addition to any other current testing requirements.

Under the updated statute, As, schools **must**:

- Adopt the technical guidance/model plan from this document or develop and adopt an alternative plan to accurately and efficiently test for lead in school buildings serving students from prekindergarten to grade 12.
- Create a schedule for testing that includes all school district buildings and charter schools serving students where there is a source of water that may be consumed by students (used in cooking or directly by drinking). Testing must have begun by July 1, 2018, and complete testing of all buildings serving students must be done within five years. **Each tap must be tested at least once every five years thereafter**.

- As of August 1, 2023, discontinue use of any sources of water used for consumption that have a level of lead 5 ppb or higher until the hazard has been remediated and verified by a retest to be below 5 ppb.
- If a test has a result of 5 ppb or higher, the school must, within 30 days of receiving the test result, either remediate the presence of lead to below 5 ppb or directly notify parents of the test result.
- Send an annual notice to parents that includes the testing and remediation plan, information on how to find test results, and a description of remediation efforts on the district website. The website must be updated at least annually. In addition to the annual notice, information must be included in an official school handbook or official school policy guide information on how parents may find the test results, and a description of remediation efforts and how often this information is updated.
- Beginning July 1, 2024 – and by July 1 each year thereafter school districts and charter schools must report their test results and remediation activities to MDH. These will then be posted on the MDH website.

The new statute does not create enforcement penalties, violations, or impact licensing when a facility does not meet the timelines or take the required actions. State agencies will reach out to facilities to provide education and outreach on meeting these requirements if they become aware of a facility that is not meeting statutory obligations. Facilities that do not follow the statute may risk losing trust of their community and risk exposing themselves to liability.

The statute is MN State Statute 121A.335.

MN State Statute 145.9273 - Testing for Lead in Drinking Water in Child Care Settings

In 2023, a new state law - Minnesota State Statute 145.9273 - was passed requiring child care centers to test for lead in drinking water in all fixtures used for consumption. The law states that child cares should use the same guidance document schools use to test for lead in drinking water as well as meet remediation and reporting requirements.

By July 1, 2024, licensed or certified child care providers **must**:

- Adopt the technical guidance/model plan from this document or develop and adopt an alternative plan to accurately and efficiently test for lead in drinking water in child care centers;
- Begin testing all sources of water that may be consumed by children (used in cooking or directly by drinking) at least once every five years;
- Discontinue use of any sources of water used for consumption that have a level of lead 5 ppb or higher until the hazard has been remediated and verified by a retest to be below 5 ppb;
- Within 30 days of receipt of results make results of testing available to the public to review and notify the parents and guardians of the availability of the information; and

- Report their test results and remediation activities to MDH by July 1 of each year.

The new statute does not create enforcement penalties, violations, or impact licensing when a facility does not meet the timelines or take the required actions. State agencies will reach out to facilities to provide education and outreach on meeting these requirements if they become aware of a facility that is not meeting statutory obligations. Facilities that do not follow the statute may risk losing trust of their community and risk exposing themselves to liability.

The statute is MN State Statute 145.9273.

Head Start Policy & Regulations Memo ACF-IM-HS-23-01

Head Start programs often must meet both MN State requirements for child care settings and the federal Office of Head Start Policy and Regulations. The federal Office of Head Start Policy and Regulations include memo ACF-IM-HS-23-01 which requires that Head Start programs have a plan to test for lead. This guidance and model plan will meet those requirements.

By July 1, 2024, in order to meet MN State requirements, Head Start programs that are part of a licensed or certified child care provider must meet the requirements of Minnesota State Statute 145.9273 (as described above).

The memorandum is Head Start ACF-IM-HS-23-01.

The Safe Drinking Water Act, Lead and Copper Rule

The federal Safe Drinking Water Act (SDWA) Lead and Copper Rule (LCR) of was first passed in 1991, was updated in 2007, and applies to the public water system (PWS) supplying drinking water to a school building. Public water systems sample for lead following the LCR. The LCR describes actions public water systems are required to take when lead is found at different levels. These levels are not health based. There is no safe level of lead.

Compliance with the LCR is based on the 90th percentile concentration value from samples collected at different points in the PWS. This is a statistical calculation used to determine when a PWS must explore options to reduce lead in the water in the whole system.

Testing under the current LCR is conducted based on a tier system, with the highest priority being individual residences. Therefore, a school or child cares served by a community water supply will not be tested under the LCR. However, if a school or child care has a private well and has 25 or more staff and students, they are classified as a Nontransient Noncommunity PWS and must test for lead under the LCR. Noncommunity Nontransient information is found at Schools, Offices, Factories, and Child Care (Noncommunity Nontransient).

In 2021 and 2023, the Lead and Copper Rule was revised, and then further improvements were proposed. The revisions require public water systems to offer limited testing and provide public education to schools and child cares. This testing would require a water system to identify all schools and licensed child cares that it serves and provide 20% of schools and child cares with testing each year for 5 years. Community water systems will be required to provide five samples per school building and two samples per child care. This testing does not replace state

requirements and is designed to prompt schools to start their own testing programs using state guidance or the EPA 3Ts.

More information on the LCR is available at Lead and Copper Rule.

The full rule is found at Lead and Copper Rule 40 CFR Part 141 Subpart I.

The Lead Contamination Control Act

The Lead Contamination and Control Act (LCCA) - Public Law 100-572 was passed in 1988 and applies to all schools. The intent of the LCCA is to identify and reduce lead in drinking water at schools and relies on voluntary compliance by individual schools and school districts. In particular, it focuses on certain models of water coolers in existence at the time of the law's enactment, while also addressing lead risk reduction generally. Although compliance with the LCCA is voluntary, schools are encouraged to review its recommendations and consider implementation where appropriate. More information on Lead Water Coolers Banned in 1988 (PDF).

The statute is Lead Contamination Control Act 1988 (PDF).

Reduction of Lead in Drinking Water Act

The Reduction of Lead in Drinking Water Act (Public Law 111-380 amending Section 1417 of the Safe Drinking Water Act) became effective in January 2014. This law applies to all schools. The most common source of lead in drinking water is the corrosion of pipes and plumbing fixtures. In an effort to reduce this contamination source, the EPA amended the SDWA to mandate that all pipes, solders, fittings, and fixtures be "lead free." The Act revised the definition of lead free to lower the allowable amount of lead to a weighted average of 0.25% percent of the wetted surfaces of plumbing products and established a statutory method for calculating lead content; it retains a 0.20% lead limit for solder and flux. The law also created exemptions from the lead-free requirements for plumbing products used exclusively for non-potable services as well as for other specified products. All plumbing fittings and fixtures must meet the NSF/ANSI Standard 61, Annex G, Final "Lead Free" Rule.

3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities

The 2018 3Ts guidance indicates that schools should "examine the permanent remediation options and select those most appropriate to their situation" rather than using an arbitrary action limit.

The 3Ts were designed to aid schools with the following:

- Establishing partnerships;
- Determining current water quality;
- Identifying potential problem areas;
- Developing a monitoring plan;

- Collecting and submitting water samples;
- Implementing corrective actions if lead is detected in any sample results; and
- Communicating and conducting public outreach.

The guidance is 3Ts for Reducing Lead in Drinking Water Toolkit.

Guidance Values of Lead

Lead is still present in many areas of our environment, including materials that were commonly used in plumbing systems. To help understand the risks posed by environmental lead, a variety of guidance values have been developed at different times by different organizations. Some of the values are relatively recent, others much older; some are health-based, while others are for statistical assessment of a water system. Table 2 summarizes guidance values frequently identified with public health protection.

Table 2: Lead in Drinking Water - By the Numbers

Guidance Value: ppb (parts per billion)	Description
0 ppb	EPA has set a maximum contaminant level goal (MCLG) of zero for lead in water. *Note: The minimum repeatable detection limits achieved by laboratories today are typically between 0.5 and 2.0 ppb.*
1 ppb	The American Academy of Pediatrics recommends this level be used as a standard for school drinking water taps. *Note: The minimum repeatable detection limits achieved by laboratories today are typically between 0.5 and 2.0 ppb.*
5 ppb	In 2023, Minnesota adopted 5 ppb as the remediation trigger for lead in water in schools and child cares. Illinois, Michigan, and Washington DC use this value as a trigger for schools to implement lead hazard reduction or provide notification. Guidelines for Canadian Drinking Water Quality has proposed this value, as their new Maximum Allowable Concentration. The International Bottled Water Association's (IBWA) *Bottled Water Code of Practice* established 5 ppb as their finished water quality product standard. The US Food and Drug Administration uses 5 ppb as the quality standard for bottled water.
10 ppb	In 2021 EPA revised the Lead and Copper Rule to add a trigger level at 10 ppb. If more than 10 percent of water system's samples are above the trigger level the system must take required actions to reduce lead by beginning corrosion control, lead service line replacement and increase monitoring across their distribution system. In 2023, EPA has proposed to make 10 ppb the action level for lead. No more than 10 percent of a water system's samples will be allowed to be above this level. If a system would exceed this level, it would trigger lead service line replacement, treatment optimization, and public education steps.

Guidance Value: ppb (parts per billion)	Description
15 ppb	In addition to the 10 ppb trigger level the LCR sets an action level with additional required actions systems must take if lead exceeds 15 ppb. No more than 10 percent of a water system's samples are allowed to be above this level, or the system will receive a Notice of Exceedance. However, this is not a health-based value; there is no safe level of lead. Systems are required to provide public education, follow corrosion control treatment steps, and follow mandatory replacement of lead service lines. This action level has not been updated since 1991 although EPA has now added an additional trigger level at 10 ppb. Several states have adopted this value in their school guidance to match the Lead and Copper Rule value. In 2023, EPA has proposed to eliminate 15 ppb as the action level.
20 ppb	This was the trigger value used in EPA's 2006 3Ts. EPA updated their guidance and the new 2018 3Ts document does not contain a specific trigger value for taking action. This value is now rarely used as a trigger. There is no safe level of lead.

State Agency Support for Lead Reduction Activities

MDE

MDE administers the Long-Term Facilities Maintenance Revenue program under Minnesota Statutes, section 123B.595. This program may be utilized to reimburse costs associated with lead testing and remediation. Funding does not cover staff time used to perform daily flushing or water use utility cost associated with flushing procedures. Memoranda from MDE, program guidance documents, spreadsheets and forms used to obtain approval to receive revenue are available at Long Term Facilities Maintenance.

DHS

DHS supports child cares by making several grants available that can help child cares to improve facilities.

More information is available at DHS Grants and RFPs.

Child Care Facility Revitalization Grants are available for facility improvements, minor renovations and related equipment and services, including assistance to meet licensing requirements, needed to establish, maintain, or expand licensed and legal unlicensed child care and early childhood education sites. Grant funds may not be used for construction or major renovation of facilities.

For more information on Child Care Facility Revitalization grants, visit:

- The First Children's Finance Child Care Facility Revitalization Grants;
- Email First Children's Finance at grants@firstchildrensfinance.org; or
- Call (612) 473-6020 for more information.

Child Care Aware Regional Grants are available on a competitive basis, helping child care programs improve the safety and quality of their programs.

For more information on Child Care Aware grants, visit:

- Child Care Aware - Child Care Service Grants; or
- Contact the local grant administrator using Child Care Aware Contacts - Local Resources.

MDH

MDH received a **Water Infrastructure Improvements for the Nation (WIIN) Grant** to develop a lead testing program for eligible schools and child cares. This program is designed to provide sample kits and laboratory analysis for lead in drinking water. Contract assistance with sampling may be available as well. MDH also provides technical assistance to interpret results and provide education about the results to their communities.

For more information visit:

- WIIN Voluntary School and Child Care Lead Testing and Reduction Program; and
- Minnesota Lead Testing in Schools and Child Care in Drinking Water.

MDH **Lead Remediation in Drinking Water in Schools and Child Care Settings Grants** are available for the purpose of remediating identified sources of lead in drinking water in schools and licensed child care settings. This grant funds projects focused on the reduction of lead in drinking water in schools and child care settings. The program prioritizes remediation to facilities with demonstrated high elevated levels of lead.

For more information visit:

- Lead Remediation in Drinking Water in Schools and Child Care Settings Grant Program.

Hydration Station Grants are also available through MDH. MDH is committed to improving the health of Minnesotans by encouraging people to drink more water. Filtered water units, in the form of hydration stations, provide a healthy alternative to sugary drinks, especially in communities with limited access to healthy, affordable beverage choices. Properly certified hydration stations remove lead and other contaminants associated with plumbing materials.

For more information visit:

- Drinking Water Protection Grant Information.

Model Plan for Lead Testing

ECES must complete these steps or formulate a plan that addresses the core concepts of planning, testing, remediating, reporting, and communicating results. An alternative plan must accurately and efficiently test for the presence of lead in water in facilities serving pre-kindergarten students and students in kindergarten through grade 12 and take steps to reduce lead if detected at 5 ppb or above.

If an ECES adopts the model plan, all steps should be implemented. If you have questions, contact MDH at 651-201-4700 for further information.

Required Components of a Model Plan

Step 1. Sampling Program Development

Step 2. Conduct First Draw Tap Sampling

Step 3. Interpret Results

Step 4. Take Corrective Actions (Remediation)

Step 5. Retest

Step 6. Communicate Results

Step 7. Report Results

Step 8. Water Management Plan

Step 1 - Sampling Program Development

A program to assess and sample for lead in drinking water must incorporate, at a minimum, the items in the checklist below:

☐ Designate who will inventory water fixtures and collect water samples.

☐ Inventory drinking water fixtures. Identify how each fixture is used and identify those used for consumption that will need to be tested. (i.e., drinking water and food preparation).

- A drinking water fixture is the point of access for people to obtain water for drinking or food preparation. Examples of fixtures include but are not limited to taps, faucets, drinking fountains and water coolers. Drinking water fixtures typically do not include bathroom taps, hose bibbs, laboratory faucets/sinks or custodial closet sinks; these should be clearly marked not for drinking. If a fixture that is accessible to staff or children is not tested, MDH recommends that it be clearly marked with signage or made inaccessible. Signage should take into consideration age of children and languages spoken.
- Only cold water fixtures should be used for human consumption.
- Hot water fixtures should never be used to obtain water for drinking water or food preparation.
- Check all drinking fountains to ensure they are not identified as having a lead-lined tank. More information in Lead Water Coolers Banned in 1988 (PDF).
    - If a drinking fountain within the school is found on this list, it should be removed from use immediately.
    - The inventory should be updated if taps are added or removed.

☐ Determine a schedule for sampling.

- All fixtures used for drinking water or food preparation must be tested at a minimum of once every five years.
- If budget or resources do not allow all fixtures to be tested in the first year, it is suggested that fixtures be prioritized, with all high priority fixtures tested the first year, medium priority the second, and low priority the third. The fourth year should be used as a "make up" year, if needed.
- Recommended priority levels are:
    - High priority: fixtures used by children under the age of six years of age or pregnant women (e.g., drinking fountains, nurse's office sinks, classrooms used for early childhood education and kitchen sinks);
    - Medium priority: other fixtures regularly used to obtain water for drinking or cooking (e.g., Family and Consumer Science sinks, classroom sinks, and teacher's lounges); and
    - Low priority: other fixtures that could reasonably be used to obtain water for drinking but are not typically used for that purpose.

☐ Determine logistics for sampling.

- Water testing should be consistent with the established schedule. Prior to testing it must be determined if school staff or a contractor will conduct the testing.
- If the facility will be doing the testing itself, it will need to contact an accredited laboratory or purchase field testing equipment. If the facility is participating in the WIIN program, MDH will provide appropriate laboratory analysis and supplies for testing.
- Facilities will also need to decide if they will use field analyzers or accredited laboratories to analyze results. Either method is acceptable with appropriate quality control and experience.
- The water in the facility should undergo normal water usage the day before sampling. DO NOT plan to sample during an extended closure. DO NOT conduct pre-stagnation flushing in advance of testing if flushing is not part of your daily building practices.

Option 1: Analysis by an Accredited Laboratory

Laboratory analysis typically involves a school district or consultant contracting with an accredited lab to obtain sample bottles. The laboratory will send instructions for sampling, sample bottles, and a chain-of-custody form to document time and date collected, collector name, and sample location. Table 3 summarizes the limitations and benefits.

Table 3 - Limitations and Benefits of Using an Accredited Laboratory

Limitations	Benefits
Analytical costs. These vary from lab to lab. Currently, typical per sample costs for lead and copper analysis may range from $20 - $50, depending on a variety of factors.	District and/or consultant will not need to maintain instrument calibration records.
May take longer to get results than using a field analyzer	Uses a chain-of-custody to ensure integrity of sample analysis process
Typically requires shipping	Analysis done by third-party may provide more independent review/transparency. Accredited labs use EPA-approved methods and have met industry standards for analysis.
	Analysts are certified and trained.

A listing of accredited laboratories may be found at Accredited Laboratories. Figure 1 presents a screen shot from the MDH website on search terms for finding an accredited lab using a customized search.

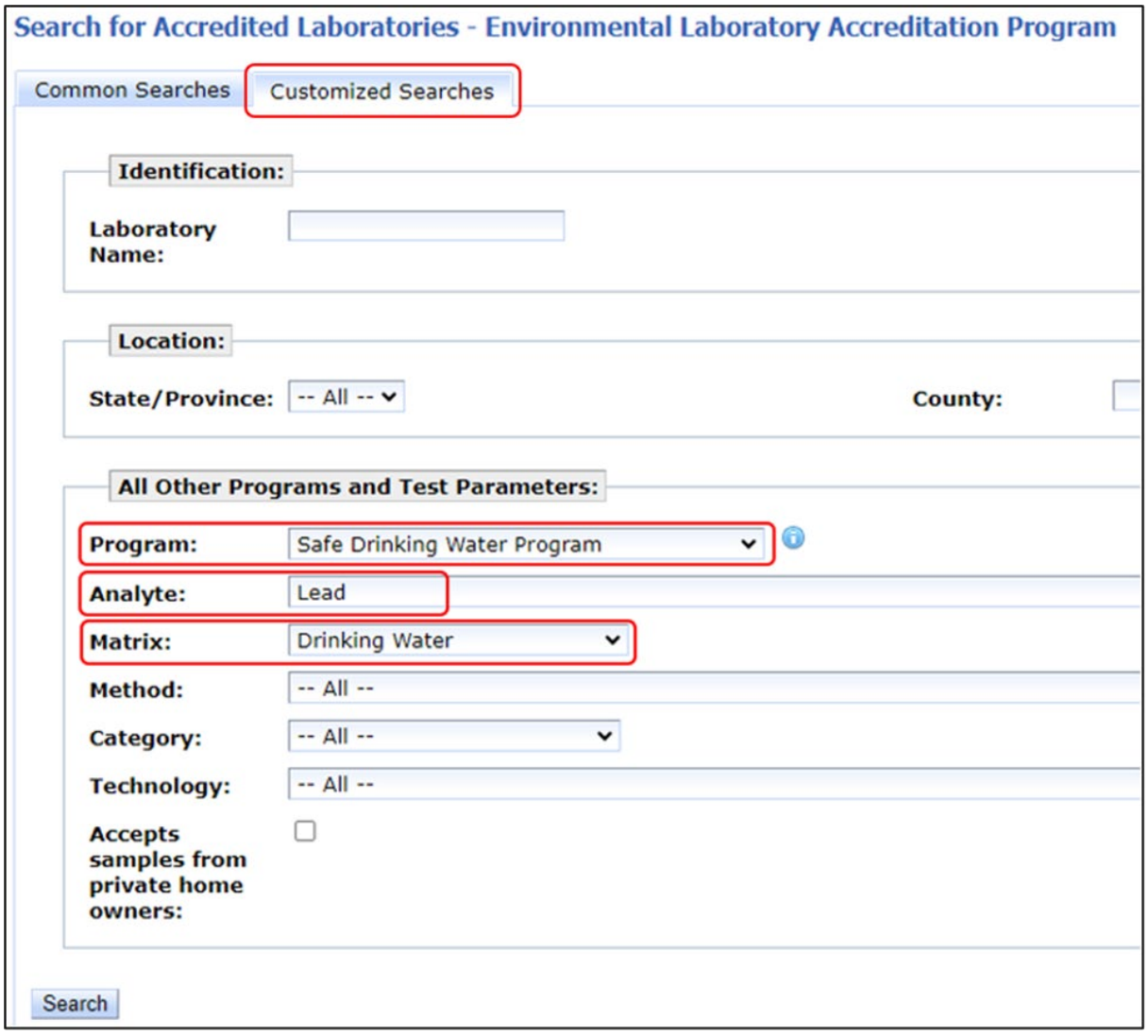
Program = Safe Drinking Water Program

Analyte = Lead

Matrix = Drinking Water

Accepts samples from private homeowners = Check this box if a family child care or residential address.

Figure 1: Screenshot of Customized Searches from MDH website



Option 2: Analysis Using Field Analyzers

A field analyzer can be a useful tool for quickly and efficiently testing for lead in drinking water. If staff from the facility is doing the sampling or a consultant uses a field analyzer, it is important that limitations and proper use are understood. The field analyzer must be approved by EPA for lead testing in drinking water. Table 4 summarizes the limitations and benefits.

Table 4 - Limitations and Benefits of Using Field Analyzers

Limitations	Benefits
Some analyzers may not measure all forms of lead in drinking water. It is important that the instrument you use measures *total* lead (particulate and dissolved). If the instrument does not measure all types of lead in drinking water, your result could be biased low.	Get results faster
Staff using an instrument need to ensure that the instrument is properly calibrated and maintained according to manufacturer's specifications, and that records of calibration and maintenance are kept.	Useful when doing large numbers of samples or investigative sampling where many samples might be taken from one fixture
Instruments may require chemicals which will need to be stored and that can expire.	Can be done on-site (no shipping needed)
Field instruments may not have limits of detection that are as low as an accredited laboratory. Be sure that the method you use can identify concentrations as low as 1 ppb.	Can be more cost efficient depending on frequency of use
Some instruments may have interferences with other contaminants and, therefore, under or overestimate the lead level. This may require that additional tests for iron, manganese, hardness, alkalinity, or other contaminants be done prior to use of the field analyzer, to ensure that the instrument will be operated to meet manufacturer's specifications.	

Return to Required Components of a Model Plan

Step 2 - Conduct First Draw Tap Sampling

Once the plan from Step 1 is set, sampling must be conducted according to the established schedule and priority. Water from fixtures used for drinking or food preparation must be tested for lead using "first draw" samples. First draw means that the samples are collected before the fixture is used or flushed during the day. Use only cold water for collecting lead samples. The order in which samples are collected must be considered to avoid the potential of accidentally flushing a fixture. Always start at fixtures closest to where the water enters the building.

Sample site preparation and sample collection must be performed consistent with the following conditions:

Preparation and Planning

- It may be necessary to collect samples over a number of days to ensure only first draw samples are collected;
- The day before sampling - normal usage of the sampling fixture should occur;

- The night before sampling - secure the fixture from being used (e.g., hang a "Do Not Use" sign);
- Do not use sampling fixtures for a minimum of eight hours. MDH recommends not exceeding 18 hours of stagnation time; and
- Do not remove aerators or attachments.

Sample Collection

EPA recommends ECES use a 2-part sampling procedure.

Part 1

Collect a 250 mL first draw sample. Be sure to start sampling at fixtures closest to where the water enters the building so that other fixtures are not accidentally flushed;

Part 2

If the result from Part 1 is high, collect a repeat 250 mL first draw sample as in Part 1. In addition, collect a 30-second flush sample to attempt to identify if the lead is coming from the plumbing behind the fixture and/or if flushing will help reduce lead. To collect a 30-second flush sample, after the water has been stagnant, as in the sample in Part 1, turn on the fixture and allow the water to run for 30 seconds and then fill the sample container.

ECES with active daily flushing programs or considering flushing may want to consider conducting Parts 1 and 2 during the same sampling event to verify flushing effectiveness and reduce the total number of samples that may need to be collected. Collecting these at the same time will also reduce the response time for investigating a high first draw result. Laboratory analysis may take days to weeks depending on lab capacity. If not taking these samples at the same time, and elevated lead levels are found in Part 1, the water **should not be consumed** while preparing follow-up actions. You may want to refer to **Step 5** for additional consideration and guidance responding to high results.

Have samples analyzed by sending to an accredited laboratory or conduct analysis using field analyzers. Be sure to follow instructions from the lab or field analyzer manufacturer.

Special Sampling Considerations

Sometimes there are special fixtures that schools or child cares may have that need additional care and consideration when conducting sampling. Some common special fixtures include ice

makers, in-line coffee makers, and kitchen kettles. Initial sampling for these special situations can be conducted as follows:

Ice Makers: Fill a suitable container (250-mL or larger, wide-mouthed bottle or other container) provided by the laboratory at least three-quarters full of ice. Do not touch the ice with bare hands. Use a non-metal scoop or disposable plastic gloves to place the ice in the container.

In-Line Coffee Makers: These are coffee makers that are directly connected to the building plumbing. These often have a hot water spigot used for dispensing hot water for tea or other beverages. If there is a spigot on the coffee maker, you can collect from the hot water side.

Kitchen Kettles: Many times, these kettles are just used for warming ingredients or food and are not used as a source of water for consumption. If they are labeled as not to be used for consumption and only used for warming, they do not need to be tested. If the kettle is used for consumption and has a spigot that could be used for sampling it can be sampled similar to the in-line coffee makers.

Results for these fixture types need special consideration and review. For guidance on additional samples or sampling after high results the EPA 3Ts Module 5 (PDF) has information on how to find sources of lead in plumbing using advanced sampling techniques to evaluate fixtures.

Return to Required Components of a Model Plan

Step 3 - Interpret Results

Once an ECES receives its sample results, it should verify that all results are expressed in parts per billion (ppb). For water samples, this will sometimes be stated as micrograms per liter (µg/L), which is equivalent to ppb.

Figure 2 presents possible lead hazard reduction options for various lead levels. More comprehensive actions may be necessary to address health threats from higher concentrations. As there is no safe level of lead, it is important to incorporate lead hazard reduction options and communicate at all levels of lead in order to raise awareness and reduce exposure.

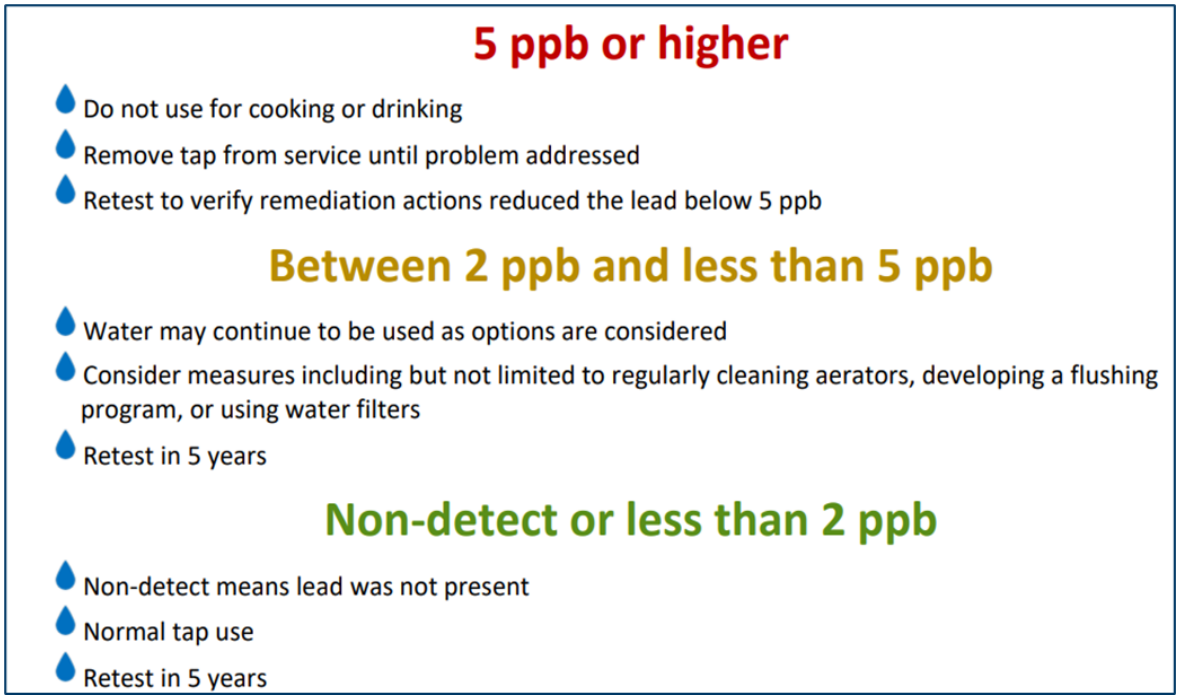
The state of Minnesota has set 5 ppb as the threshold to take remediation steps. **Public schools, charter schools, and child care centers MUST remediate when lead is 5 ppb or higher. MDH recommends that other facilities serving children clearly identify their policy for remediating.**

Guidance on Interpreting Results and Recommended Remediation Options

It is critical to understand that health risks from lead do not abruptly change at varying concentrations of lead. As lead concentrations, the duration of exposure, or the number of fixtures impacted (i.e., distribution) steadily increases, the risks posed to students steadily increase. Response options should consider vulnerability of those exposed, concentration of lead, duration of exposures, and current practices to reduce lead, among other things. A result of 4 ppb is not appreciably safer than a result of 5 ppb.

Mitigation strategies used will depend on the site-specific conditions of the facility such as building age, plumbing materials, water use pattern, incoming water quality, and population served. It may take a combination of options and multiple steps over a period of time to manage/remove lead in drinking water. Analytical results can be highly variable, and a clear pattern should be identified before implementing any strategy. ECES may consider prioritizing strategies to prevent exposures to students and staff most at risk. The following discussion provides the most common hazard reduction options but is not intended to be all- inclusive. EPA's 3Ts guidance document is also an excellent resource for strategies on finding lead sources and implementing mitigation. MDH recommends taking action to minimize lead exposure at every level using a tiered approach as in Figure 2.

Figure 2: Remediation Actions



Return to Required Components of a Model Plan

Step 4 – Take Corrective Actions (Remediate)

Individual facilities vary tremendously across the state, it is imperative that final decisions on corrective actions are driven by local conditions and considerations. Actions that may be ideal in one ECES may not be appropriate for another setting.

The recommendations in this section were compiled to assist ECES in choosing the best lead hazard reduction option to reduce exposure to lead in their ECES. Options may be implemented individually, in combination, or not at all, depending on the specific situation at an individual ECES. Because no two facilities are exactly alike, best management practices will likely vary across the state.

In addition to possible remediation options outlined in Figure 2, the options further described here are in priority order (with the highest priority listed first and lowest priority last) of long-term effectiveness in reducing lead hazards. Even when lead is detected at very small levels it shows that there is room to examine best practices such as changing or implementing routine maintenance strategies. **For additional information, see Appendix D: Detailed Fixture Evaluation found on page 59 of the 2018** 3Ts Revised Manual (PDF).

Option 1: Removal and/or Replacement of Lead Sources

Removal of sources of lead is the preferred way to remediate. Engineering plans and specifications for the plumbing system are useful for identifying sources of lead and helpful in determining if sources of lead can be removed from service or replaced with lead free fixtures. Options for eliminating lead sources include:

- Remove fixture from service. If the fixture is seldom used, it may be disconnected or removed from the water supply line, but first verify the fixture is not required for local building code compliance;
- Replace with lead-free fixture/plumbing component;
- If the existing fixture is suspected to be the source of contamination, replace with a lead free fixture;
- Replace other sources of lead, including lead pipe, lead solder joints, and brass plumbing components with lead free materials; and
- To minimize the introduction of lead into drinking water systems, go to EPA's website to identify lead free certification marks for drinking water systems and plumbing materials. More information can be found in How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products.

Option 2: Implement a Flushing Program

Flushing the drinking water fixtures (letting the water run for a set amount of time on a regular basis) can effectively reduce lead concentrations in drinking water. A flushing program works to reduce lead concentrations by clearing the fixtures of water that has been in contact with plumbing components that may contain lead. While flushing can work to reduce lead, it requires staff time, diligence, and commitment to ensure effectiveness. Verify the effectiveness of your flushing program by conducting follow up lead testing. Flushing programs do not remove the source of lead from buildings and must be continuously followed to prevent lead from building up.

A facility should develop standard operating procedures to conduct flushing that it maintains onsite and should ensure that facility staff are aware of the responsibility and importance of maintaining flushing programs. Flushing programs are a water management strategy and can work to maintain high quality of water by reducing corrosion, maintaining chlorine residual, and if your public water system uses corrosion control treatment (such as orthophosphate) it can help bring this treatment through your buildings to protect plumbing materials. Flushing programs can also help with legionella management. Warm, stagnant water can be an incubator for legionella and other biological activity.

There are two primary types of flushing programs:
Individual Tap Flushing and **Main Pipe Flushing**

Individual Tap Flushing Program

- May be implemented if lead concentrations are found to be high at certain fixtures.
- Flush individual fixtures that have been tested and found to have high lead levels. This procedure is to be followed each day the facility is in session.
- During periods of normal use:
  - Run each fixture in the morning before children arrive and again at midday. Site-specific conditions will determine how long a fixture needs to be flushed and the number of times a day a fixture needs to be flushed. Refer to 3Ts Flushing Best Practices (PDF) for guidance on flushing.
  - Periodic testing may be done prior to and after the midday flushing to ensure the lead concentrations have remained low throughout the morning hours. If they have not, the flushing time should be increased, or another option should be implemented.
  - After weekends or breaks, run each fixture for ten to fifteen minutes before children return to the facility, then return to normal use; and
  - Frequency and duration of flushing should be reasonably documented.

Main Pipe Flushing Program

- May be implemented if lead concentrations are found to be high throughout the entire facility or confined to a certain area of the facility. This procedure is to be followed each day the facility is in session;
- Begin by flushing the fixture furthest away from the water source for at least ten minutes;
- Next flush the fixture the second furthest away and continue in this manner until all have been flushed;
- Flushed samples should be periodically collected and analyzed for lead to confirm the effectiveness of flushing programs;
- It is recommended that midday samples and end of the day samples be taken periodically to ensure the lead concentrations have remained low throughout the day. If they have not, another option should be implemented; and
- Review the results upon receipt and continue to optimize the procedure to reduce lead.

More on Flushing

Flushing is a best management practice used to reduce lead levels by controlling the age of the water. It can be an interim or long-term option. This guidance presents flushing procedures that MDH has found effective in reducing the lead level in drinking water. Site-specific conditions will determine how long a fixture needs to be flushed and the number of times a day a fixture needs flushing. The key to using flushing as a best management practice is monitoring that demonstrates the lead level has been reduced.

Flushing can be done manually or can be automated with flushing devices. Flushing done for the purposes of lead reduction needs to be done and tracked at a fixture level. Manual flushing can take significant staff time depending on the size of the building and scope of flushing needed. Automatic flushing can help reduce the time needed to flush individual fixtures or be part of a routine water management plan.

Note that facilities implementing a flush program may wish to identify non-consumptive uses for the flushed water (watering plants, cleaning, etc.) in order to make use of this resource.

If a flushing program is stopped, MDH recommends the facility document why it stopped flushing and complete lead testing within 3 months of stopping the flushing program to assess any impacts to lead levels in drinking water. Flushing as a remediation option is only effective if it continues to be implemented consistently.

Option 3: Cleaning Aerators

Cleaning aerators is a routine maintenance strategy that can help reduce lead levels if implemented consistently. Aerators are screens located at the end of some fixtures. Cleaning aerators once after a high lead test will not prevent lead levels from increasing later.

Picture of an aerator with particulate

- As a routine maintenance strategy we recommend cleaning aerators once every 6 months or once per quarter.
- Clean aerators more often if visible build up or changes to water flow are observed.
- If aerator cleaning is used as a remediation strategy, retest to make sure it was effective and implement a regular cleaning program to ensure lead does not build up again.
- Cleaning aerators does not remove the source of lead from the plumbing. Removing aerators so that they do not have to be cleaned can be an option but will impact the water usage and flow of the water through the fixtures.

Option 4: Treatment

Point-of-Use (POU) Treatment Device

A POU water treatment device may be installed at fixtures where lead has been detected. These include reverse osmosis, on-sink water filters, filtered hydration stations, pitcher filters, and other devices. A POU device should be approved to meet NSF Standard 53, NSF Standard 58, or an equivalent standard along with a claim of lead reduction. The device must be installed, operated, and maintained in accordance with the manufacturer's recommendations. **POU treatment systems may be subject to Department of Labor and Industry (DLI) or local administrative authority plan review and approval prior to installation. Contact DLI at (651) 284-5063 for more information.** For some examples of home treatment options that will reduce lead in drinking water see Home Water Treatment factsheet.

Check that the device you are using is NSF certified for lead reduction at: NSF Certified Drinking Water Treatment Units, Water Filters.

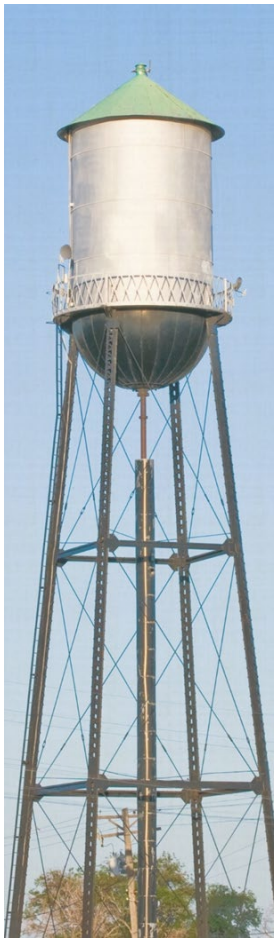
Point of Entry (POE) Chemical Treatment

POE chemical treatment involves adjusting the water chemistry which may reduce the amount of lead absorbed by the water. This may be done by adding a chemical to the water as it enters the building. Typical methods of chemical treatment include addition of a phosphate-based or silica-based corrosion inhibitor or an adjustment to the water's pH or hardness. These chemicals provide a protective barrier along the pipes (pipe scale) that prevents lead from getting into the water. **All chemical treatment systems are subject to MDH plan review and approval prior to installation**. In addition, a school that installs POE corrosion control treatment becomes a public water system and is required to meet the regulatory requirements of the SDWA. If classified as a public water system, the school is responsible for meeting all of the water quality standards of the SDWA, is subject to inspection of the water distribution system, and is required to have a certified water operator.

POE chemical treatment does not take away the need for a water management or flushing program to ensure treatment consistency throughout the building. In parts of facilities with low water usage it may still be possible for elevated lead levels to be detected.

Contact the Minnesota Department of Health Drinking Water Protection Program at **651-201-4700** to determine if additional requirements will apply to your school prior to installing treatment.

Building Relationships with your Public Water System



If the ECES receives its water from a municipal water supply, the ECES is encouraged to work with them to assess the source contribution of lead coming into the ECES and if the ECES has a lead service line.

Most ECES obtain their water from a public water system or municipal water supply. ECES should maintain good relationships with their water system.

1. Contact the water system if you have questions or concerns about your incoming water quality. If there are sudden changes in taste, odor, or color the water system is the best contact to help you address those concerns.

2. Check with your water system to see if your facility has a lead service line, lead gooseneck, or galvanized steel service line. These lines may need to be replaced and coordinating with the city is the best way to ensure the whole line is fully removed. The city may have funds available to assist in removal of these lines.

3. Community water systems report their annual water quality in a Consumer Confidence Report that is available every year. Search for your Consumer Confidence Report (CCR). Water systems will also notify their customers if there is a water quality problem that requires special actions (flushing, boiling etc.). Be sure you know how your water system will communicate concerns to your organization.

It is rare for lead to be coming from the public water supply itself; most lead in drinking water comes from corrosion of plumbing materials such as service line or premise plumbing. For ECES on their own well, the only way to characterize lead contribution from the water source is to do a test of water coming into the building.

Return to Required Components of a Model Plan

Step 5 – Retest

All fixtures affected by a lead hazard reduction action must be retested to confirm the remediation action was effective at lowering the level of lead below 5 ppb. A first draw sample is to be taken using the procedure outlined in Step 2. If a flushing program was not implemented as part of the remediation, you may also want to collect a flushed sample(s) to identify if flushing would be helpful for reducing lead in the facility.

Interpreting Results after Implementing Remediation Actions

Different facilities will choose different actions or combine actions. It is very common to combine aerator cleaning and flushing for example.

- If the analysis does not detect lead or lead is less than 5 ppb, no further action is required, as long as the remediation or water management option remains in place. The next sample should be collected within five years.
- If the analysis shows lead remains present and is still at or above 5 ppb: A new remediation option can be implemented followed by retesting as specified in Step 2.
- When evaluating flushing both first draw and midday samples should be evaluated to ensure that lead levels do not rebound during the day. If lead remains present after flushing, additional options such as filters, or fixture removal/replacement may be necessary.

If results show persistent elevated lead levels, testing/remediation should continue until the lead source is found and hazard reduction options implemented. The overall goal is to have the state agencies, ECES, parents, and students all work together to ensure that available resources are best targeted to minimize exposure to lead in drinking water.

Return to Required Components of a Model Plan

Step 6 - Communicate Results

Schools

MN State Statute 121A.335 creates a communication requirement for schools as follows:

"(a) A school district or charter school must send parents an annual notice that includes the district's or charter school's annual testing and remediation plan, information about how to find test results, and a description of remediation efforts on the district website. The district or charter school must update the lead testing and remediation information on its website at least annually. In addition to the annual notice, the district or charter school must include in an official school handbook or official school policy guide information on how parents may find the test results and a description of remediation efforts on the district or charter school website and how often this information is updated.

(b) If a test conducted under subdivision 3, paragraph (a), reveals the presence of lead at or above five parts per billion, the school district or charter school must, within 30 days of receiving the test result, either remediate the presence of lead to below five parts per billion, verified by retest, or directly notify parents of the test result."

In addition to testing for lead and meeting the remediation requirements, a lead hazard reduction program should include a comprehensive communication plan. The purpose of a communication plan is to provide a process for school employees, students, and parents to address questions, report results, share remediation actions and provide ongoing, up-to-date information regarding sampling efforts.

School management should:

- Assign a designated person(s) to be the contact.
- Notify affected individuals about the availability of the testing and results; in a period not to exceed 30 days. School employees, students, and parents should be informed and involved in the communication process. Results of initial and any follow-up testing should be easily accessible along with documentation of lead hazard reduction options.
- Posting the information on a website is preferred, but the information should also be available to those without easily accessible internet access. Examples of other information venues are meetings, open houses, and public notices.
- Whenever lead is detected, identify and share specific activities taken to minimize lead exposure by following the guidance in Figure 2 or refer to EPA 3Ts for additional remediation strategies.

MDE and MDH have developed an Education and Communication Toolkit A Technical Guidance and Model Plan for Minnesota's Public Schools (PDF) to aid schools in implementing this technical guidance/model plan.

Child Care Centers

MN Statute 145.9273 creates a communication requirement for child care centers as follows:

"A licensed or certified child care provider that tested its buildings for the presence of lead shall make the results of the testing and any remediation steps taken available to parents and staff and notify them of the availability of results. Reporting shall occur no later than 30 days from receipt of results and annually thereafter."

Head Start programs that are classified as a licensed or certified childcare provider must make the results of testing and remediation steps taken available to parents and staff and notify them of the availability of the results. Reporting shall occur no later than 30 days from receipt of results and annually thereafter.

A facility that is sampling once every 5 years would share the old results each year until it tests again. The Education and Communication Toolkit: Reducing Lead in Drinking Water in Child Care Settings (PDF) will assist child care settings in implementing this technical/guidance.

Other Facilities

There are no requirements for private schools, family child care providers, or other institutions that voluntarily choose to conduct lead testing in drinking water to communicate results. Best practice is for locations that test for lead in drinking water make results available to anyone that asks for the results or that may be drinking the water such as staff, students, parents, etc. When facilities proactively communicate about the work they are doing to keep children and staff safe from lead in drinking water it builds trust and accountability.

Return to Required Components of a Model Plan

Step 7 - Report Results

Reporting templates will be posted when MDH is ready to accept submissions.

Schools

MN State Statute 121A.335 creates a reporting requirement for schools as follows:

(c) Starting July 1, 2024, school districts and charter schools must report their test results and remediation activities to the commissioner of health in the form and manner determined by the commissioner in consultation with school districts and charter schools, by July 1 of each year. The commissioner of health must post and annually update the test results and remediation efforts on the department website by school site.

(d) A district or charter school must maintain a record of lead testing results and remediation activities for at least 15 years.

Keeping records is useful for identifying trends/anomalies in results at any drinking water fixtures or in the school distribution system as a whole.

Child Care Centers

MN Statute 145.9273 creates a reporting requirement for child care centers as follows:

(b) Beginning July 1, 2024, a licensed or certified child care provider must report the provider's test results and remediation activities to the commissioner of health annually on or before July 1 of each year.

Head Starts

Many Head Start programs are classified as child care centers or are located within a school program. These child cares would be required to report results to MDH. Head Start programs that do not meet these requirements would not have to report results to MDH.

Others

Public schools, charter schools, and child care centers are the only facilities that must report their lead results and remediation actions to MDH annually beginning July 1, 2024. Schools and child care centers have different reporting requirements. Use the spreadsheet template and instructions listed below to report results to MDH.

- Results and Remediation Reporting Instructions and FAQ (PDF)
- Lead Results and Remediation Reporting Spreadsheet (Excel)

Other facilities are encouraged to make results readily available to parents and staff but are not required to report the results.

Return to Required Components of a Model Plan

Step 8 – Water Management Plan

MN State Statute 121A.335 states:

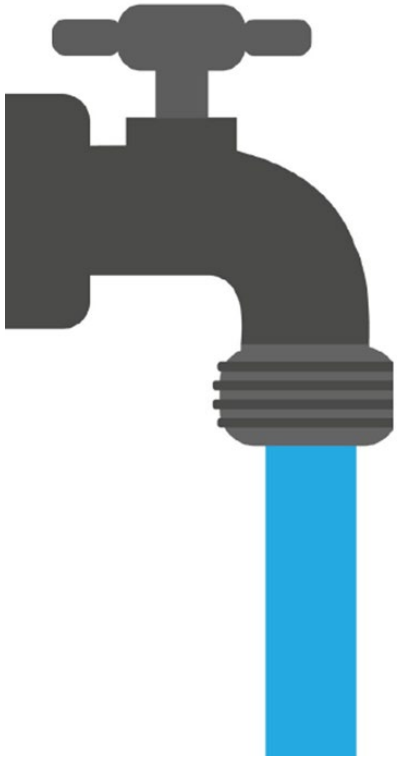
(b) By July 1, 2024, a school district or charter school must revise its plan to include its policies and procedures for ensuring consistent water quality throughout the district's or charter school's facilities. The plan must document the routine water management strategies and procedures used in each building or facility to maintain water quality and reduce exposure to lead. A district or charter school must base the plan on the United States Environmental Protection Agency's "Ensuring Drinking Water Quality in Schools During and After Extended Closures" fact sheet and the United States Environmental Protection Agency's "3Ts Toolkit for Reducing Lead in Drinking Water in Schools and Child Care Facilities" manual. A district or charter school's plan must be publicly available upon request.

A water management plan is a helpful tool for ECES to use to maintain and improve facility water quality. Every building is different, and the scope of a water management plan may look vastly different from a small building to a large building or campus-style facility.

Key components of water management plan include:

1. Identify all water fixtures and identify how they are used. This will help determine which fixtures you will test for lead and which fixtures should be labeled/posted for non-consumption. Identifying fixtures will also help identify hazards.
2. Identify areas of concern where lead levels are likely to be highest or where biological activity may be a concern (warm, stagnant water).
3. Decide what routine maintenance strategies (engineering controls) should be used and how to access their effectiveness (lead testing, chlorine testing, pH, temperature, etc.). This will be highly specific to your building.
4. Decide how you will intervene when assessments reveal that controls are not being met.

a. Ex. A lead test was above 5 ppb at an old fixture. Intervention: Replaced with a new fixture and retested showing non-detect for lead.



b. Ex. Biofilm/pipe scale was observed on a faucet. Intervention: The faucet and aerator were cleaned and flushed.

c. Ex. A weekly chlorine test shows no detected chlorine residual in area not used frequently. Intervention: Flushing was done until a chlorine residual was observed. Chlorine was tested daily for several days to ensure the regular flushing protocol was working.

d. Ex. Hot water lines are not hot. This is a hazard because when hot water is allowed to cool it can provide growth for bacteria. Intervention: Temperature regulator and mixing valves were checked. A mixing valve was broken, after repair the problem was corrected.

5. Make sure the program is running as designed and is effective.
6. Document and share results.

The larger the building and more complex the plumbing system is the more information and details may be needed in your water management plan.

Resources for building water management plans include:

- Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings (PDF); and
- Ensuring Drinking Water Quality in Schools During and After Extended Closures.

Return to Required Components of a Model Plan

Glossary of Terms and Acronyms

Aerator - An aerator is found at the tip of the faucet. Aerators are screwed onto the faucet head, creating a non-splashing stream, and delivering a mixture of water and air.

Child Cares - A licensed or certified child care provider is a child care center licensed under Minnesota Rules, chapter 9503, or a certified license-exempt child care center under chapter 245H.

Corrosion - A dissolving and wearing-away of metal caused by a chemical reaction between water and plumbing materials in contact with the water.

Department of Human Services (DHS) - Minnesota Department of Human Services, state agency that regulates child cares.

Detected - An amount of lead above the detection level. A concentration of lead analyzed with a certainty of precision to be at or above the detected level.

Detection Level (DL) - The lowest concentration of lead that can be analyzed with a certainty of precision. Results below this level are often expressed as "non-detected," "nd," or "<DL." For the purposes of this document, 2 ppb is the maximum detection level recommended for lead analysis.

Drinking Water Faucet/Tap - Point of access for people to obtain water for drinking or food preparation. A faucet/tap can be a fixture, faucet, drinking fountain or water cooler. Drinking water taps typically **do not** include bathroom taps, hose bibs, laboratory faucets/sinks or custodial closet sinks when clearly marked as not for drinking water or food preparation.

EPA 3Ts – Environmental Protection Agency 3Ts for Reducing Lead in Drinking Water is a guidance document to help schools and child care facilities implement a program for reducing lead in drinking water. The document focuses on training, testing, and taking action.

Federal Safe Drinking Water Act (SDWA) – Federal law regulating the nation's public drinking water supply.

Field Analyzer - Instrument suitable for water quality analysis in the field and will provide results without the use of a laboratory.

First Draw Sample - The first water drawn from a fixture after the water has sat undisturbed in the plumbing system for at least eight hours.

Fittings - Plumbing components used to join sections of pipe or to join pipe to fixtures.

Fixture - Exchangeable device connected for the distribution and use of water in a building. Examples: drinking fountain, sinks, shower, tub, toilet, hydrant.

Flush(ing) - Running the water at a fixture or combination of fixtures to clear standing water from the plumbing system.

Flush Sample - A water sample that has been collected following the flushing of a drinking water fixture.

Flux - A substance applied during soldering to facilitate the flow of solder. Flux used prior to 1986 contains lead and can itself be a source of lead contamination in water.

Lead-Free - Weighted average of not more than 0.25% lead in wetted surface material for pipe, pipe and plumbing fittings and fixtures, and 0.2% lead for solder and flux.

Limit of Detection (LOD) - The lowest quantity of a substance that can be distinguished from the absence of the substance due to the instrument's analytical process. It is usually lower than the detection level.

Minnesota Department of Education (MDE) - State public education agency.

Minnesota Department of Health (MDH) - State public health agency.

National Standards (NSF) - Authority for health standards, testing, certification, consulting and training for food, water, health products, and the environment.

Non-Detect - A lead result below the limit of detection, often expressed as "non-detected," "nd," or "<DL."

Parts per Billion (ppb) - A standard unit of measurement commonly used to describe the concentration of lead in drinking water. Also expressed as micrograms/liter (µg/L).

pH - A logarithmic measure of acidity and alkalinity between 0 (highly acidic) and 14 (highly basic); 7 is neutral.

Point of Entry (POE) - A water treatment device installed to treat all water entering a single school, building, facility or home. Example: water softener.

Point of Use (POU) - A water treatment device intended to treat water for direct consumption, typically at a single fixture or a limited number of fixtures. Example: faucet-mount cartridge filter.

Primary Prevention - aims to prevent disease or injury before it ever occurs. It is done by preventing exposures to hazards that cause disease or injury, altering unhealthy or unsafe behaviors that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur.

Public Water System (PWS) - A system that has at least 15 service connections or regularly serves an average of 25 individuals daily at least 60 days out of the year.

- **Community Public Water System (CPWS)** - A PWS which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Examples: municipalities, manufactured mobile home parks.
- **Nontransient Noncommunity (NTNC) Public Water System** - A PWS that is not a CPWS and that regularly serves at least 25 of the same persons over 6 months per year. Examples: schools, child care centers, factories.

Schools - Minnesota's public and charter schools serving students in pre-kindergarten through grade 12.

Service Connection - The pipe that carries fixture water from the public water main to a building.

Solder - A metallic compound used to seal the joints between pipes. Until 1988, solder containing up to 50% lead was legally used in potable water plumbing. Lead free solders, which can contain up to 0.2% lead, often contain one or more of the following metals: antimony, tin, copper, or silver.

Technical Guidance/Model Plan - The plan developed by the commissioners of health and education to accurately and efficiently test for the presence of lead in drinking water in public school buildings, as required under MN State Statute 121A.335 and MN State Statute 145.9273.

United States Environmental Protection Agency (EPA) - Federal agency with a mission to protect human health and the environment; oversees implementation of the SDWA.

Water Infrastructure Improvements for the Nation (WIIN) - A federal grant from the EPA to states to develop and implement a lead testing program for eligible schools and child cares. This program is designed to provide sample kits and laboratory analysis for lead in drinking water.

References

Applicable references are listed in the order they appear in the document.

- MN Rules, part 121A.335 Lead in School Drinking Water (https://www.revisor.mn.gov/statutes/cite/121A.335)
- MN Rules, part 145.9273 Testing for Lead in Drinking Water in Child Care Settings (https://www.revisor.mn.gov/statutes/cite/145.9273)
- Centers for Disease Control and Prevention - Childhood Lead Poisoning Prevention (https://www.cdc.gov/nceh/lead/)
- MDH Lead Program (https://www.health.state.mn.us/communities/environment/lead/index.html)
- How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100LVYK.txt)
- Ensuring Drinking Water Quality in Schools During and After Extended Closures (PDF) (https://www.epa.gov/sites/default/files/2021-03/documents/us_epa_schools_extended_closures_factsheet_508_3-4-2021_0.pdf)
- The Role of Head Start Programs in Addressing Lead in Water ACF-IM-HS-23-01 (https:/eclkc.ohs.acf.hhs.gov/policy/im/acf-im-hs-23-01)
- Schools, Offices, Factories, and Child Care (Noncommunity Nontransient) (https://www.health.state.mn.us/communities/environment/water/noncom/nontransient.html)
- Lead and Copper Rule (https://www.epa.gov/dwreginfo/lead-and-copper-rule)
- Lead and Copper Rule 40 CFR Part 141 Subpart I (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141#subpart-I)
- Lead Water Coolers Banned in 1988 (PDF) (https:/www.epa.gov/sites/production/files/2018-09/documents/module_4_leaded_water_coolers_banned_in_1988_508.pdf)
- Lead Contamination Control Act 1988 (PDF)(https://www.epa.gov/sites/default/files/2015-09/documents/epalccapamphlet1989.pdf)
- Final "Lead Free" Rule (https:/www.epa.gov/sdwa/use-lead-free-pipes-fittings-fixtures-solder-and-flux-drinking-water)
- 3Ts for Reducing Lead in Drinking Water Toolkit (https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water-toolkit)
- Guidelines for Canadian Drinking Water Quality (https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-lead.html)
- Long Term Facilities Maintenance (https:/education.mn.gov/MDE/dse/schfin/fac/ltfm/)
- DHS Grants and RFPs (https://mn.gov/dhs/partners-and-providers/grants-rfps/)

- Child Care Facility Revitalization Grants (https://www.firstchildrensfinance.org/for-businesses/grants/)
- Child Care Aware - Child Care Service Grants (http://childcareawaremn.org/professionals-caregivers/grants-scholarships/ccrr-grants)
- Child Care Aware - Local Resources (http://childcareawaremn.org/local-resources)
- WIIN Grant: Voluntary School and Child Care Lead Testing and Reduction Program (https:/www.epa.gov/dwcapacity/wiin-grant-lead-testing-school-and-child-care-program-drinking-water)
- Minnesota Lead Testing in Schools and Child Care in Drinking Water (https:/www.health.state.mn.us/communities/environment/water/schools/mngrant.html)
- Lead Remediation in Drinking Water in Schools and Child Care Settings Grant Program (https://www.health.state.mn.us/communities/environment/water/com/leadremgrant.html)
- Drinking Water Protection Grant Information (https:/www.health.state.mn.us/communities/environment/water/com/grants.html)
- Accredited Laboratories (http://www.health.state.mn.us/labsearch)
- EPA 3Ts Module 5 (PDF)(https://www.epa.gov/system/files/documents/2021-08/module_5_detailed_fixture_evaluation_508.pdf)
- 3Ts Revised Manual (PDF) (https://nepis.epa.gov/Exe/ZyPDF.cgi/P100VLI2.PDF?Dockey=P100VLI2.PDF)
- 3Ts Flushing Best Practices (PDF) (https://www.epa.gov/sites/default/files/2018-09/documents/flushing_best_practices_factsheet_508.pdf)
- Home Water Treatment Fact Sheet (https:/www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html)
- NSF Certified Drinking Water Treatment Units, Water Filters (https://info.nsf.org/Certified/dwtu/)
- Consumer Confidence Report (CCR) (https:/mnccr.web.health.state.mn.us/index.faces)
- Education and Communication Toolkit A Technical Guidance and Model Plan for Minnesota's Public Schools (PDF) (https:/www.health.state.mn.us/communities/environment/water/docs/toolkit.pdf)
- Education and Communication Toolkit: Reducing Lead in Drinking Water in Child Care Settings (PDF) (https:/www.health.state.mn.us/communities/environment/water/docs/toolkitccare.pdf)
- Results and Remediation Reporting Instructions and FAQ (PDF) (https://www.health.state.mn.us/communities/environment/water/docs/reportinstfaq.pdf)

- Lead Results and Remediation Reporting Spreadsheet (Excel) (https://www.health.state.mn.us/communities/environment/water/docs/leadreporttemplate.xlsx)
- Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings (PDF) (https://www.cdc.gov/legionella/downloads/toolkit.pdf)