

3T's for Reducing Lead in Drinking Water in Schools

Training for New York





General Information: Lead

- Lead is a toxic metal that affects multiple body systems, particularly the nervous system.
- Lead enters the body primarily through inhalation and ingestion.
- Once lead enters the body, it is distributed to the brain, liver, kidney and bones. It is stored in the teeth and bones, where it accumulates over time.
- The human body cannot tell the difference between lead and calcium (a mineral that strengthens bones).*



General Information: Lead

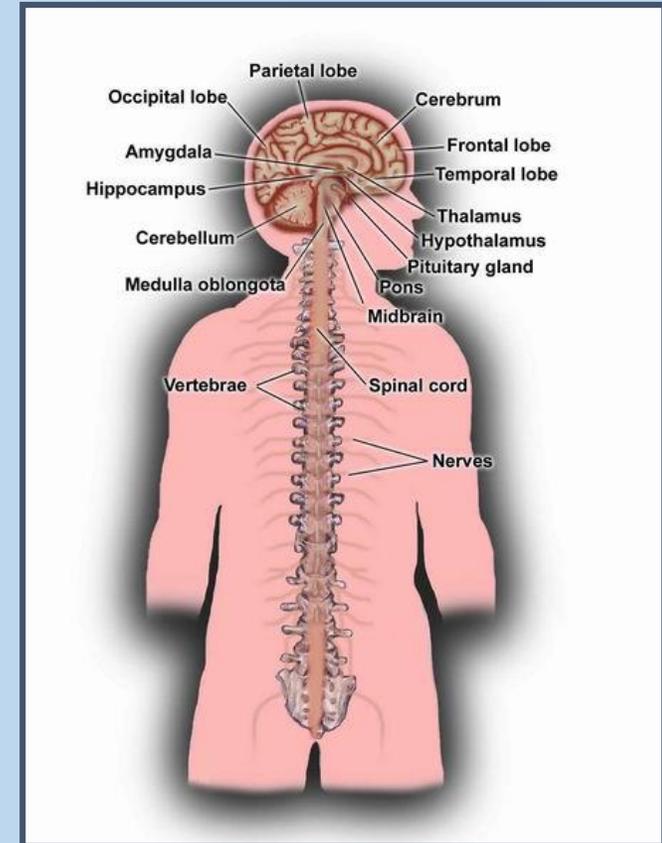
- Pregnant women and their developing fetus, infants, and young children are most vulnerable to the effects of lead.
- Human exposure is usually assessed through the measurement of lead in blood.
- New York State (NYS) requires a blood lead test for children at age 1 and again at age 2.
- There is no known safe blood lead level (BLL).





Health Effects of Lead: For Children

- Reduced IQ and Attention Span
- Learning Disabilities
- Poor Classroom Performance
- Hyperactivity
- Behavioral Problems
- Impaired Growth
- Hearing Loss





Sources of Lead in the Environment



Lead-based paint



In the air



In the soil



Lead Industry



In consumer products and food



In water

Lead in Drinking Water

- Children in schools and child care centers may be exposed through water they drink or food that has been prepared with contaminated water.
- *Did You Know:* Formula fed infants can receive up to 60 percent of their exposure to lead from lead in drinking water.
- Lead in drinking water has no taste, scent or color.
- Boiling water will NOT get rid of lead.





Lead in Drinking Water: Source Water

- Lead can enter drinking water by being present in the source water.
- Lead can enter source water from contaminated runoff or water pollution.





Lead in Drinking Water: Plumbing

- Lead can enter drinking water through an interaction between the water and plumbing materials containing lead, such as through corrosion.

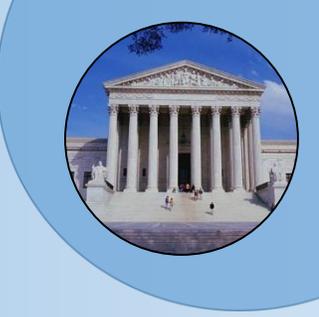


Many factors influence corrosion

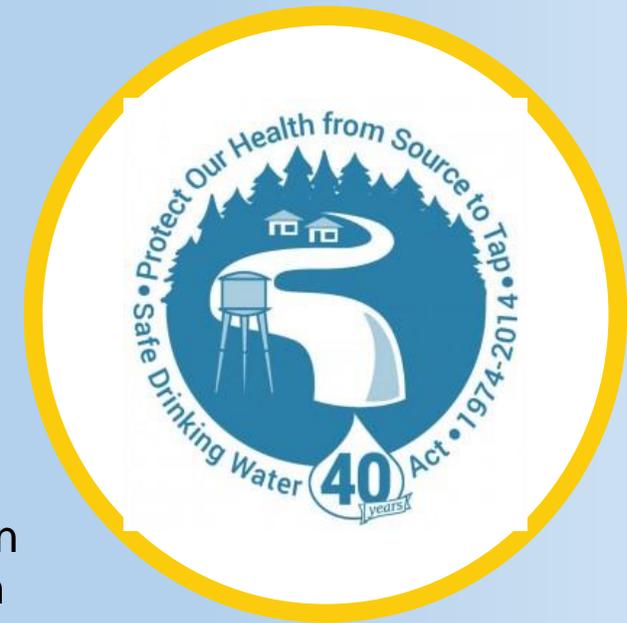
- “Soft” water
- Acidic (low pH) water
- Water velocity
- Temperature
- Alkalinity
- Chlorine levels
- Grounding of electrical wiring to water pipes
- Age and condition of plumbing
- Amount of time water is in contact with plumbing



Safe Drinking Water Act (SDWA) controls lead in drinking water



- **Lead Ban (1986):**
 - requires the use of “lead-free” materials (containing up to 8% lead). Plumbing fixtures are subject to NSF International Standard (<http://www.nsf.org/>).
- **Lead Contamination Control Act (1988):**
 - aimed at the identification and reduction of lead in drinking water in schools. Bans lead-lined water coolers and *requires guidance*.
- **Lead and Copper Rule (1991):**
 - addresses corrosion supplied by public water supplies (PWSs).
- **Reduction of Lead in Drinking Water Act (2011):**
 - Section 1417 further reduces the amount of lead in plumbing (to up to 0.25% lead on surfaces in contact with potable water) and identifies lead-free certification marks on plumbing products (<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100GRDZ.txt>).

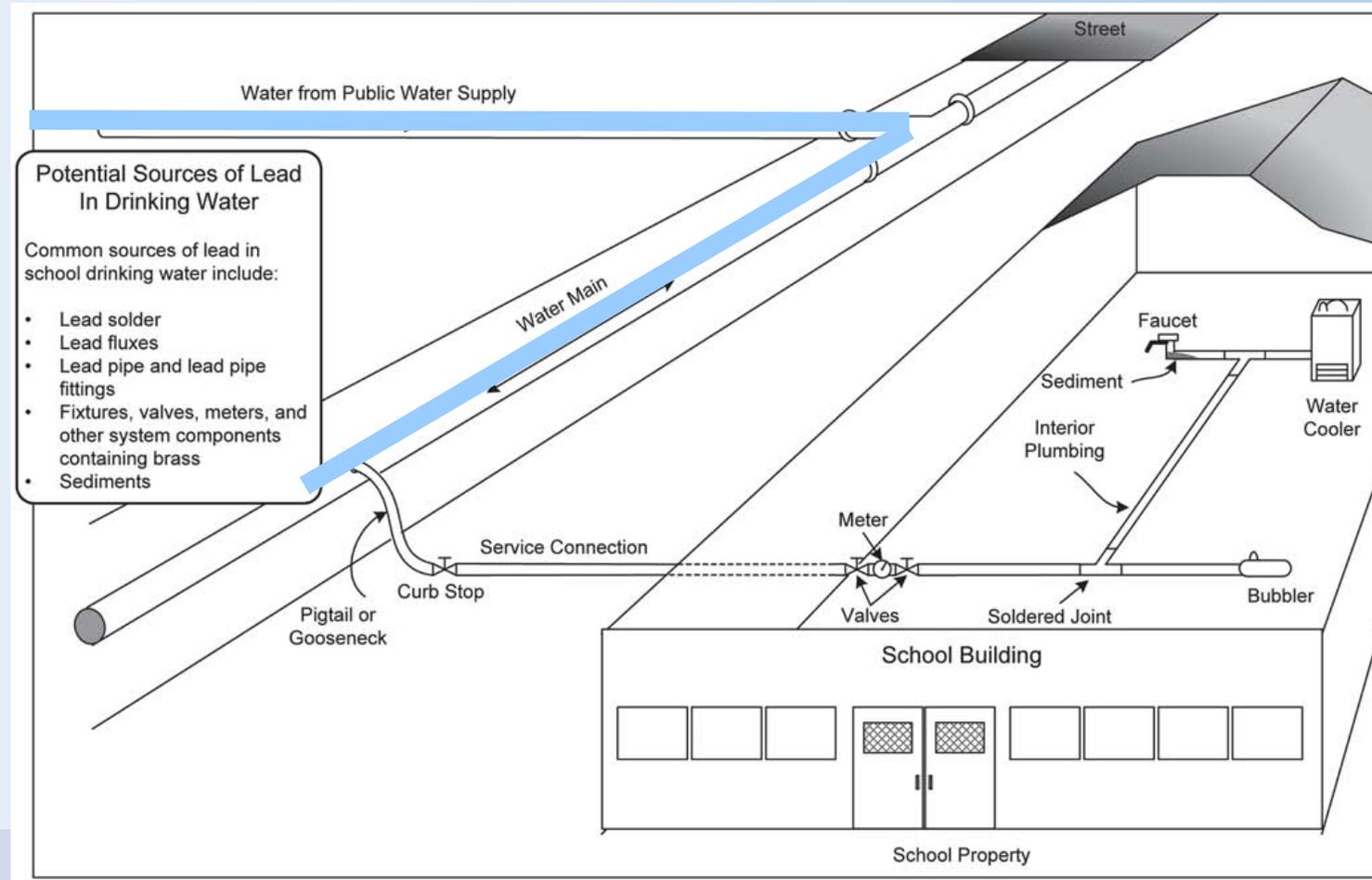


PWS Testing vs. Testing at Schools

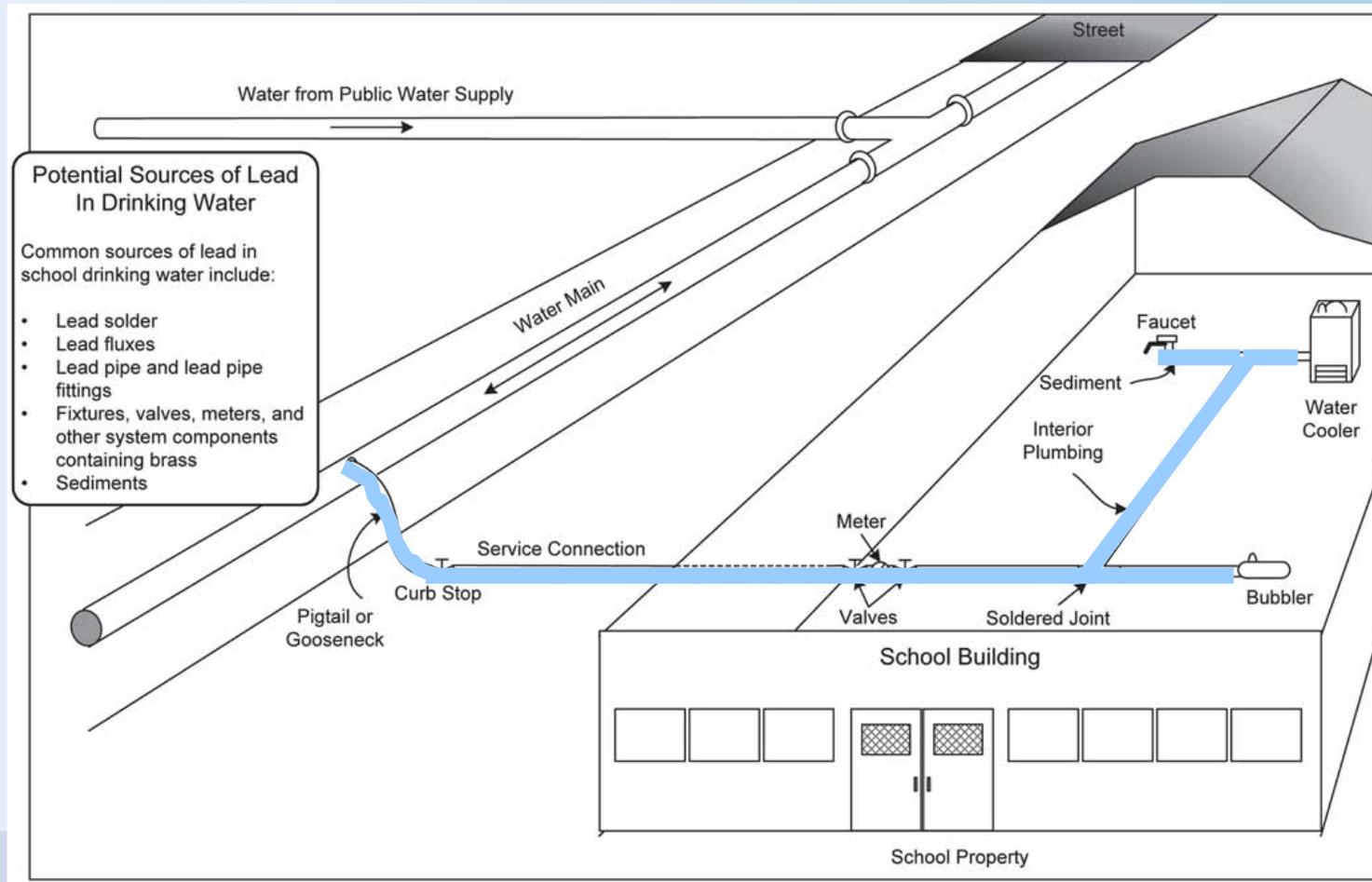
- System-wide vs. specific
- The protocols for sample size and sampling procedures are different.
- Public Water Supply Testing (1L, 15 ppb) vs. Testing at Schools (250 mL, 20 ppb)
- Testing at schools in NYS is now required (250 mL, 15 ppb)



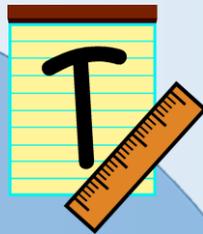
Lead in School Drinking Water: Public Water Supply

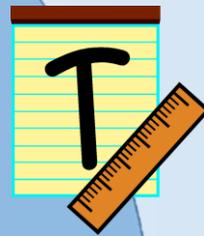


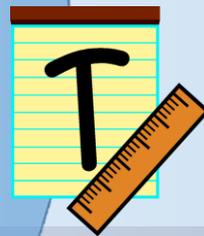
Lead in School Drinking Water: Interior Plumbing

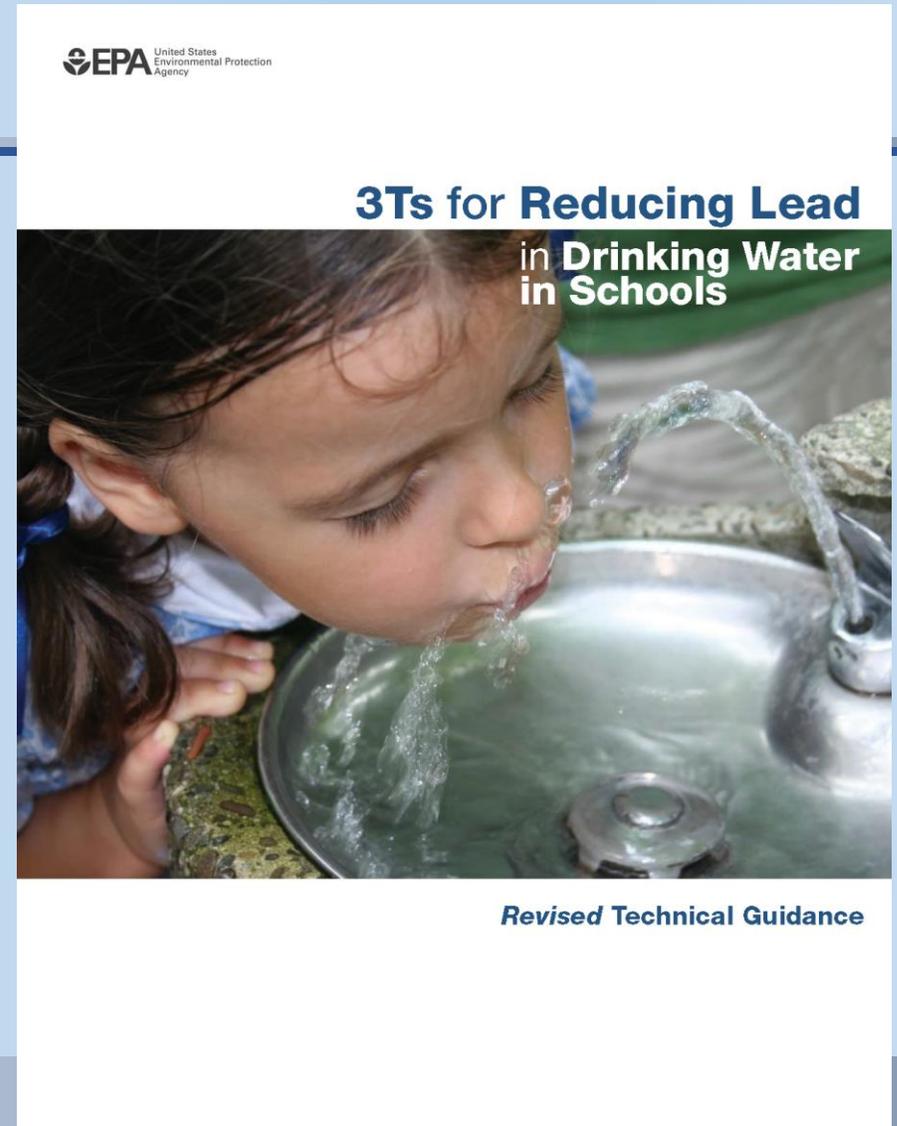


3T's for Reducing Lead in Drinking Water in Schools

 **Training**

 **Testing**

 **Telling**





Developing a 3Ts Program

- **Get School Buy-In**
 - Superintendent
 - Business Administrator
 - Director of Facilities
- **Establish Partnerships**
 - Your Public Water Supplier
 - Certified Laboratories
 - Local Health Office
 - State Drinking Water Program
 - Local Community Organizations
 - State Department of Education
- **Identify Funding** (testing, remediation, etc.)



Implementation of a lead control program

- Assessment & Strategy
- Testing
- Remediation
- Follow-up actions
- Communication
- Record keeping



Assessment & Strategy



- Inquire about lead in your building's source water.
- Review available records
- Develop a plumbing profile
- Conduct a Pre-Sampling Inspection of your building(s)
 - Understand how water enters and flows in your building(s)
 - Identify your building(s) plumbing products
 - Check for recalled water coolers (EPA810/F-90-21)
 - Identify and prioritize sampling sites. Map and code each outlet. *
 - Record observations (i.e., leaks, corrosion, particles on screens, locations of where electrical wires are grounded to water pipes, etc.) and take corrective actions where appropriate.



Areas most likely to have high lead include:

- Areas containing lead pipes or lead solder.
- Areas of recent construction and repair in which materials containing lead were used.
- Areas where the plumbing is used to ground electrical circuits.
- Areas of low flow and/or infrequent use.
- Areas containing brass fittings and fixtures.



Assessment and Strategy

- Create a sampling plan
 - Identify an action level. Your state may have more stringent requirements than EPA.
 - Identify who will collect and analyze your samples. Ensure sample collectors have a clear understanding of how to sample.
- Communicate your plans
 - Let maintenance staff, food service people, teachers, parents, and students know about the sampling event and their roles in it.

Sample all outlets used for consumption



- EPA recommends the following sites as priority sample sites:
 - drinking fountains (both bubbler and water cooler style),
 - kitchen sinks,
 - classroom combination sinks and drinking fountains,
 - home economics room sinks,
 - teachers' lounge sinks,
 - nurse's office sinks,
 - sinks in special education classrooms,
 - and any other sink known to be or visibly used for consumption (e.g., coffeemaker or cups are nearby).





Testing: How to Sample

- Ensure outlets are inactive for at least eight hours prior to testing, but not more than 18 hours
- The 2-Step Sampling Process:
 - **Step 1:** Collect 250 mL samples from water outlets to determine lead occurrence
 - **Step 2:** Collect follow-up flush samples from outlets identified as problem locations from Step 1
 - Compare sample results to determine sources of lead contamination and appropriate corrective measures
- Send samples to a certified laboratory

Establishing Partnerships: Certified Laboratories



- Use only EPA or state certified labs
- For certified labs in New York, visit: <http://www.wadsworth.org/regulatory/elap>
- Costs vary, so consult multiple labs



Immediate Responses

- If results identify outlets with high lead levels,
 - Turn off outlets with high lead results and prioritize remediation
 - Publically post test results
 - Notify staff, parents, and students of high lead levels and identify activities you are pursuing to correct any lead levels found.



Remediation: Control Measures

- Clean debris from screens (aerators) frequently
- Thoroughly flush holding tanks to remove sediment
- Use only cold water for food and beverage preparation
- Post “Do Not Use Water” signs. Use pictures for children.
- Provide bottled water
 - The FDA ensures the quality and safety of bottled water. NYS certifies bottled water.
- Know your plumbing products. Consult NSF (www.nsf.org)
- Keep up to date with plumbing standards.



Remediation: Long-Term Actions

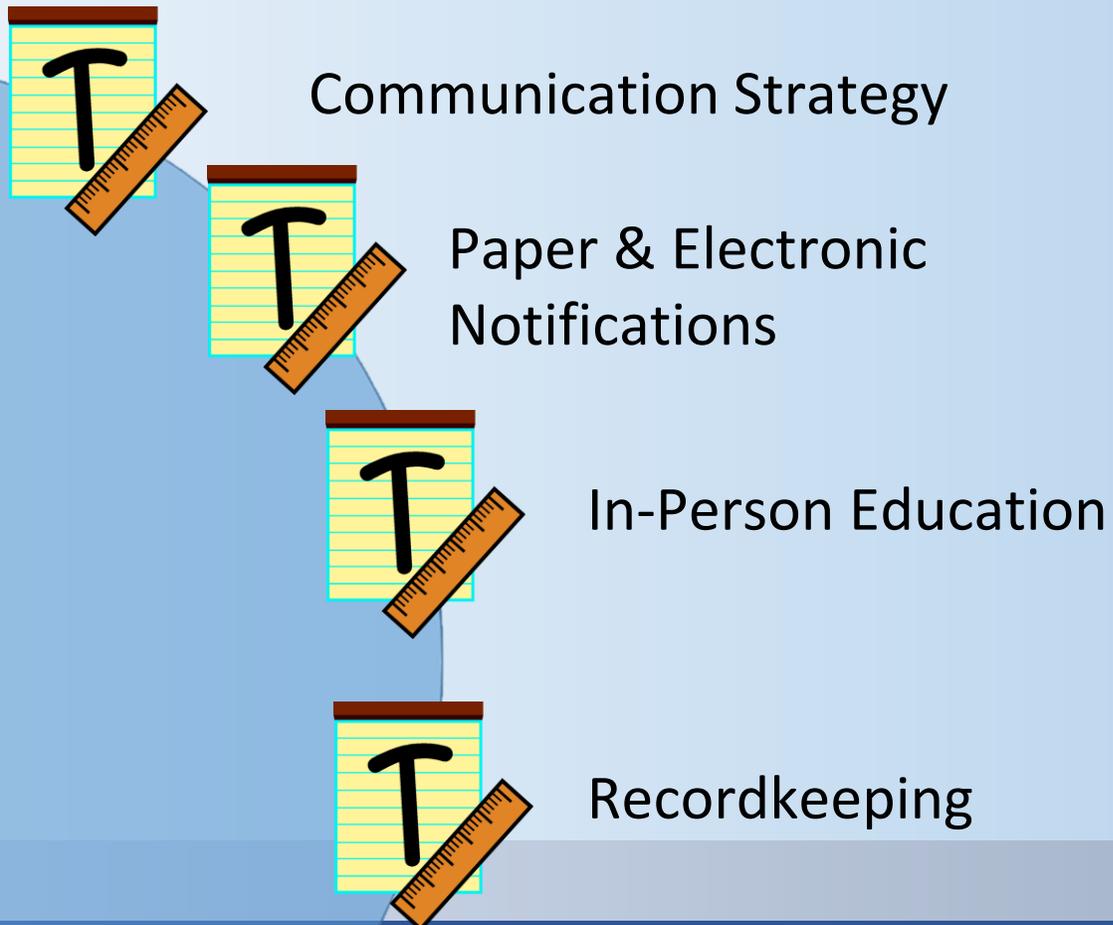
- Permanent Solutions:
 - Remove or replace unnecessary water outlets
 - Install point-of-use filters that control lead at the tap
 - Install corrosion control devices for individual buildings (point-of-entry devices)
- Always conduct post-remediation sampling to ensure that levels have been reduced and that remediation activities have been successful.

Recordkeeping

- Recordkeeping is important before, during, and following any testing that is conducted. Ensure your school:
 - Documents methodologies, procedures, and best practices that were used to plan for testing
 - Maintains information about the laboratories and/or professionals and their procedures
 - Memorializes any plans instituted in the process (i.e., flushing plans, maintenance plans or schedules, etc.)



Telling: Communicating & Public Notification

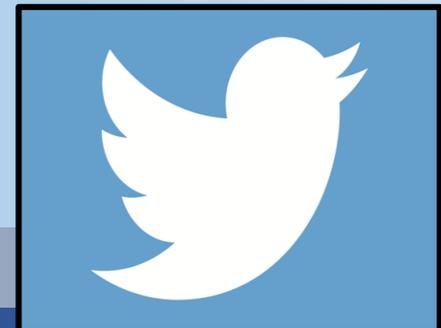
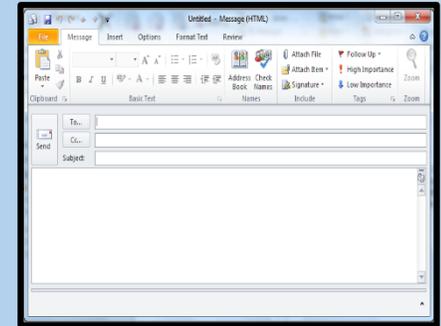


Communication Strategy

- The purpose of a communication strategy is to provide the means for delivering ongoing, up-to-date information regarding your sampling efforts. Your communications should take the following into consideration:
 - Your method of communicating
 - Your audience
 - Timing
 - Content

Methods of Communicating: Paper & Electronic Notifications

- Examples of paper communications to the public include:
 - Press Releases
 - Letters/Fliers
 - Mailbox or Paycheck Stuffers
 - Staff Newsletters
- Examples of electronic communications to the public include:
 - Email and websites
 - Social media



In-Person Education

- Examples of in-person public education include:
 - Presentations



Recordkeeping

- Maintain an ongoing record of public outreach and communication activities.
 - Enables complete transparency
 - Provides documentation that steps were taken to inform the public on lead issues
 - Aids in keeping the state in the loop as to the steps a school has taken to notify the public



Questions?

