GUIDANCE FOR SCHOOLS

IFA’s Lead Sampling Program for Public Schools

Table of Contents

1. Purpose of this Document
2. How Lead in Drinking Water is Regulated
3. EPA’s 3Ts Guidance Provides Recommendations for Schools
4. How Does Lead get into Drinking Water?
5. Health Impacts of Lead
6. A School’s Role In Creating a Sampling Plan
7. A School’s Role in Collecting Samples
8. A School’s Role in Responding to Results
9. A School’s Role in Remediation Actions
10. Future Sampling Efforts

Indiana Finance Authority (IFA)
www.in.gov.ifa
1. **Purpose of this Document**
   a. This guidance is intended to assist Indiana public schools participating in the IFA’s Lead Sampling Program for Public Schools. It is important for school officials to understand the sampling process to enable future samples to be managed by your school.
   
   b. The IFA is working with two Indiana partners to implement the Lead Sampling Program. The Indiana Geological and Water Survey (“IGWS”), a research institute of Indiana University, will be responsible for designing sampling plans and carrying out sample collection, pursuant to Indiana Department of Environmental Management’s (“IDEM”) guidance and training. 120WaterAudit will coordinate sample testing with local laboratories.

2. **How Lead in Drinking Water is Regulated**
   a. There is no federal law requiring testing of drinking water in schools, except for schools that have their own water supply and are thus regulated under the Safe Drinking Water Act.
   
   b. The Safe Drinking Water Act requires Public Water Systems to test for lead for the purpose of assessing system-wide issues. The most typical type of Public Water System is a municipally-owned drinking water utility. The Safe Drinking Water Act’s Lead and Copper Rule requires Public Water Systems to sample for lead at single family dwellings.
   
   c. Schools that are classified as a Public Water System are not included in the Indiana Lead Sampling Program because they are already sampling for lead.

3. **EPA’s 3Ts Guidance Provides Recommendations for Schools**
   a. To assist schools that are not regulated by the Safe Drinking Water Act, EPA developed a technical guidance document titled, 3Ts for Reducing Lead in Drinking Water in Schools (“3Ts Guidance”). The 3Ts refer to “training”, “testing” and “telling”. The purpose of the 3Ts Guidance is to help schools identify issues with faucets and fixtures. For more information about topics in this guidance, please refer to the 3Ts Guidance.
   
   b. The main difference between the 3Ts Guidance and the IFA Lead Sampling Program Guidance, is the level at which IDEM recommends Indiana schools take action. IDEM is the regulatory agency that oversees Indiana Public Water Systems. The 3Ts recommends a school take action at 20 ppb; IDEM and the IFA Lead Sampling Program Guidance recommend a school take action at 15 ppb, which is the action level for Public Water Systems under the Lead and Copper Rule. See Table 1.
Table 1: Differences between the 3Ts Guidance and the Lead and Copper Rule

<table>
<thead>
<tr>
<th>Source</th>
<th>Recommended Action Level for lead</th>
<th>Sample Volume</th>
<th>Sampling Location</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Ts Guidance (EPA)</td>
<td>20 ppb</td>
<td>250 mL</td>
<td>Drinking/cooking water sites at schools</td>
<td>To identify problems at faucets and fixtures</td>
</tr>
<tr>
<td>Lead and Copper Rule (EPA)</td>
<td>15 ppb</td>
<td>1000 mL</td>
<td>Residential homes</td>
<td>To identify system-wide problems</td>
</tr>
</tbody>
</table>

As a reminder,

1 mg/L = 1 ppm (parts per million) = 1000 ppb (parts per billion)
15 ppb = 0.015 ppm = 0.015 mg/L

4. **How Does Lead get into Drinking Water?**
   a. Lead most frequently gets into drinking water by leaching from plumbing materials and fixtures as water moves through a school’s distribution system. Even though the drinking water received from a Public Water System meets federal and state standards for lead, a facility may still have elevated lead levels due to plumbing materials, fixtures, and/or water use patterns. Because lead concentrations can change as water moves through the distribution system, the best way to know if a school might have elevated levels of lead in its drinking water is by testing the water in that school.

   b. Common sources of lead in school drinking water:
      i. Lead pipes in interior plumbing
      ii. Lead soldered joints
      iii. Water fountains
      iv. Kitchen cooking vessels (a.k.a. “kettles”)
      v. Faucets that contain lead
      vi. Leaded brass fittings
      vii. Galvanized steel pipes (zinc coating)
      viii. Lead service line to school building. The service line connects the school to the Public Water System’s water main; see Figure 1
      ix. Sediment in faucet screens; see Figure 2.
IFA Lead Sampling Program
Guidance for Schools

Figure 1: Typical layout of a school service line
(Photo: Irvine Ranch Water District)

Figure 2: Faucet aerators (left) can become a long-term source of lead. The image on the right shows the contents of a single aerator. Brown debris are particulate lead.
(Photos: Smart Stock; Marc Edwards)

5. Health Impacts of Lead
   a. Lead is a toxic metal that is harmful to human health. The human body cannot tell the difference between lead and calcium. Like calcium, lead remains in the body for a few months. What is not excreted is absorbed into the bones, where it can collect for a lifetime. Young children, those 6 years and younger, are at particular risk because they have frequent hand-to-mouth activity and absorb lead more easily than adults. Lead is also harmful to the developing fetuses of pregnant women.
Elevated blood lead levels have been associated with reduced IQ and attention span, learning disabilities, poor classroom performance, impaired growth, severe neurological problems, among other problems.

Children can be exposed to lead from a variety of sources including old paint, soil, dust, and drinking water. The exposure risk depends on a number of factors including frequency, duration and dose of the exposure(s) and individual susceptibility factors (e.g. age). In addition, the exposure risk depends on one’s total exposure to lead from all sources in the environment – air, soil, dust, food, and water. The only way to determine a child’s lead level is for them to have a blood lead test done by a health provider. To learn more about reducing lead risks, please visit [www.cdc.gov/lead](http://www.cdc.gov/lead).

6. **A School’s Role In Creating a Sampling Plan**
   a. The IGWS representatives will need the following information from school officials to create a sampling plan:
      i. A building map or floor plan;
      ii. Location of the service line, where the drinking water enters the building;
      iii. Location of all fixtures that are used for drinking water; typical fixtures include:
         1. Water fountains; there are two main types;
            a. “Water coolers” have an interior cooling unit and are typically larger, see Figure 3;
            b. “Bubblers” do not have a cooling unit and are typically smaller, see Figure 4;

---

**Figure 3: Water cooler**  
(Photo: Ente75)

**Figure 4: Bubbler**  
(Photo: Pixabay)
2. Kitchen sinks and cooking vessels ("kettles") used for food preparation and consumption, see Figures 5 and 6;

![Figure 5: Kitchen sinks](Photo: Wikipedia)  
![Figure 6: Kitchen kettle](Photo: Erikoinentunnus)

3. Sinks in nurse’s station may be used for administering medicine, see Figure 7;

![Figure 7: Nurse’s office](Photo: PCHS-NJROTC)
4. Sinks in faculty lounge may be used for drinking water, coffee or food preparation, see Figure 8;

Figure 8: Teacher’s lounge
(Photo: BalooDavies)

5. Sinks in home economics room used for food preparation, see Figure 9;

Figure 9: Home economics room
(Photo: Nightscream)
6. Concession stands may use water for drinking or food preparation;

Figure 10: Concession stand
(Photo: Michael Rivera)

7. Spigots in locker rooms, athletic buildings, or athletic fields used to fill water jugs;

Figure 11: Water spigot
(Photo: Photos-public-domain.com)
8. Ice machines;

![Figure 12: Ice machine](Photo: BrokenSphere)

iv. The IGWS representatives will create the sampling plan to contain:
1. “Initial” samples that will be collected from all drinking water fixtures to assess water in contact with the fixtures;
2. “Flushed” samples that will be collected from certain fixtures to represent the water in the internal plumbing;
3. “3-minute Flushed” samples that will be collected from the first drinking water fixture nearest to the service line to represent the water in the service line or close to it.

v. The IGWS representatives would like to apply “handwashing only” stickers or signs at fixtures that are not recommended for sampling or use for consumption; typically these include:
1. Mop sinks used for cleaning

![Figure 13: Mop sink](image)

2. Bathroom sinks used for handwashing

![Figure 14: Bathroom sinks](image)

(Photos: Raysonho)
3. Classroom sinks laboratory sinks that are used for handwashing only

![Figure 15: Classroom sinks](Photo: TLSuda)

4. Kitchen sinks used exclusively for hand and dishwashing

![Figure 16: Kitchen sinks used for dishwashing only](Photo: Tracy Hunter)
7. **A School’s Role in Collecting Samples**
   a. Prior to the second site visit, pre-labeled bottles (specific to the fixtures that were identified in the sampling plan) will be mailed to the school. In order to prevent accidental contamination, please do not open the box. Boxes will be mailed from 120WaterAudit.

   b. IGWS representatives will request your help to ensure:
      i. They can get early access to the building before the facility opens;
      ii. Samples are collected during “normal use” conditions, which means when school is in session but prior to students’ daily use. The goal is for the water collected to be as “typical” as possible;
      iii. The water in the school should be stagnant for at least 8, but no longer than 18 hours, prior to collection;
         1. Sampling can occur on Tuesdays-Saturdays, but not the day after a break.
      iv. The system has not been flushed or aerators cleaned before the visit, unless this process is already in place;
      v. Verify that no water at all has been used before the samples are taken, including flushing toilets or preparing coffee or food, etc.;
         1. It may be helpful to send a reminder to all staff and put signs up around the school building.

   c. IGWS representatives will collect samples using the following guidelines:
      i. Use only cold water for sampling, unless hot water is used for food preparation;
      ii. Collect an “initial” sample, which means collecting the first draw of water out of the fixture;
      iii. Collect a 30-second flushed sample, collecting a sample after the water has run for 30 seconds.

   d. IGWS representatives will mail the bottles to a certified laboratory that will analyze the samples.

   e. The laboratory will send the results to the IFA.

8. **A School’s Role in Responding to Results**
   a. With oversight from IDEM, IFA will evaluate the results and send a summary letter to the school. The letter will contain:
      i. An explanation of the results;
      ii. Recommended remediation actions, if needed;
      iii. A public information kit, which includes:
         1. Community/media discussion points;
         2. Template letter to parents.

   b. The school will be responsible for sharing the results with the public, including the Public Water System.

   c. After the summary letter has been sent to the school, the IFA will periodically post results to its website.
d. If the results are inconclusive, it may be necessary for additional samples to be collected. If IFA determines that additional samples are needed, IFA will order more collection bottles to be shipped directly to the school. The cost of the additional samples ordered by IFA will be covered by IFA. It will be the responsibility of the school to collect these samples and mail them to the laboratory.

9. **A School’s Role in Remediation Actions**
   a. It is imperative for schools to take action if drinking water samples are above 15 ppb. IFA will recommend remediation actions, which have been sanctioned by IDEM. It will be the responsibility of the schools to implement the remediation actions.

   b. During short-term remediation, schools may be asked to:
      i. Shut off problem fixtures, and place a sign above these sites indicating corrective action is being taken;
      ii. Manually flush the piping system in the building every morning and especially after vacations;
      iii. Provide bottled water;
      iv. Use only cold water for food and beverage preparation;
      v. Clean aerators (particulate lead can accumulate in screen).

   c. During long-term remediation, IFA might recommend that schools:
      i. Permanently shut off, remove or replace problem fixtures;
      ii. Replace lead service lines. Contact Public Water System;
      iii. Replace lead pipes or reconfigure plumbing to bypass sources of lead contamination;
      iv. Replace brass faucets and fittings that contain lead;
      v. Remove copper lines with lead solder;
      vi. Install time-operated solenoid valves to automatically flush the problem areas;
      vii. Check ground wire and eliminate any that may accelerate corrosion;
      viii. Use certified lead-free materials to repair or replace the facility’s plumbing system (refer to EPA’s publication “How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products”);
      ix. Use only cold water for food and beverage preparation;
      x. Clean aerators in accordance with regular maintenance schedule.

   d. It is important for schools to follow up and share results of remediation actions.
      i. Share results of remediation actions with school community.
10. Future Sampling Efforts
   a. Due to the variable nature of lead concentrations in drinking water, we recommend schools put together a long-term monitoring plan using the sample plan map and educational materials provided by this program. Water chemistry, temperature, and varying flow rates can all impact the amount of lead found at fixtures. As explained above, schools that do not provide their own drinking water are not currently legally required to test for lead. The following recommendations are purely voluntary and may not meet requirements set forth in future regulations.
      i. **Schools with any samples over 15 ppb** - consider sampling all cooking and drinking water fixtures once every year.
      
      ii. **Schools with all samples under 15 ppb** - consider sampling all cooking and drinking water fixtures once every 3 years.
   
   b. EPA’s 3Ts for Reducing Lead in Drinking Water in Schools
   
   c. IDEM’s Sampling for Lead in Drinking Water for Schools video
      i. [http://www.in.gov/idem/6968.htm](http://www.in.gov/idem/6968.htm)
   
   d. IFA’s Pipe Identification Guide
      i. See attached.