Washington State Department of Health

Lead in Drinking Water in Schools

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PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER COMMUNITY




Office of Drinking Water's Mission

We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.


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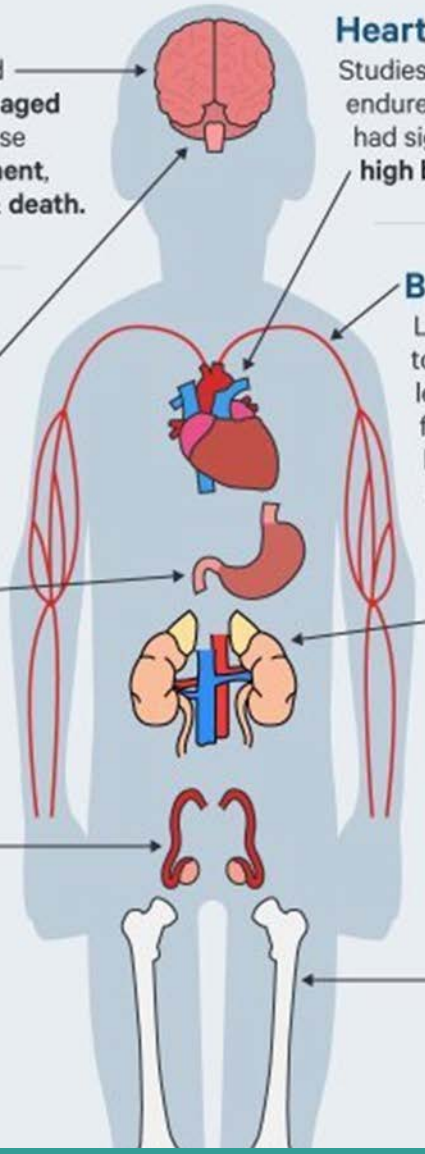
T-MOBILE PARK

Children Most Vulnerable to Lead

- Developing children are much more sensitive to the adverse effects of lead.
- Especially harmful to developing brains and nervous systems
- Children absorb more lead than adults
- Children have higher metabolism relative to body weight
- Young children put hands in mouths, increasing their exposure

How **lead** affects childrens' health



Brain

Any exposure is linked to lowered **IQ**, **ADHD**, **hearing loss**, and **damaged nerves**. Acute exposures can cause convulsions, **loss of body movement**, **coma**, **stupor**, **hyperirritability,** & **death.**

Heart

Studies suggest that adults who endured lead poisoning as children had significantly higher risks of **high blood pressure** 50 years later.

Blood

Lead inhibits the body's ability to make hemoglobin, which can lead to anemia. This reduces oxygen flow to organs, causing **fatigue**, **lightheadedness**, **rapid heartbeat**, **dizziness,** & **shortness of breath.**

Hormones

Lead disrupts levels of vitamin D, which can **impair cell growth**, maturation, and tooth and bone development.

Stomach

Severe lead exposure can create intense **abdominal pain** and **cramping**.

Kidneys

Chronic exposures can cause chronic inflammation, which can lead to **kidney failure**, **bloody urine**, **fever**, **nausea**, **vomiting**, **drowsiness**, **coma**, **weight gain**, **confusion**, **rash**, and **urinary changes**.

Reproductive System

A moderate exposure can not only **lower sperm count**, but also **damage them**. Chronic exposures can diminish the concentration, total count, and motility of sperm, though it's unclear how long these effects last after the exposure ends.

Bones

Lead may impair development and the health of bones, which can **slow growth in children**.

Lead Is a Silent Threat

- In most cases, there are no symptoms
- At high levels: Abdominal pain, cramping, anemia
- At extremely high levels: Seizures, coma, and death

Sources of Lead Poisoning

Paint in Homes
Built Before 1978

Dirt

Lead Dust

Some Pottery

Take Home Lead
(Jobs or Hobbies)

Traditional Remedies, Make-up
and Powders

Some Candy

Some Jewelry

Some Toys

How is Lead Regulated in Water Systems?

Lead and Copper Rule

- Effective 1991. Revised in 2001, 2007
- Community and Non-transient, Non-community water systems
- Homes with lead service lines and/or lead solder
- ***Treatment technique rule***
  - If ***action level*** exceeded, must install corrosion treatment

LCR Long Term Revisions (LTR)

- EPA working on LTR since STR
- White paper (2016) identified potential areas of focus
  - LSL Replacement
  - Improving Treatment
  - Health-based benchmark
  - How and when samples are collected
  - Public Education and Transparency
  - Copper Requirements

How is Lead Regulated in Schools?

- **Lead Contamination Control Act**
- Federal rule adopted in 1988
- Schools and child care facilities
- Focus on drinking fountains containing lead
- ***Court challenge deemed unenforceable***

- **Primary and Secondary Schools (WAC 246-266)**
- Adopted in 1991
- Updated in 2009 (WAC 246-366A)
- ***NOT IMPEMENTED*** *due to lack of funding*

Other regulations related to lead and schools

- **Healthy, Hunger Free Kids Act (2010)**
  - **Schools participating in school lunch program**
  - **Potable water during lunch service**
    - **No lead testing if served by public water system**

- **Reduction of Lead in Drinking Water Act (2011)**
  - **Redefines “lead free” in Safe Drinking Water Act**
  - **Pipes, pipe fittings, plumbing fittings and fixtures intended for human consumption**
  - **Reduces allowable lead from 8% to weighted average of 0.25%**

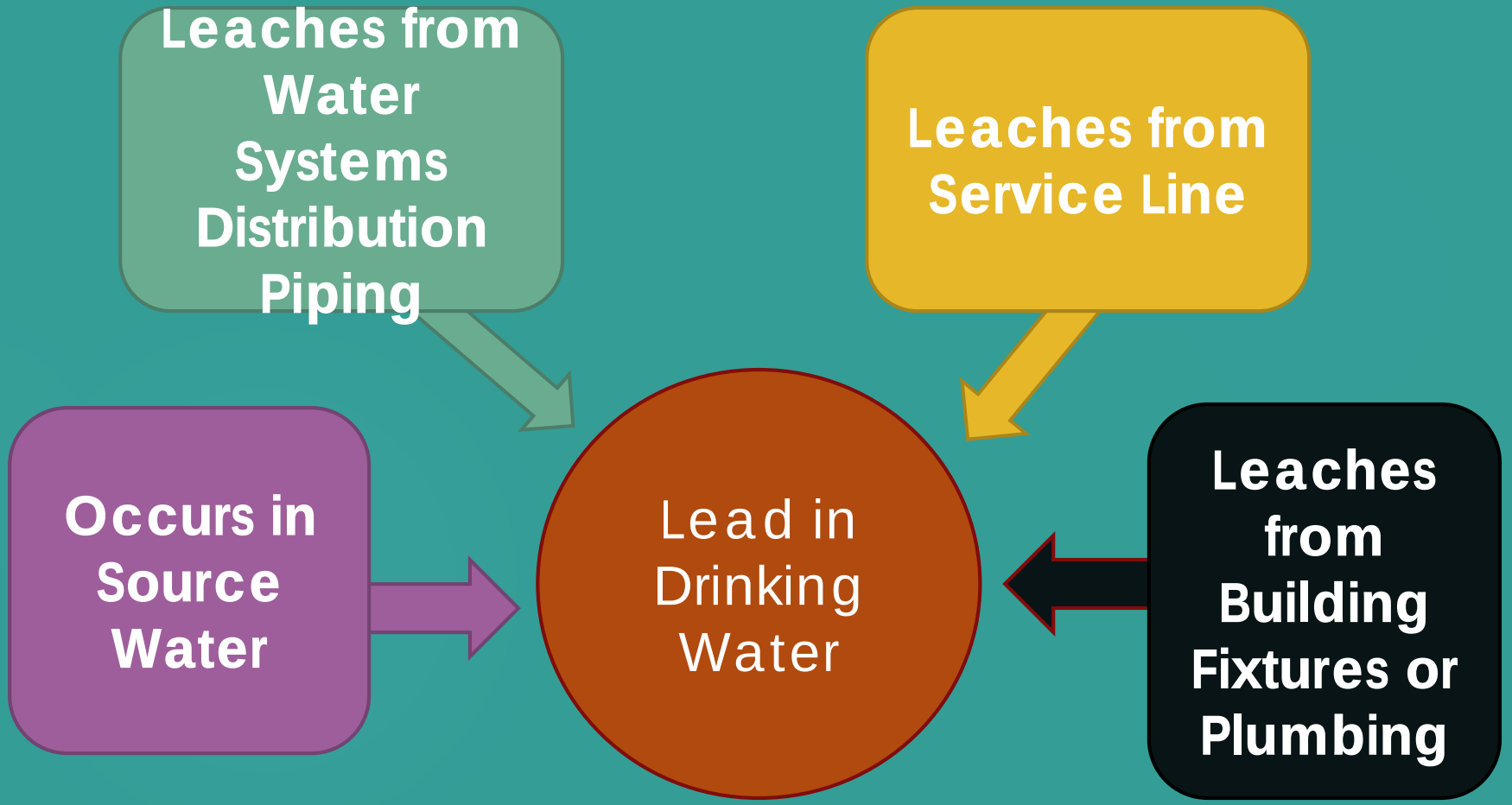
So What Does It All Mean??

- No State or Federal Regulations requiring schools to test for lead
- If a school has it's own water source, it must test for lead under the LCR
- If schools choose to test, it is voluntary

Key Differences Between Water Systems and Schools

	Water System	School
Sampling Location	Customer Homes	Taps within buildings
Sample size	1000 mL	250 mL
Action Level	15 ppb	~~20 ppb**~~
Response	Work toward centralized treatment	Immediately take taps out of service; remediate

Sources of Lead in Drinking Water



Why is Lead a Concern for Schools?

- The “on-again, off-again” nature of water use.
- Lead levels increase when water sit in pipes for extended period of time.

- Plumbing system design and use patterns may create zones where flow is short-circuited and stagnant water can persist.

Resources for Schools

- **ODW Lead in Schools webpage**
  - How lead gets into water
  - Sampling brochure
  - Link to health effects info

- **EPA 3Ts for Reducing Lead in Drinking Water in Schools**
  - Very detailed
  - Good information on planning and communication

More about EPA's 3T's

- New revision – October 2018 (revised from 2006)
- Now combined recommendation for child care facilities
- New and improved format
- Now Training, Testing, and Taking Action
- Recommends sequential sampling up front
- BIGGEST CHANGE….
  - **Removal of 20 ppb recommended remediation level**

Lead Proviso

$1,500,000 of the general fund—state appropriation for fiscal year 2018 and $1,500,000 of the general fund—state appropriation for fiscal year 2019 are provided solely for:

- Increased screening, case management, and an electronic data reporting
- Sampling and testing of drinking water and water fixtures in public schools.
- Using 3Ts for Reducing Lead in Drinking Water in Schools—Revised Technical Guidance

Guidance must include:

- Actions to take if test results exceed the action level of 20ppb or public drinking water standard;
- Recommendations to schools on:
- prioritizing fixture replacement, and options for further reducing lead,
- communicating test results and risk to parents and the community.

And we put our commitment to work

Timeline

- June 2017: Proviso funding passes legislature.
- July – October 2017: Reorganized the office to create Built Environment Section.
- November 2017 – January 2018: Hired Built Environment Manager, Schools Coordinator, and Samplers. Designed the program.
- January 2018: started scheduling and sampling schools

How does sampling work?

- Trained staff visit participating schools to collect water samples based on the EPA's 3 T's for Reducing the Lead in Drinking Water in Schools:
- Samples are sent to the DOH public health lab for analysis.
- Schools are notified of their results.
- DOH provides guidance on communication and remediation
- Results are posted on the open data portal through DOH web thirty days after schools have been notified of their results.

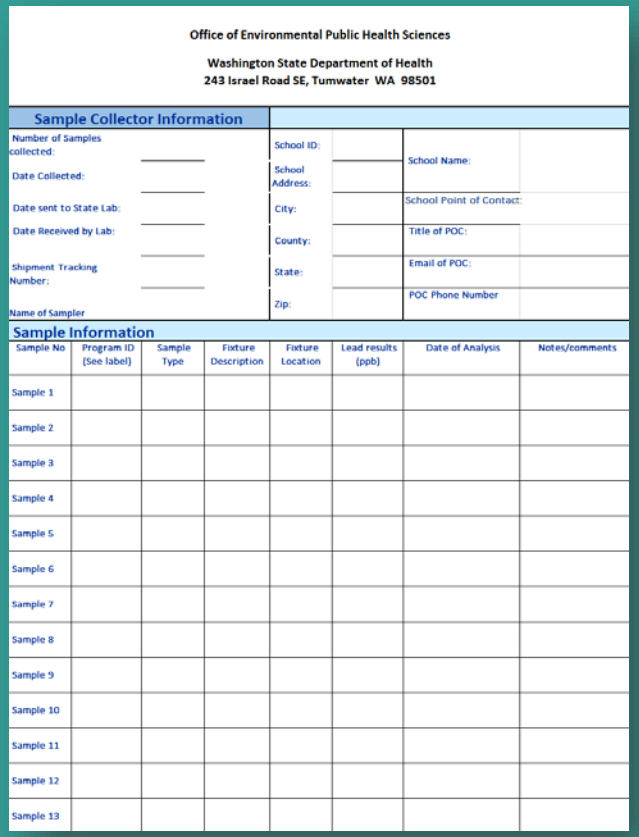
Priority Testing Sites

- Drinking fountains (both bubblers and water cooler types
- Kitchen sinks
- Classroom combination sinks
- Home economic room sinks
- Teachers lounge sinks
- Nurse office sinks
- Sinks used or known to be used for consumption e.g. coffee maker cups nearby.
- Sinks in special education classrooms

Field Data Collection

Due to the short timeline in getting the program up and running, initial field data collection was with pen and paper.

- Approximately 40 – 60 samples are taken from most schools.
- Field data manually typed in to printed excel spreadsheet.
- Results from public health lab manually added to field data spreadsheet when they are received.
- Final data tables manually re-formatted to send to schools.



Office of Environmental Public Health Sciences

Washington State Department of Health
243 Israel Road SE, Tumwater WA 98501

Sample Collector Information

Number of Samples collected:
Date Collected:
Date sent to State Lab:
Date Received by Lab:
Shipment Tracking Number:
Name of Sampler

School ID:
School Address:
City:
County:
State:
Zip:

School Name:
School Point of Contact:
Title of POC:
Email of POC:
POC Phone Number

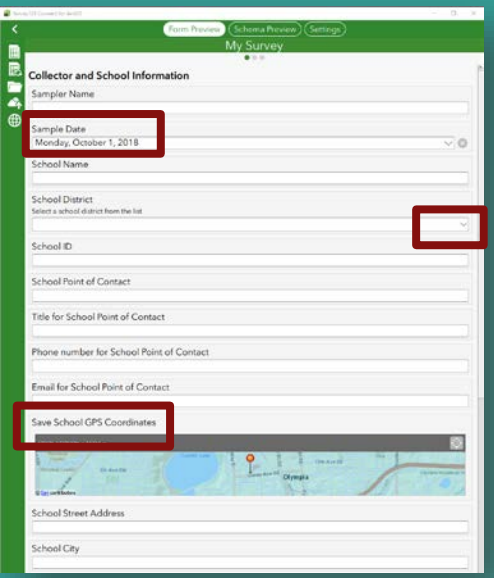
Sample Information

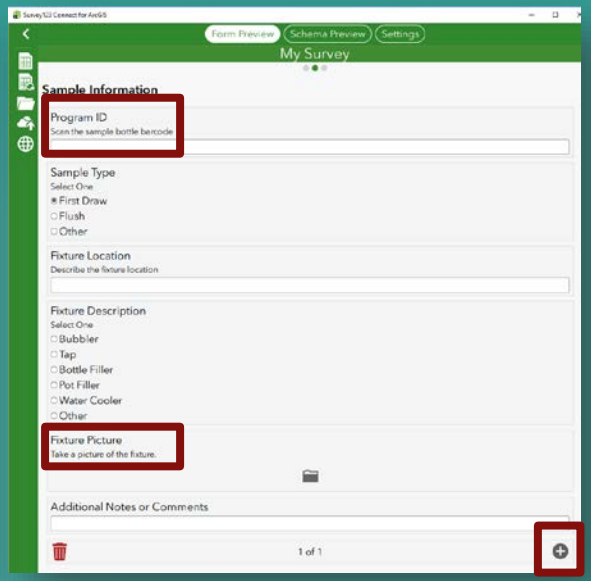
Sample No	Program ID (See label)	Sample Type	Fixture Description	Fixture Location	Lead results (ppb)	Date of Analysis	Notes/comments
Sample 1							
Sample 2							
Sample 3							
Sample 4							
Sample 5							
Sample 6							
Sample 7							
Sample 8							
Sample 9							
Sample 10							
Sample 11							
Sample 12							
Sample 13							

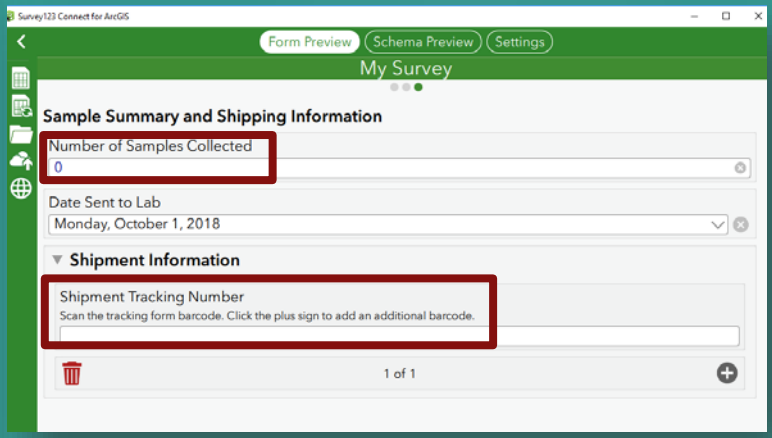
Transitioning to Survey123

Objectives

- Improve efficiency for field data collection, improve the process for matching sample results to field data and formatting results for communicating with schools and the public.
- Improve accuracy and standardization (drop down menus, multiple choice options) of field data collection.





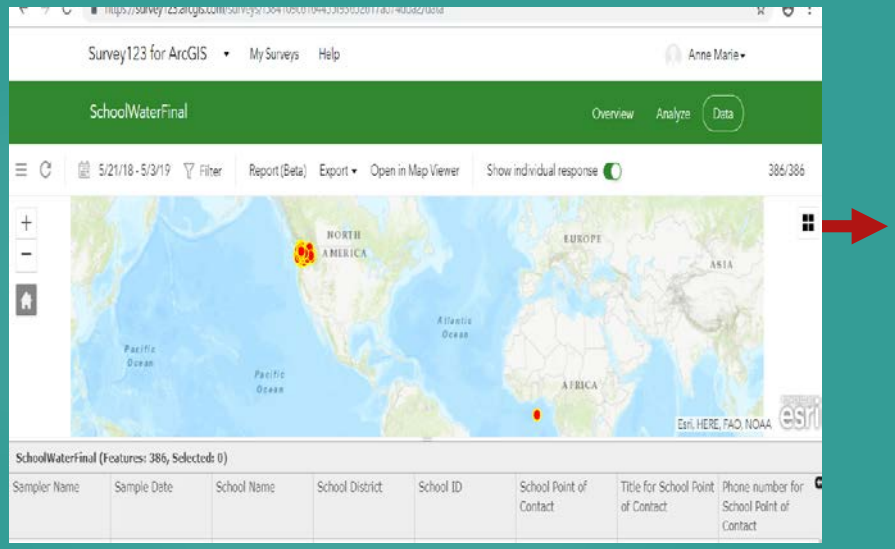


Survey123 Field Data Collection

- Our 4 samplers across Washington can simultaneously collect data on their cell phones using the Survey123 app.
- When samplers submit their data, it is automatically uploaded and added to our Survey123 database.

Survey123 Report Generator

- We use the report generator to export data in the format we use to share results with schools and the public.



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243 Israel Road SE, Tumwater WA 98501

Lead Sample Collection Information

DISCLAIMER: Results posted here only represent testing done by the Washington State Department of Health for the 2018-19 lead in school drinking water program. Schools have been provided these results, along with recommendations for remediation if applicable. Please contact your school to find out more about this and other testing they may have done, as well as plans for remediation.

Date Collected: 10/17/2018

School Name: DOH Early Learning Academy

School Code: 2222

School District Name: North Thurston

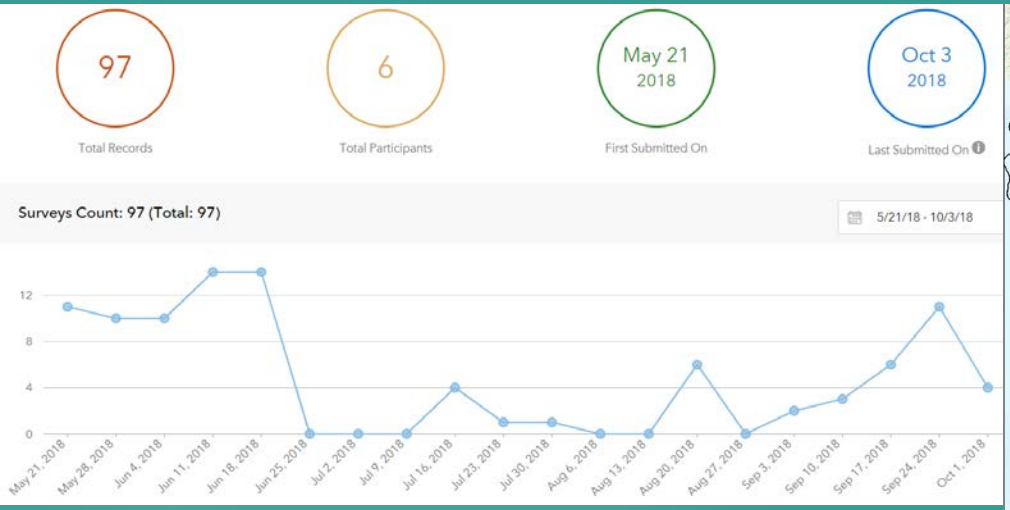
Address: 243 Israel Rd. Tumwater WA 98504

County: Thurston

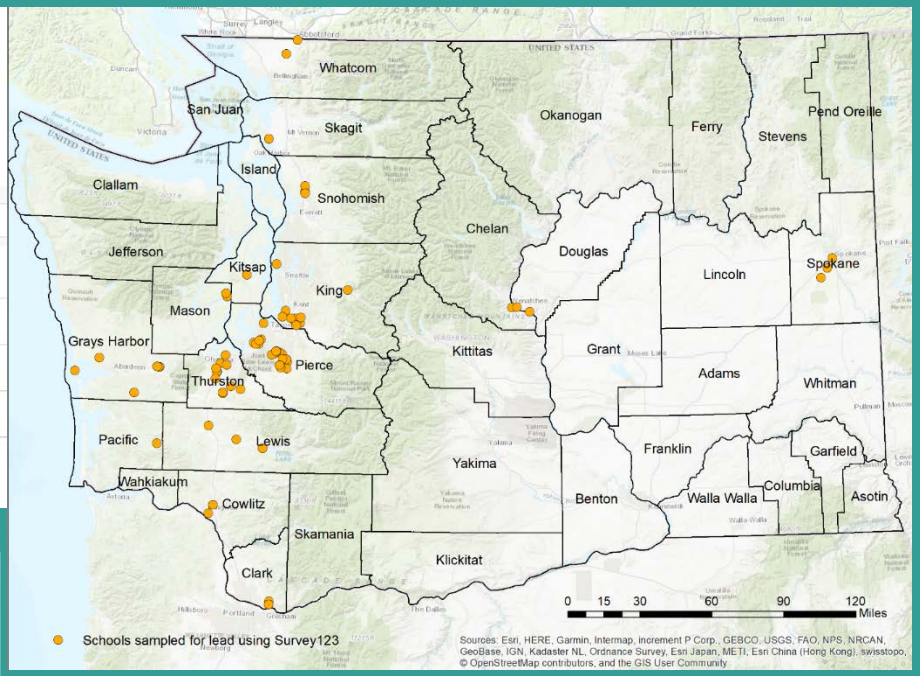
Number of Samples Collected: 64

Sample number	Sample ID	Sample Type	Fixture Description	Fixture Location	Lead Content (ppb)	Date of Analysis	Notes/Comments
1.	14906	First Draw	Tap	Kitchen	2	10/24/2018	Used by staff member
2.	14907	First Draw		Kitchen	<1	10/24/2018	Food Prep Sink, used by staff member
3.	14908	First Draw	Bubbler	Near kitchen	<1	10/24/2018	Used by staff member

Data collected using Survey123



Answers	Count	Percentage
First time sampling school	68	70.10%
Follow up sampling	26	26.80%



Survey 123 Outcomes

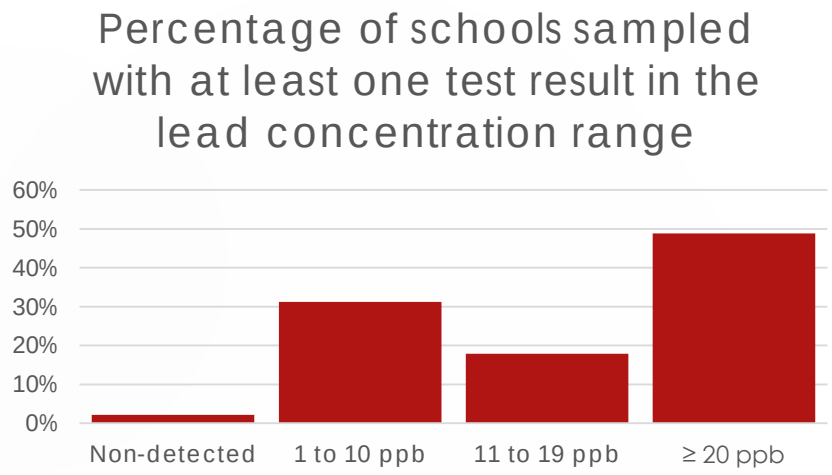
- Transitioning to Survey123 improved the accuracy, standardization and efficiency of our field data collection.

- The report generator feature allows us to instantly export our results in formatted letters we use to communicate with schools and the public, which has saved a lot of time and resources.

- Approximately 97% of schools have lead concentrations >1 ppb and ~49.0% of schools have lead concentrations ≥ 20 ppb.

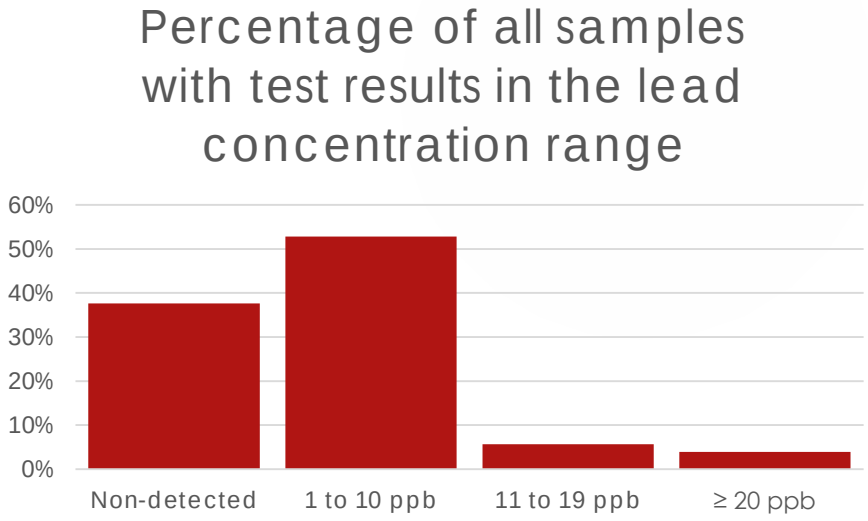
Did every school have lead?

- The percentage of schools sampled with at least one test result in the lead concentration range



Did you find any lead?

- The percentage of all samples with test result in the lead concentration range



- Analysis ongoing, not all samples taken have results.
- This summary includes 20,709 samples analyzed by lab from 429 schools as of 5/3/2019.

Our Recommendations

DOH provides recommendations for schools based on lead concentration:

≥ 20 ppb

Take fixture out of service

- Take flush sample to determine source
- Replace fixture.

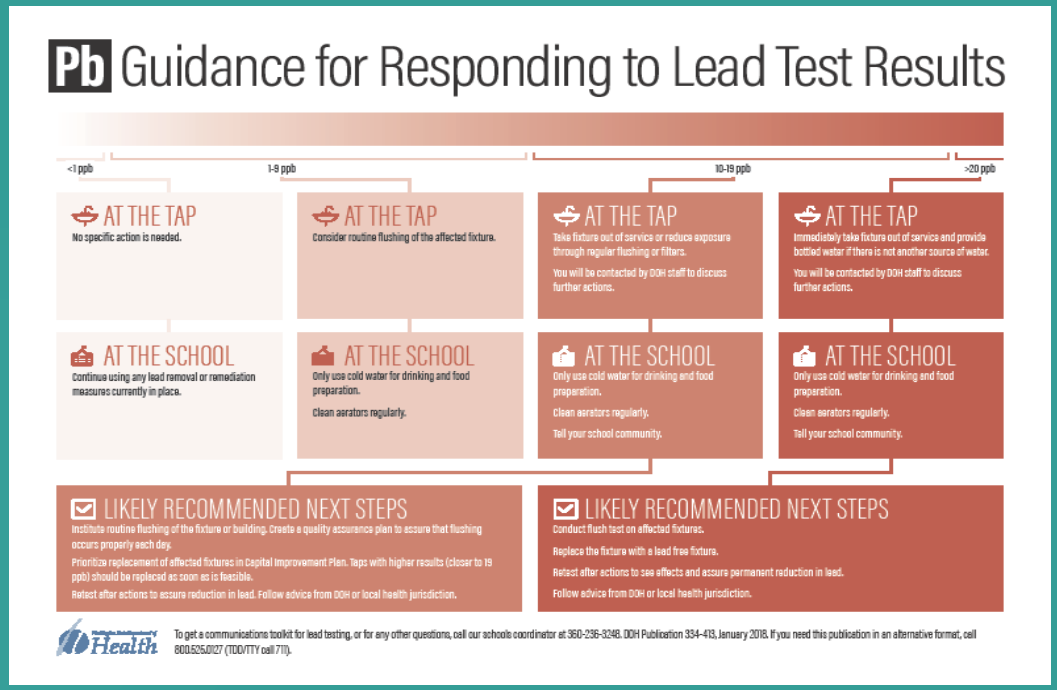
Between 10 and 19 ppb

- Replace or remove fixture.
- Implement flushing program.
- Clean aerators regularly.
- Install filter.
- Convert to hand wash only station.

Between 2 and 9 ppb

- Implement flushing program.
- Clean aerator regularly

Lead Testing Guidance



School Water Lead Test Results Summary (as of 5/03/19)

- Schools required to be tested by the Proviso: **500**
- *How many schools have been sampled?* **429** (only includes schools with results analyzed by the lab.
- Number of Schools whose results are analyzed: **407 (the charts are about these schools only so the numbers will change when we have all the results in *How many samples have been analyzed by the lab?***

  20,709
- *What is the highest result?*

  8509 ppb
- *What is the average result?*

  5.7 ppb

Thank You

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