

DRINKING WATER AND LEAD SERVICE LINES

PARTNERING TO PROTECT
PUBLIC HEALTH

#SAFEWATER

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Milwaukee Health
Department
@MKEhealth

Lynn R. Goldman, MD, MS, MPH

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National Center for
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Amanda Reddy

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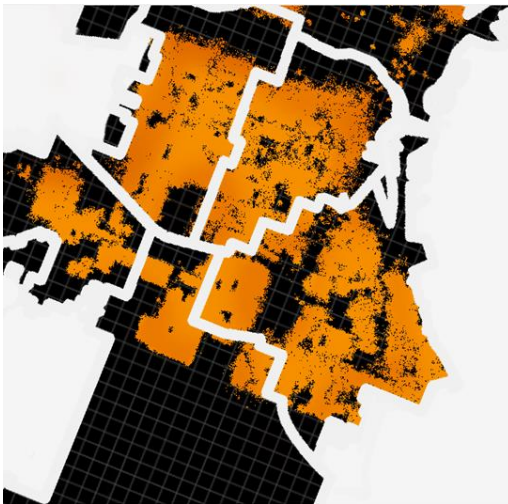
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535,000

*Number of children
with blood lead levels
above 5 $\mu\text{g}/\text{dL}$*



Even low levels of lead can affect the developing brain.

5 $\mu\text{g}/\text{dL}$

(5 micrograms per deciliter)

**Action levels vary
across the country
and over time**







#safewater

10 Policies to Prevent and Respond
to Childhood Lead Exposure

REMOVE LEAD FROM DRINKING WATER PIPES

350,000

children protected
each year



\$2.7 billion

future benefits
per cohort



\$1.33

return for
every \$1 invested

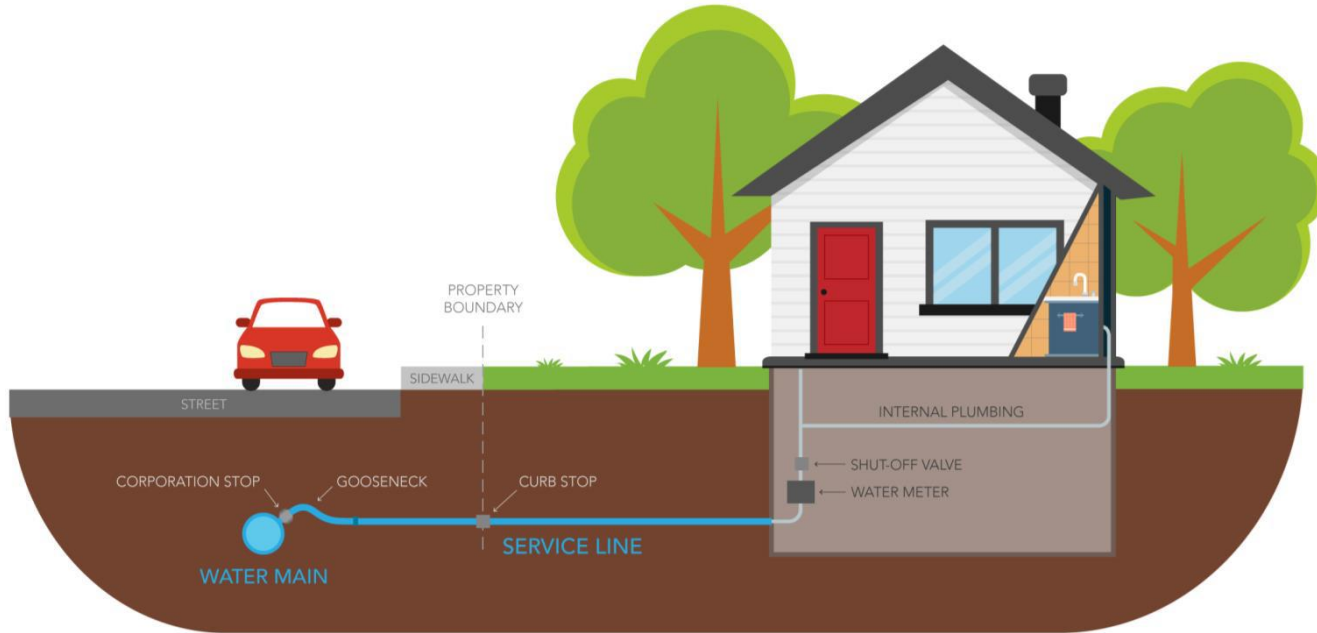




Our goal is to
accelerate voluntary
LSL replacement in
communities across the
United States.

<https://www.lslr-collaborative.org/>

What is a service line?



Where should I begin?

If you are not sure, select the category below that best represents your interests.



Community Leader



Public Health
Professional



Drinking Water
Professional



Elected Official



Concerned
Consumer

"Access to public water sources that are safe and reliable is crucial for the health and prosperity of a society."

Centers for Disease Control and Prevention

<https://www.lslr-collaborative.org/>



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Yaquelin Vargas

Resident of Flint, Michigan

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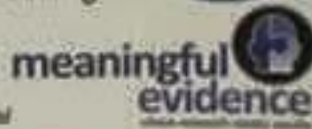


The **DO's** and **DON'T's** of Flint's Water

- DO:** Install an approved filter on your kitchen faucet
- DO:** Replace filter every 30 days or when the light is red
- DO:** Run the tap water for 1 to 2 minutes with cold water before using
- DO:** Eat a healthy diet. Consuming nutritious meals on a regular basis may reduce lead absorption: Children especially need enough calcium and iron in their diets
- DO:** Obtain a water testing kit from your local Fire Station
- DO:** Contact Replublic Services for your recycling bin 1-800-438-0966
- DO NOT:** take long hot baths/showers
- DO NOT:** boil water. Boiling increases concentration of lead
- DO NOT:** store bottled water in the direct sunlight
- DO NOT:** use hot tap water to make baby formula or for cooking

Please contact 211 for more information or
Log on to www.gchd.us

This information is cited from the Mayo Health Clinic and The Center for Disease Control









Jean Shultz

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The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it, primarily concentrated in the top and bottom corners.

MILWAUKEE'S LEAD SERVICE LINE PROGRAM

A PARTNERSHIP BETWEEN THE MILWAUKEE WATER WORKS
AND THE CITY OF MILWAUKEE HEALTH DEPARTMENT

THE BASICS

- 76,000 lead service lines plus about 5,000 properties where private side of the service line may be lead
- Milwaukee started phasing out the use of lead for the public side of water service lines in 1947 and ended its use in 1951
- Milwaukee enacted an ordinance in 1962 requiring copper service line installation on the private side
- Milwaukee has used orthophosphate for corrosion control since 1996

WATER MAIN RELAY SAMPLING PROJECT

- In 2014, the WI Public Service Commission ordered an increased main replacement schedule
- MWW designed sampling project in 2015 to answer the question: Do main relays affect lead levels at the tap?
- Testing and outreach protocols reviewed with Milwaukee Health Department, USEPA, WI DHS, and WI DNR
- For 2015, 21 single-family properties with lead services lines were invited to participate
 - Six chose to participate
 - All properties with lead service lines received advisories, regardless of participation

TESTING PROTOCOL & RESULTS

Participants captured 12 consecutive 1-liter samples of tap water, plus a well-flushed sample, on three occasions:

- Before the project
- After reconnection to the new main
- Four weeks after reconnection

Results:

1. In all homes there was an increase in lead levels after reconnection of lead service line to the new main
2. In most homes, lead levels lowered after four to six weeks
3. Lead was below 5 ug/L in all well-flushed samples

MILWAUKEE'S APPROACH

- Sampling results led to internal consensus about how to prioritize our approach
- MWW immediately suspended water main projects connected to LSLs
- Outreach protocols developed for disturbance of LSLs and later expanded to include other types of LSL disturbance including street construction and meter work

	Service Leak-City	Service Leak-Customer	Main Break/Shutoff **	Sewer Work
Sampling/Testing w/ Results	Offered	Offered	Offered	Offered
Letter to Occupants With Results	From MWW	From MWW	From MWW	From MWW
Survey/ Questionnaire by MWW	Sent to MHD	Sent to MHD	Sent to MHD	Sent to MHD
Lead Awareness Information **	Same Day	Same Day	Same Day	Prior To Work
Filter/Alt. Water for 30+ Days	Yes	Yes	Yes	Yes

INTERDEPARTMENTAL WORKGROUP RECOMMENDATIONS

- Discontinue any planned partial LSL replacement
- Develop protocols emergency leaks, repairs, etc.
- Adopt an ordinance mandating full LSL replacement
- Offer a subsidy toward the replacement cost and special assessment financing that would act as an incentive for the homeowner to participate in the project
- Develop a public information campaign
- Outreach to stakeholders
- Prioritize vulnerable populations
- Seek legislative support for flexibility in use of MWW rate payer funds

PUBLIC OUTREACH & COMMUNICATION

- Sampling Project results released publicly
 - All homes as part of testing received information, test results, consultation with Health Department
 - Update of sampling project results to Milwaukee officials and media
- Developed citywide outreach plan
 - Letters mailed to 70,000+ homes that may have a lead service line
 - Health outreach to local health care providers
 - Outreach to licensed child care facilities, public and private schools
 - Community presentations
 - Media interviews
- Engagement of local environmental and community advocacy groups
- Joint development of **Lead-Safe Milwaukee** public awareness campaign

CHILDCARE FACILITIES IDENTIFIED AS PRIORITY

- Identified licensed childcare facilities with LSLs as a priority for replacement
- Offered testing in letter to facilities and received no responses
- Applied to WI DNR for DWSRLF to fund private side
- Randomly chose 3 facilities for full service line replacement in December 2016
- MWW/MHD team arranged bottled water, sampling, and construction

MOVING FORWARD WITH LSL REPLACEMENT AT CHILDCARE FACILITIES

- MHD/MWW team sent letters to property owners about replacement program
- MHD coordinated site visit appointments with property owners and MWW. MHD provided education and information about LSL replacement, drinking water filter program to childcare facility owners, and all lead hazards in the facility
- MWW coordinated paperwork for access, construction activities, and bottled water delivery
- MHD followed up after construction with water testing and additional information on reducing exposure to lead in drinking water

CHALLENGES

- Interior plumbing may still have lead pipes, fixtures, and solder
- Not all childcare facilities are licensed
- Non-responsive property owners to enroll in LSL replacement program



LESSONS LEARNED

- Collaboration between health and water works before events
- Data-driven decision making is key
- Strong intergovernmental and regulatory relationships are important
- Coordination with property owners for projects is challenging and time consuming

QUESTIONS?

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Cincinnati Health Department

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Cincinnati Health Department
Childhood Lead Poisoning Prevention Program
“Partnering to Protect Public Health”

Cynthia McCarthy
HUD Lead Grant Program Manager

Cincinnati Health Department (CHD)

Childhood Lead Poisoning Prevention Program (CLPPP)

- CHD CLPPP Formed in 1974
- 1978 Lead-based Paint is banned from residential use
- Public Health Lead Investigations for children with Elevated Blood Lead Levels



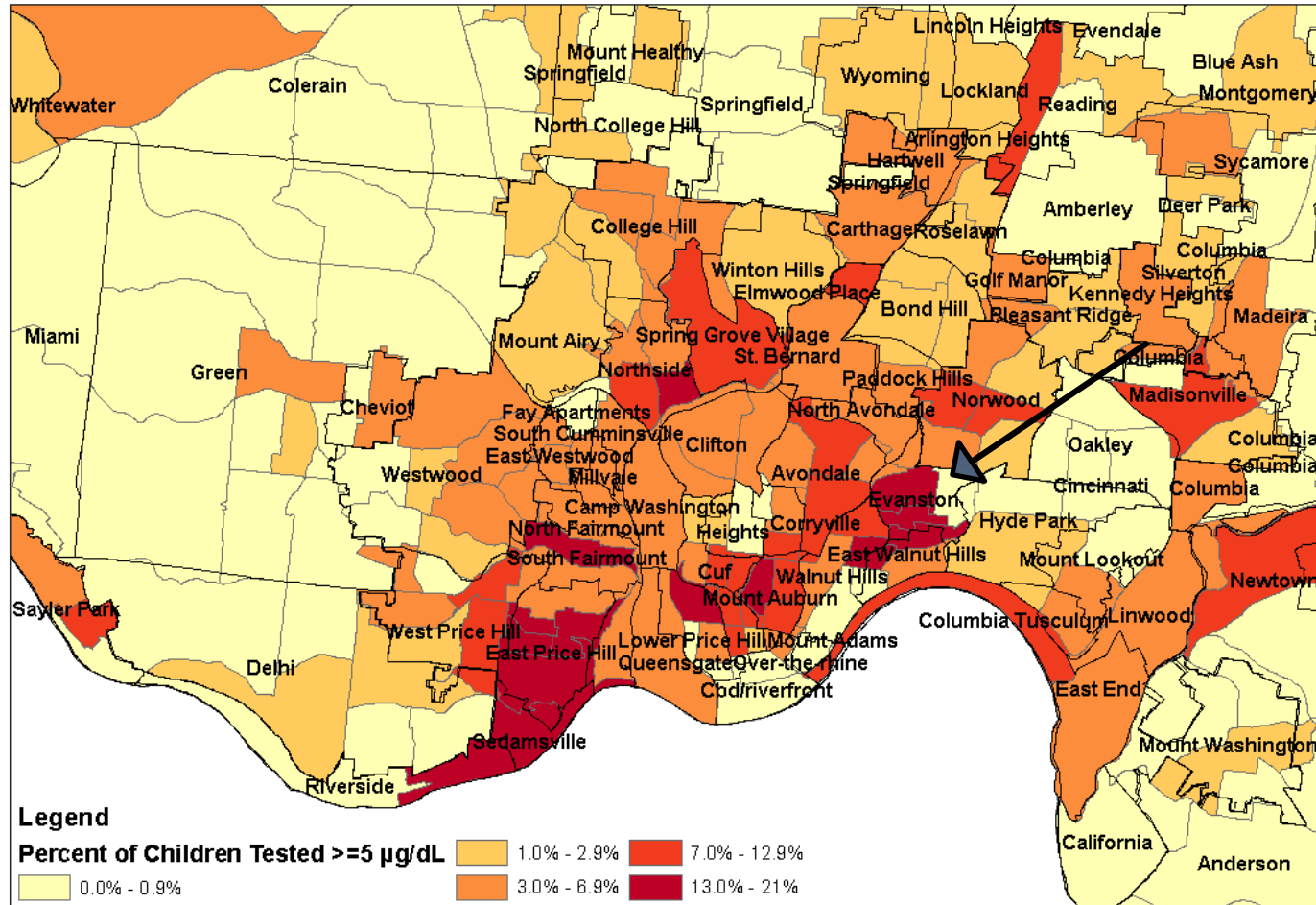
CHD CLPPP

Cincinnati Testing Data

	2010	2011	2012	2013	2014
Children Tested	14,957	15,590	15,000	16,446	15,486
Confirmed >10	177	160	134	111	115
% of Tested	1.18%	1.03%	0.89%	0.67%	0.74%
Confirmed 5-9	1,023	828	565	322	260
% of Tested	8.02%	6.34%	4.66%	2.63%	2.42%



Percentage of Children Under 6 Tested for Lead at $\geq 5 \mu\text{g/dL}$ in 2012: Cincinnati



Estimate	Evanston					TOTAL
	Census Tract 38	Census Tract 39	Census Tract 40	Census Tract 41*	Census Tract 65	
Housing^a						
Total Occupied Housing Units	1097	671	941	568	1943	5220
Total Built Pre-1950	831 (75.75%)	520 (77.50%)	668 (70.99%)	452 (79.58%)	1230 (63.30%)	3701 (70.90%)
% of Pre-1950 that is Rented	51.14%	36.15%	37.28%	35.18%	33.74%	38.80%
% of Pre-1950 that is Owned	48.86%	63.85%	62.72%	64.82%	66.26%	61.20%
Total # of Rental Occupied	634	304	346	254	920	2458
# of Renter Occupied that is Pre-1950	425 (67.03%)	188 (61.84%)	249 (71.97%)	159 (62.60%)	415 (45.11%)	1436 (58.42%)
Total # of Owner Occupied	463	367	595	314	1023	2762
# of Owner Occupied that is Pre-1950	406 (87.69%)	332 (90.46%)	419 (70.42%)	293 (93.31%)	815 (79.67%)	2265 (82.01%)
Population						
Children <72 months of Age ^b	216	184	120	93	251	864
# Tested for Lead Poisoning in 2012 ^c	68	58	38	18	78	260
# w/ confirmed BLLs ≥ 5 ^c	11	12	0	3	3	29
% of tested population w/ BLLs ≥ 5	16.18%	20.69%	0.00%	16.67%	3.85%	11.15%
% of Children <60 months living below the poverty	78.46%	41.03%	50.76%	42.35%	53.85%	52.04%

a: Source: U.S. Census Bureau, 2008-2012 American Community Survey; Table B25036: TENURE BY YEAR STRUCTURE BUILT

b: Source: U.S. Census Bureau, 2010 Census. Summary File 1, Table PCT12; Table QT-P2 SINGLE YEARS OF AGE AND SEX: 2010

c: Source: Ohio Dept of Health Healthy Homes and Lead Poisoning Prevention Program; Data extracted from the Healthy Housing and Lead Poisoning Surveillance System

d: Source: U.S. Census Bureau, 2008-2012 American Community Survey; Table B17001: POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE

*Census Tract 41 only partially falls within the neighborhood approximation of Evanston. The remainder falls within the neighborhood East Walnut Hills. I have included statistics for the entire census tract as the census tract as a whole is considered to have a high predicted proportion of blood

CHD CLPPP

Public Health Lead Investigation

- Directed by state law
- Primary focus is lead-contaminated dust from:
 - Deteriorated Lead-Based Paint
 - Soil contaminated from LBP and/or use of leaded gasoline



CHD CLPPP

Is it Lead?



CHD CLPPP

Other Potential sources of Lead

- Hobbies
- Cookware
- Food/Candy
- Drinking Water
- Remodeling
- Occupation
- Play Jewelry



CHD CLPPP

Partnership with Greater Cincinnati Water Works (GCWW)

Monthly Health Updates

- Teleconference between key CHD CLPPP and GCWW personnel

Water Sampling

- Nurse Case Manager takes water sample at every Public Health Lead Investigation
 - One liter from kitchen tap after 1 hours stagnation time
 - Not EPA protocol, feasible for screening
- Water is tested by GCWW

CHD CLPPP

Partnership with Greater Cincinnati Water Works (GCWW)

Results ≥ 15 ppb, referred to CHD CLPPP

- CHD CLPPP follows up with a letter
 - Outlining health effects of lead on children
 - Encouraging getting children tested for lead
 - Location and phone number of CHD clinics
 - Information about HUD Grant

CHD CLPPP

Partnership with Greater Cincinnati Water Works (GCWW)

HUD Grant Funds

- CHD CLPPP has \$3 million in Lead Hazard Control funds
 - \$400,000 in supplemental Healthy Homes funds
- City of Cincinnati awarded similar funding for 2018-2021
- Healthy Homes funding is used in conjunction with Lead Hazard Control work
 - Used for trip/fall hazards, mold/dampness issues, structural problems, etc.
 - May be used to remove and replace private lead service line

CHD CLPPP

Hamilton County Lead and Healthy Homes Collaborative

Collaborative Partnerships

- Brings together agencies, educators, professionals, and service providers to share ideas and pool resources
- Regular bi-monthly meetings
 - Speakers
 - Updates from members about their activities
 - “Cross-pollination”
 - “Mini-workshops”
- A model for other organizations/regions

CHD CLPPP

Hamilton County Lead and Healthy Homes Collaborative

Collaborative Partnership Participants

- CHD CLPPP – Inspectors, Risk Assessors, Nurses
- GCWW – Administrators, Lab Personnel
- Cincinnati Children’s Hospital Lead Clinic – Dr. Newman
- University of Cincinnati Behavioral Sciences – Dr. J.C. Barnes
- EPA – Water chemistry scientists and research personnel
- Regional Health Departments
- Ohio State Health Department
- Neighborhood improvement organizations (WIN, PWC)
- Non-profit Hispanic organizations (Su Casa, Santa Maria)

CHD CLPPP

Hamilton County Lead and Healthy Homes Collaborative

Collaborative Partnership Participants (cont.)

- City Department of Community and Economic Development
 - Rehab specialists, Building code inspectors, Grant mgrs.
- Legal Aid Association
- Social Service Agencies
 - WIC
 - Head Start/Community Action Agency
 - Hamilton County Jobs and Family Services
 - Child Care Division
 - Help Me Grow

CHD CLPPP

Hamilton County Lead and Healthy Homes Collaborative

Collaborative Partnership Participants (cont.)

- Arts Wave – Facilitating education for children through the arts
- Concerned Citizens
- Parents of lead poisoned children and their advocates

CHD CLPPP

Targeted Outreach

Presentations and Educational Materials given to:

- PTAs/PTOs
- Real Estate Investment Association
- Community Councils
- Church groups
- Physicians/Pediatricians
- Health Fairs

CHD CLPPP

Together, We Must Get the Word Out!

For every \$1 spent on Lead Poisoning Prevention, there is a savings of: \$17 - \$212 in future costs.



PHOTO: ANDREW ECCLES

Gould, Elise. "Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control." *Environmental Health Perspectives* July 2009: 1162-1167. Web.



Cincinnati Health Department
Childhood Lead Poisoning
Prevention Program

Cynthia McCarthy
513-357-7420
cynthia.mccarthy@cincinnati-oh.gov

Cathy Bailey

Executive Director
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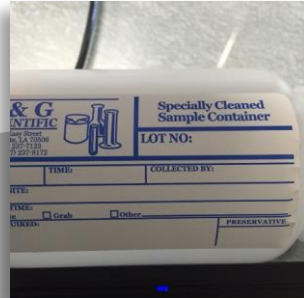


National Center for
HEALTHY HOUSING

Drinking Water and Lead Service Lines

Partnering to Protect Public Health

Greater Cincinnati Water Works
Cathy Bernardino Bailey
Director

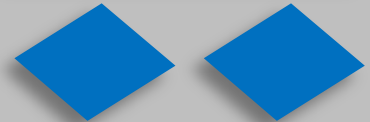


George Washington University Milken School of Public Health
January 24, 2018

General

City of Cincinnati Information

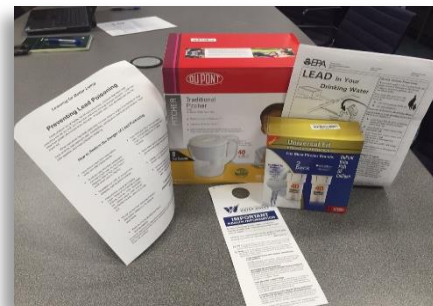
- Serve 1.1M customers in the region
- City--52 neighborhoods; 298,000 residents
- 26% of residents are 18 years or younger
- 2nd highest child poverty rate in the Country (53%)
- 15,000 full LSLs to replace
- 27,000+ private side still to replace
- Many people of color in neighborhoods with LSLs left to replace
- Many low-income customers and renters in these same neighborhoods



Tier 1 Lead Program Solutions:

Communication and Education

- **website lead.mycww.org**
- **513-651-LEAD phone line**
- **Social Media**
- **Letters**
- **Free Lead Testing**
- **School Lead Testing**
- **Pitcher Kits**
- **LSL Lookup Map**



Lead Website

Lead.mygcww.org

The screenshot shows the website's header with the logo and navigation menu. The main content area is titled 'Lead Awareness' and features six interactive cards: 'Do I have a Lead Line?', 'Lead Test Kit', 'Lead Testing in Schools', 'Child Care Facilities', 'Lead Newsletter', and 'Links and Additional Information'. Each card includes a representative image and a list of links.

GREATER CINCINNATI WATER WORKS

BUSINESSES | RESIDENTS | VISITORS | SERVICES | GOVERNMENT |

Contact Us

GREATER CINCINNATI WATER WORKS Connect With GCWW:

GCWW / Lead Awareness

GCWW MENU

- Pay Your Bill / LOG IN
- H2O0
- Lead Awareness**
- Leaks and Breaks
- About GCWW & Your Water
- Billing Information
- Moving or Selling Your Property
- News
- Engineering & Construction
- 2017 Rate Updates / Service Charges
- Contact Us
- Riverside Drive FAQ

Lead Awareness

Do I have a Lead Line?

- Map FAQs

Lead Test Kit

- Get your **FREE** Lead Test Kit here
- Yes, my lead test kit sample is **READY** for pick-up - click here

Lead Testing in Schools

Child Care Facilities

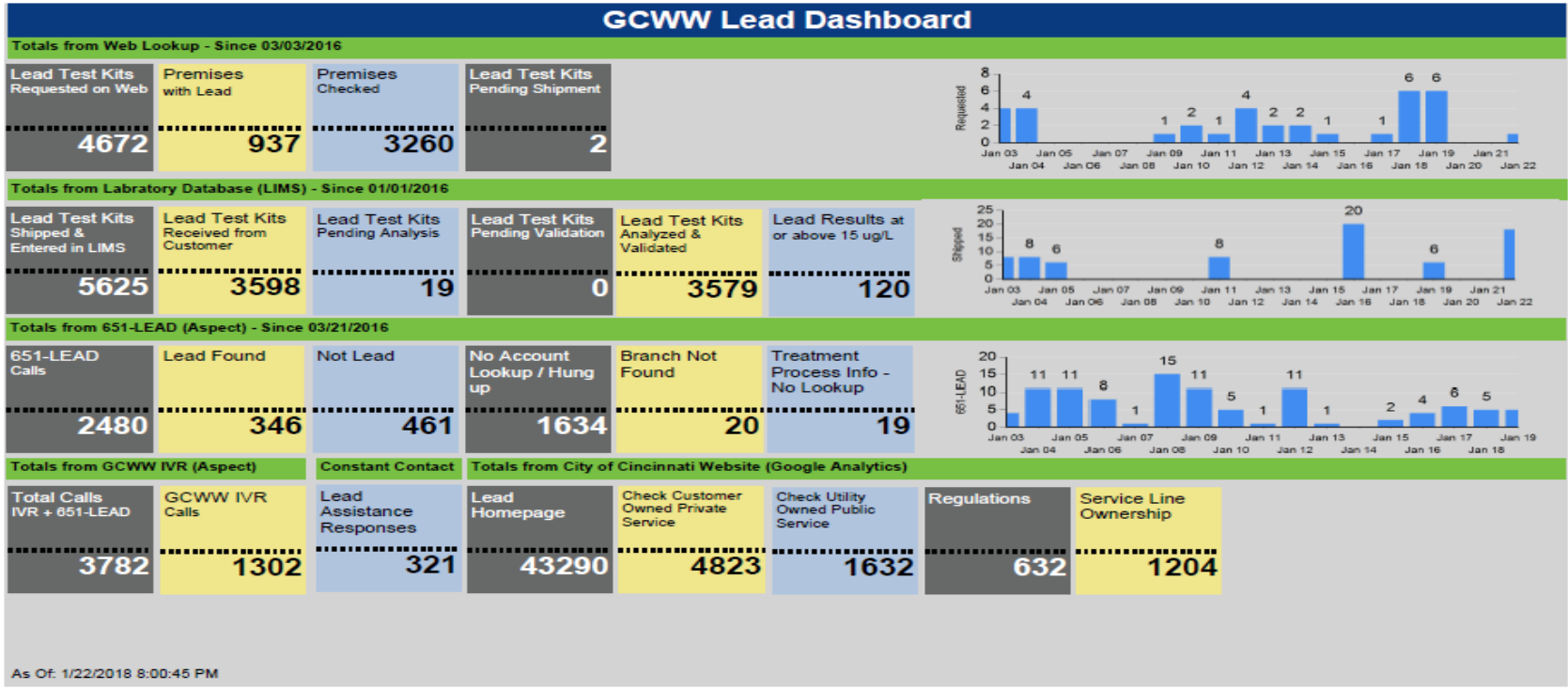
Lead Newsletter

- Spring 2017

Links and Additional Information

Lead Dashboard

Stats for Free Residential Lead Testing



Get Ahead, No More Lead Program

Assistance to Schools

- **EPA 3T's Testing Guidelines are used for schools, child care facilities**
- **School results are released publicly (via our website)**
- **Partnership with Cincinnati Health Dept. and Hamilton County Public Health for testing in schools, child care facilities, etc.**



Get Ahead, No More Lead Program Partnership with Health Dept.

Goal-understand the water quality in early learning environments and help schools and residents implement solutions that reduce the risk of lead

- **Share data to understand blood lead levels in children and neighborhoods and lead testing results from schools**
- **Monthly meetings/conference calls to discuss progress and any issues with schools, etc.**
- **Follow-up testing where needed**



School Partnership/Program

1. Explain our records/service line at school

2. Verify the actual service lines

3. Share copy of *USEPA 3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance Document (3Ts Guidelines)*

4. Walkthroughs at schools

5. Provide labeled sample bottles to schools + chain of custody form; school collects sample



School Partnership/Program

6. GCWW analyzes samples, if >15ppb, call and discuss results
7. Health dept. discussion of results; sharing of data
8. Consider follow-up sampling and offer assistance with remediation plan
9. **Send detailed summary letter to school and health dept. with suggested next steps**



10. Post the results to the lead.mygcww.org website

Next steps

GCWW has reviewed the results from your samples and provides some next-steps comments:

1. Given the number of lead detections and the amount of lead detected, Greater Cincinnati Water Works would like to schedule a meeting with you to discuss the results and collaboratively devise a plan to move forward.
2. Based on the sample names, all drinking fountain (DF) and cooking outlet (KIT in name) sample locations had results below the detection level. This is great news and no further action is needed with the drinking fountains and kitchen cooking outlets.
3. There were four (4) sample locations with results greater than 100ppb. There were thirty-nine (39) sample locations with results greater than 15ppb but less than 100ppb. Based on the sample names, it is assumed these are not drinking water or cooking outlets (various sinks). Although the locations are not used for these purposes, consider immediate remedies such as taking the sample locations out of service until a more defined plan can be created OR post a sign above the locations limiting the purpose of these sinks ('hand washing only', 'work sink only'). Posting a sign will deter students and staff from potentially using the sink to fill a water bottle, etc. For more information, refer to the 3Ts Guidelines that suggest shutting off or disconnecting problem outlets until the problem is resolved. Additional options to further reduce the risk of lead can be discussed at the meeting.
4. Although lower than the 15 ppb action level, for samples with lead detections, consider flushing the lines before using the water. Refer to the USEPA 3Ts Guidelines for more information.
5. For samples with lead detections, as an added precaution, consider posting signs at sink locations indicating 'hand washing only' (or other specific purposes) as these locations should not be used as drinking water or cooking outlets. Refer to the USEPA 3Ts Guidelines for more information and suggestions on signage.
6. Review how water is being used within your facility. If water is not used on a regular basis at some of these outlets, the infrequent use at the outlet may be contributing to the lead detections. Again, signage at these locations may be helpful (hand washing only, etc.).

Free Testing for Schools

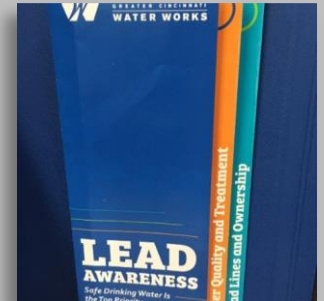
Results for 60 schools

School Information			60 Schools			
Sampled Drinking Fountains, Bottle Fillers, Cooking Outlets, Sinks						
# of Samples	<1 ppb	1-5 ppb	5-10 ppb	10-15 ppb	>15 ppb	
6019	3860	1532	275	116	236	
All Schools had some lead detection in samples						
Schools throughout city in various neighborhoods						
Sampled most sinks in schools because of nearby indicators (dishes, coffee makers, cups, food, etc.)						

Lead Program Solutions

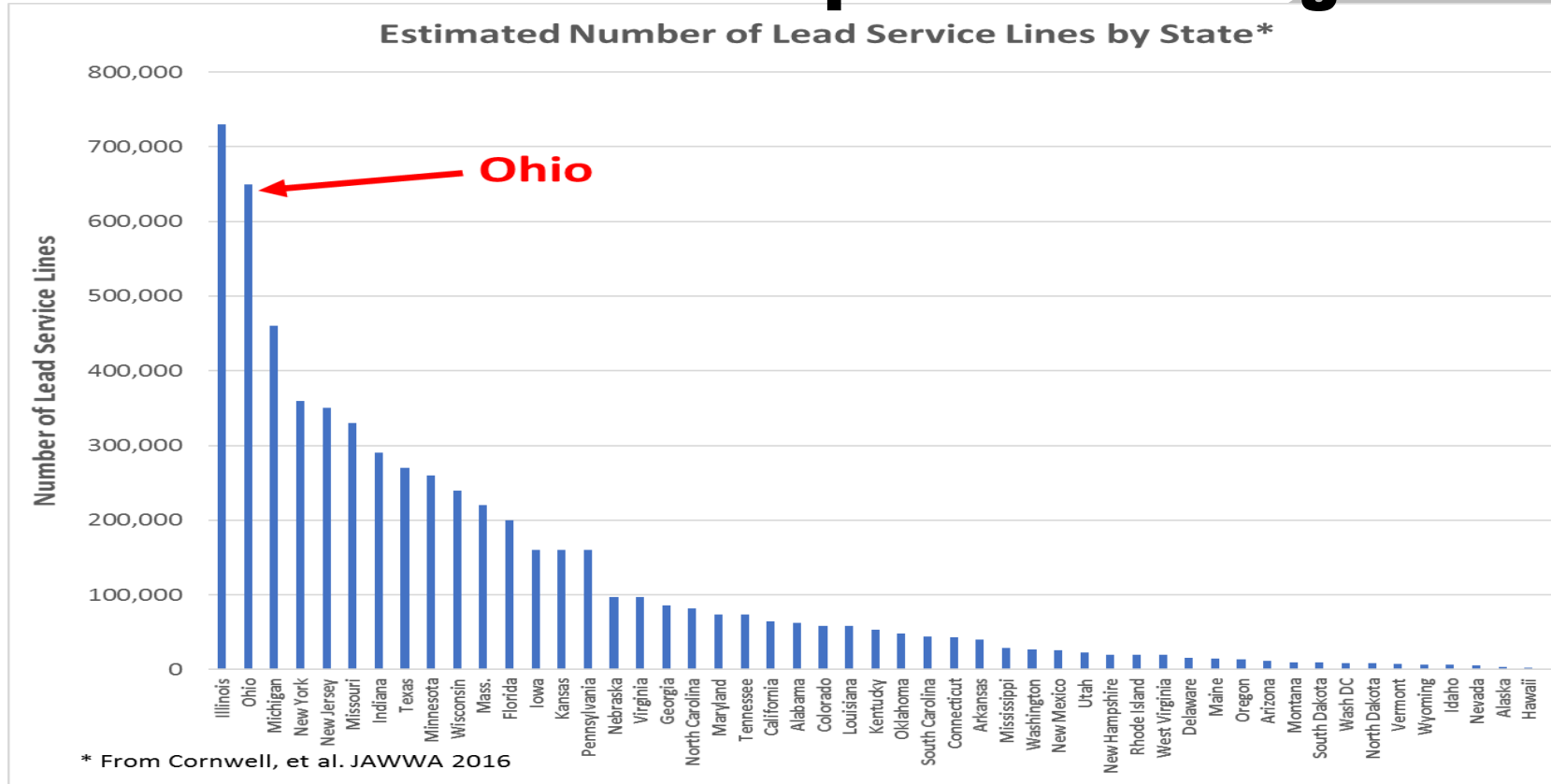
Funding for Lead Testing and Solutions

- **For residential lead testing, if >15ppb, residents are given a faucet filter or pitcher kit (certified pitcher with 3-4 months of cartridges)**
- **Free Testing**
 - **Greater Cincinnati Water Works is a certified lab for testing**
 - **\$12/sample for analysis**
 - **Since March 2016, \$43,000 for residential**
 - **Since March 2016, \$72000 for schools**
- **Part of ongoing operating budget**
 - **Felt it was the right thing to do for our community, so substitutions in budget to make this happen**



Enhanced Lead Program

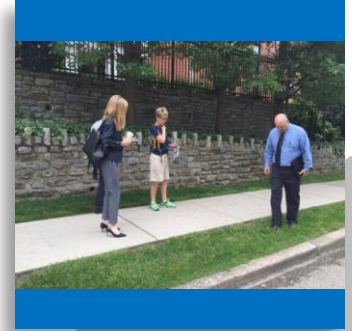
Lead Service Line Replacement Program



Tier 2 Lead Program Solutions:

Complete Removal of Full LSLs

- 15 year program to remove public and private side LSLs
- **Cost Sharing Program, up to \$1500 of private side replacement cost will be provided by utility**
- Property Assessment for owner to pay balance over 5-10 years
- **Customer Assistance Program for low-income customers to obtain additional assistance**

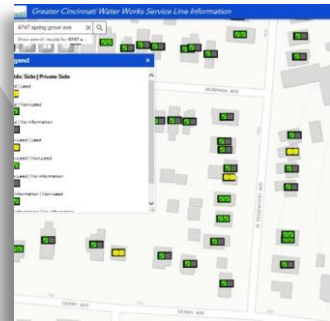


Overall Summary

Enhanced Lead Program

Partnerships are needed to reduce lead levels. Strong partnerships with health organizations are the beginning of the road leading to a lead-safe community.

- Water utilities
- Communities
- Customers
- Building owners
- Health Community
- Regulators
- Legislatures
- HUD, EPA



Cathy Bernardino Bailey

Cathy.bailey@gcww.cincinnati-oh.gov

Social Media/Website	Handle/Name
Facebook	Greater Cincinnati Water Works
Facebook-Director	Cathy B. Bailey
Twitter	@CincinnatiWater
Twitter-Director	@1stLadyofWater
Lead Website	Lead.myGCWW.org

Have Questions for Our Speakers?

Tweet to @GWSPHonline using the hashtag #SafeWater

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