# Kentucky Lead Workgroup Meeting
# August 16, 2017
# 1:30 – 3:00 PM EST
# Kentucky Division of Water
# Frankfort, Kentucky

1. Call Meeting to Order and Roll Call of Membership – Greg Heitzman

2. Introduce Guests – Greg Heitzman

3. Approve Minutes of March 15, 2017 – Greg Heitzman

4. Update from KDOW and EPA on Lead Regulatory Changes – Tom Gabbard

5. Update on Lead Session at Water Professional Conference in Lexington – Greg Heitzman

6. Review Draft Recommendations – Greg Heitzman and Sub-team Members.

7. Review Assignments for Drafting Sections of Report Next Steps – Greg Heitzman

8. Open Discussion for Workgroup

9. Public Comment Period

10. Next Workgroup Meeting, 1:30 PM – September 20, 2017

# Drinking Water Advisory Council
# Lead in Drinking Water Workgroup (LIDW)
# Location: Kentucky Division of Water Office
# 300 Sower Blvd, Frankfort KY
# Draft Meeting Minutes
# August 16, 2017



In attendance: Jennifer Burt (DPH), Obe Cox (CCW), Tom Gabbard (DOW), Mike Gardner (BGMU), Greg Heitzman, Chair (BWK), Ron Lovan (NKYW), Bill Robertson (PWWKY), Thomas Rockaway (U of L), Justin Sensabaugh (KYAW)

Liaisons: Kay Sanborn (KYTN-AWWA)

Absent: Rengao Song (LWC), Brad Montgomery (ACEC), Brian Thomas (MWD)

Division of Water (DOW): Claude Carothers, Sarah Gaddis, Todd Ritter, Joe Uliasz

Public Attendees: Amber Agee (DPH), S. Morgan Faulkner (KYOAG-ORI), Justin McNeil (KYOAG-ORI), Melissa Melton (RCAP), David Shehee (KYAW), Mike West (EEC/OGC)

The meeting began at 1:45 pm

Call Meeting to Order and Roll Call of Membership – Greg Heitzman

Members and public attendees introduced themselves, Mr. Heitzman confirmed the quorum.

Approve Minutes of March 15, 2017 – Greg Heitzman

The Workgroup approved the March meeting minutes by consensus.

Update from KDOW and EPA on Lead Regulatory Changes – Tom Gabbard

There is much speculation on the revisions to the Lead and Copper Rule, however no updates have been released yet to the states. The EPA Region 4 Directors Meeting will convene September 19th in Atlanta. Therefore it may be to the advantage of the Workgroup to reschedule the September meeting after the EPA meeting.

Update on Lead Session at Water Professional Conference in Lexington – Greg Heitzman

Six Lead topics from Workgroup were presented at the AWWA KY-TN Water Professional Conference in Lexington on July 11. The feedback from the conference panel discussion was encouraging and no concerns on the recommendations were reported. The discussion included the various venues to disseminate information and recommendations of the Lead Workgroup.

Review Draft Primary Recommendations – Greg Heitzman and Sub-team Members.

- The Workgroup reviewed the draft Primary Recommendations presented at the AWWA WPC conference on July 11, 2017 and made minor revisions as follows:
    - DOW will define "utility" in the Utility Recommendations Section
    - Corrosion Control language in 2.1 should mirror 1.1 language
    - Revise 2.1 responsible parties to include Drinking Water Utilities and KDOW
    - Revise 2.5 responsible parties to include Drinking Water Utilities with assistance from KRWA, AWWA.
    - 4.3 will be revised to include the AWWA Standard on Lead Service Lines, due to be published in late 2017. The AWWA Board has tentatively approved the new Standard.

- The Workgroup noted the recommendations are not in priority order, but are grouped by constituency (agency, utility, industry associations, etc.)
- The Workgroup discussed the importance of the timing of a release of the Workgroup recommendations after full vetting and response from EPA on any planned changes to the Lead and Copper Rule.
- The recommendations will be submitted to the Drinking Water Advisory Council for review.
- Once the Workgroup and Drinking Water Advisory Council finalize the recommendations, Kentucky DOW will review the recommendations and then proceed with the decision making process for any proposed changes in the administration of the Lead and Copper Rule.

In addition to reviewing the Primary Recommendations, the Workgroup reviewed a set of Supplementary Recommendations provided by Mr. Heitzman. The Supplementary Recommendations were collected from sub-team reports or from individuals serving on the Workgroup. The Supplementary Recommendations were not included in the AWWA WPC presentation on July 11, 2017. The following observations and actions are directed to the Supplementary Recommendations:

1. The Workgroup recommended not including a recommendation on specific identification and location of Lead service lines in the Kentucky Water Resource Information System (WRIS), (Supplementary Recommendation #1) due to the practicality of locating Lead service lines, the absence of reliable information on both public and private Lead service lines, and the ability to maintain an accurate, up to date, record in the WRIS.

2. The Workgroup discussed that it is premature to recommend a State law for a homeowner to disclose the presence of lead service lines when selling a home (Supplementary Recommendation #2). The Workgroup discussed:

    a. Monitoring what other states are doing regarding disclosure of Lead sources in homes.
    b. Research current federal disclosure requirements for Lead and what other groups (i.e. Health Departments) are doing regarding household Lead abatement.
    c. Recognize the term "lead" must be defined, to include sources beyond lead pipe and plumbing fixtures, including paint, hobbies, etc.
    d. Utilize existing information (pamphlets and websites) available from US EPA, Consumer Products Safety Commission, Center for Disease Control, local Health Departments, etc. to educate homeowners on the risks of lead in the home.
    e. Followup with the Kentucky Real Estate Association to determine if additional educational information on Lead in homes should be developed and disseminated.

3. The Kentucky Department of Public Health supports the practice that utilities notify their local Health Department when the EPA Action Level (15 parts per billion or higher) is detected at schools and daycares (Supplementary Recommendation #3). Currently North Carolina has established a policy to notify the local health department if a Lead Action Level (15 ppb) is exceeded for a school or daycare (once the sample results are verified by the State). Workgroup members agreed that this notification is a good practice. This recommendation will be added to the Primary Recommendation list.
4. The Workgroup discussed the benefits of blood lead testing for all children at age 12 and 24 months (Supplementary Recommendation #4). The Kentucky Health Department recommends this practice and this recommendation will be added to the Primary Recommendation list.
5. The Workgroup discussed the benefits of financial assistance for Lead abatement in homes, including Lead service lines, Lead plumbing fixtures, Lead paint and other source of Lead (Supplementary Recommendation #5 and #7). This recommendation will be added to the Primary Recommendation list.
6. KDOW supports creating a website regarding information and best practices for managing lead, including health impacts, regulatory requirements, best practices and recommendations of the Lead Workgroup (Supplementary Recommendation #6). This recommendation will be added to the Primary Recommendation list.
7. The Workgroup discussed the benefits of partnering with school systems and daycares for testing, education and replacement of lead plumbing in school facilities. Louisville and other utilities have developed best practice models that can be

followed (Supplementary Recommendation #8). This recommendation will be added to the Primary Recommendation list.

8. The Workgroup discussed a peer review program or certification process for managing lead in drinking water (Supplementary Recommendation #8). The EPA Partnership with Safe Water distribution certification program is being reviewed to include elements for managing lead in drinking water. The Workgroup discussed monitoring that development, rather than implementing a state-wide program, therefore there is no recommendation at this time.
9. The Workgroup discussed the need for continued research to determine the best sampling methods for Lead compliance monitoring (Supplementary Recommendation #10). This recommendation will be added to the Primary Recommendation list.

Review Assignments for Drafting Sections of Report Next Steps – Greg Heitzman

Mr. Heitzman advised he would update the changes to the Final Recommendations and add the Supplementary Recommendations as discussed and bring the full set of recommendations to the next meeting for review and final approval.

Mr. Heitzman also reminded the Sub-teams to begin to draft their sections for the final report, using the provided MS Word template.

The next meeting will be scheduled after the September 19 EPA Region 4 Directors Meeting, in order to obtain input from EPA.

Open Discussion for Workgroup

This report and group wrap up is targeted for completion in the 1st quarter of 2018

Public Comment Period

There were no comments from public attendees

Next Workgroup Meeting

After September 27, 2017.

## 11/16/17 email from Alan Roberson, State Drinking Water Administrators

**Subject:** EPA's Most Recent Statements on the Lead and Copper Rule (LCR)

Good morning State Administrators, below are EPA's most recent statements on the Lead and Copper Rule (LCR) that were sent to me earlier in the week. These aren't available anywhere on EPA's website - it's what they have been using recently when called by stakeholders, reporters, Congressional staff, etc.

So take a look at them - I have read and reread them a couple of times and so am willing to offer my thoughts after reading between the lines a bit. EPA will likely schedule the interaction with the states for early 2018, but I have no idea of any potential dates yet but will keep everyone posted. It's interesting to note that EPA is making no firm time commitment for getting the proposed Long-Term Revisions to the Lead and Copper Rule completed and published. The modeling effort is turning out to be more complicated than expected, and that's certainly one reason for the delay. This is just my opinion, but I think it's highly unlikely that the proposal will be published in 2018 and it's a coin flip whether it comes out at all in 2019 or 2020.

**Timing Statement**
EPA continues to work on possible revisions to the Lead and Copper Rule. We are planning additional interactions with our state and local partners to assure that EPA has the most up-to-date and accurate information so that the potential revisions can be effectively implemented in order to improve public health protections. EPA will update the schedule in the regulatory agenda in the upcoming months.

**
**General LCR Statement**
Protecting children's health is one of EPA's highest priorities and the agency continues to engage with stakeholders and assess recommendations from leading scientific experts. These steps will help ensure that any potential revisions to the lead and copper drinking water standards reflect the best available information and latest science so that we can provide all Americans these important public health protections.

**Background**
EPA is conducting extensive engagement with stakeholder groups and the public to inform potential revisions to the LCR. In December of 2015, EPA received comprehensive recommendations from the National Drinking Water Advisory Council (NDWAC) and other concerned stakeholders on potential steps to strengthen the LCR. EPA is carefully evaluating the recommendations from these groups.

Further, as part of EPA’s ongoing effort to understand and assess lead exposure to children, EPA undertook a peer review of draft scientific modeling approaches to inform EPA’s evaluation of potential health-based benchmarks for lead in drinking water. Input from the public and peer reviewers will help ensure that EPA is evaluating the best information and latest science on how lead in drinking water can potentially impact the health of children, one of our most vulnerable populations. EPA is committed to use the best available science to inform LCR revisions to improve public health protection.

**********

**J. Alan Roberson, P.E.**
*Executive Director*

**Association of State Drinking Water Administrators (ASDWA)**
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# FINAL DRAFT 8-16-17

# Kentucky Lead Workgroup Recommendations

## *Primary Recommendations for Kentucky Lead Workgroup Meeting on 8-16-17*

## State Agency Recommendations (KY Division of Water, KY Infrastructure Authority, KY Division of Compliance Assistance):

1.1 In collaboration with utilities, develop protocol and guidance for evaluation of treatment process changes under the following conditions:

a. a new water source is introduced (including interconnects with utilities);
b. the water source is changed;
c. the water treatment process is changed
d. lead sampling is near or exceeds the EPA Action Level (currently 15 ppb);
e. an emergency or interim supply is needed.

The protocol for treatment process or source water changes should use the guidance provided by US EPA in the report titled Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems, published March 2016.

*Responsible Parties: KDOW, Kentucky Rural Water, KY-TN AWWA, Drinking Water Utilities.*

1.2 Establish protocol and reporting requirements for utilities to use for customer requested lead samples and special lead samples.

*Responsible Parties: KDOW, with input from Drinking Water Utilities.*

1.3 Update the estimate of lead service lines (public and private) in Kentucky and update cost estimate for replacement.

*Responsible Parties: KDOW, Kentucky Rural Water, KY-TN AWWA, Drinking Water Utilities.*

1.4 Revise the criteria for prioritization of state-wide water projects to include lead service lines replacement. Include input from water industry on priority and weighting criteria.

*Responsible Parties: KDOW and Kentucky Infrastructure Authority.*

1.5 Develop a portfolio of funding sources for utilities to finance lead service line replacement (public and private) and lead abatement, including KIA, Rural Development, SRF funding, and State appropriations.

*Responsible Parties: Kentucky Infrastructure Authority, Rural Development with input from KDOW, with input from Drinking Water Utilities.*

1.6 Develop a lead training curriculum in partnership with utilities, state and local health departments, and water industry associations. The training should include corrosion control treatment, lead service line replacement and repair practices, flushing practices and customer communications.

*Responsible Parties: KDOW, Kentucky Rural Water, KY-TN AWWA, Drinking Water Utilities.*

## Utility Recommendations:

2.1 Utilities should conduct a Corrosion Control Evaluation and develop a Corrosion Control Plan for water treatment and distribution operations following the the guidance provided by US EPA in the Report on Optimal Corrosion Control Treatment Evaluation (OCCTE) Report, published in March 2016. The Corrosion Control Plan should be developed under the following conditions, when:

a. a new water source is introduced (including interconnects with utilities);
b. the water source is changed;
c. the water treatment process is changed (including chemical additives);
d. lead sampling is near or exceeds the EPA Action Level (currently 15 ppb);
e. an emergency or interim supply is needed.

This is a complex analysis that should be conducted by qualified water quality professionals to assure optimal water quality is achieved and regulatory compliance is maintained. The Corrosion Control Plan should be developed in coordination with Kentucky Division of Water, as recommended by EPA.

*Responsible Parties: Drinking Water Utilities with input from KDOW.*

2.2 Utilities should review their current lead sampling protocol and methods and adopt the EPA recommended guidelines for lead sampling.

*Responsible Parties: Drinking Water Utilities with input from KDOW.*

2.3 Utilities should prepare for a reduction in the Lead Action Level from 15 parts per billion (ppb) to less than 10 ppb.

*Responsible Parties: Drinking Water Utilities and KDOW.*

2.4 Utilities should prepare for more frequent sampling cycles and more diverse sampling locations for LCR compliance in the future.

*Responsible Parties: Drinking Utilities with input from KDOW.*

2.5 Utilities should adopt a policy or practice to remove lead service lines whenever exposed during excavation and communicate the discovery of any private lead plumbing to the homeowner/occupant. This should include communication to homeowners regarding responsibility for private plumbing, flushing and the associated impacts of lead from plumbing fittings and fixtures.

*Responsible Parties: Drinking Water Utilities.*

2.6 Utilities should proactively investigate where lead service lines are located using various methods (historical records, maps, construction plans, field surveys, excavations, home age, etc.) and add the service line information to the water distribution inventory, maps, and records (include material, age, condition, etc.).

*Responsible Parties: Drinking Water Utilities.*

2.7 Utilities should consider providing customers access to an on-line database of lead service line locations (public portion).

*Responsible Parties: Drinking Water Utilities.*

2.8 Utilities should consider adopting a long term (5-20 year) goal to replace all lead service lines, with the schedule based on local conditions and financial capability.

*Responsible Parties: Drinking Water Utilities.*

2.9 Utilities should make available consumer education materials on lead in drinking water in partnership with industry associations, regulators, public health officials and utilities and provide these materials to consumers through available channels

(Consumer Confidence Reports, websites, social media, bill stuffers, door hangers, etc.). The communication materials should identify the homeowner responsibility for private service lines and plumbing fixtures.

*Responsible Parties: Drinking Water Utilities in partnership with Kentucky Rural Water, KY-Tn AWWA, KDOW, State and Local Health Departments,*

2.10 Utilities should conduct training of field personnel in techniques to identify, locate, repair, replace lead service lines and lead-containing fittings.

*Responsible Parties: Drinking Water Utilities.*

2.11 Utilities should monitor state and national best practices on managing lead and after careful review, implement these practices where feasible and practical.

*Responsible Parties: Drinking Water Utilities.*

## Industry Associations (Kentucky Rural Water, KY-TN AWWA, KY Water/Wastewater Operators Association and others)

3.1 Identify key stakeholders and develop lead communication tools, web site links and templates for utilities to use in communicating with customers. Utilize existing resources from national and local partners. The materials should include information on the homeowner responsibility for private lead service lines and plumbing fixtures that may be sources of lead. Cross reference with Recommendation 2.9.

*Responsible Parties: Kentucky Rural Water, KY-TN AWWA, and Drinking Water Utilities.*

3.2 Develop a utility training curriculum for communication to customers/media; lead treatment (corrosion control); water sampling protocol; system assessment for lead; lead inventory; lead service line repair; lead service line replacement (public and private) and the potential source of Lead from homeowner plumbing fixtures. Cross reference RIs commendation 2.10.

*Responsible Parties: Kentucky Rural Water, KY-TN AWWA, Kentucky Water/Wastewater Operators Association, and Drinking Water Utilities.*

3.3 Engage stakeholders into discussion and education regarding lead in drinking water, including the public health community, medical professionals, regulatory agencies, education officials, engineering professionals, building trades and other organizations that are impacted or establish policy regarding lead in drinking water.

*Responsible Parties: Kentucky Rural Water, KY-TN AWWA, Kentucky Water/Wastewater Operators Association, and Drinking Water Utilities*

## Research and Development:
## (Water Research Foundation, Universities, and other research groups)

4.1 Development of technology to identify buried lead service lines (non-destructive).

*Responsible Parties: Water Research Foundation, Universities and private sector market.*

4.2 Identify industry best practices among utilities for replacement of lead service lines (public and private) and guidance on partial lead service line replacement (public portion only).

*Responsible Parties: Water Research Foundation, Universities and private sector market.*

4.3 Develop a Manual of Practice for utilities to determine optimal corrosion control to minimize levels of lead in the distribution system, service lines and home plumbing

*Responsible Parties: Water Research Foundation, Universities and Drinking Water Utilities.*

4.4 Conduct research on the impact of lead in drinking water on human health to assist in identifying an appropriate action level for lead in drinking water.

*Responsible Parties: US EPA, Water Research Foundation, National Science Foundation, National Institute of Health, and Health Foundations Universities and Drinking Water Utilities.*

4.5 Evaluate the cost effectiveness of point of use (POU) and point of entry (POE) treatment for lead removal as an alternative for utilities to deploy as an alternative to treatment changes or lead service line replacement to meet the Lead Action Level (currently 15 ppb).

*Responsible Parties: EPA, Water Research Foundation, Drinking Water Utilities and private sector market.*

## Other Recommendations to Consider by the Lead Work Group in August 16, 2017

1) Identify lead service line information (general or street address level) in the Kentucky Water Resource Information System (WRIS) GIS system where available.

2) Pursue lead disclosure requirements for homeowners selling their home, prior to closing and transfer of property, with reporting of any lead piping/plumbing to the local utility and County Health Department.

3) Notify the local health department when local water utilities detect lead exceeding the EPA Action Level (currently 15 ppb) of lead at schools and daycares.

4) Consider legislation for requiring blood lead level testing for all children at 12 months and 24 months old.

5) Request state funding appropriations for lead abatement in homes, including lead service lines and other lead based materials (paint, plumbing fixtures, etc.)

6) Create a state-wide clearing house (web portal) for information on lead in the built environment. The clearing house would be managed by a partnership across state agencies, including Kentucky Division of Water, Kentucky Health Department, Department of Housing Building and Construction.

7) Consider a financial assistance program for homeowners to replace private portion of lead service lines, where financial resources are available.

8) Develop a program for utilities to partner with public/private schools and daycares for testing, education and replacement of all lead plumbing within school facilities.

9) Develop a peer review and/or certification process for management of lead in drinking water, similar to the EPA Partnership for Safe Water, where utilities can voluntarily subscribe and obtain a certification of best practices for reduction of lead in drinking water.

10) Conduct research to determine the best sampling methods to obtain a representative sample of lead in drinking water for purposes of compliance monitoring.

# DRAFT

# KENTUCKY LEAD REPORT

# FOCUS AREA – PUBLIC HEALTH & LEAD

## BACKGROUND INFORMATION:

Throughout history, lead (Pb) and lead products have had influential roles as society developed. Significant lead production began in about 3000 BC with large mines in Spain and Greece. in early history, it was used in the production of makeup, paints, spermicide, condiments, wine additives, and, most importantly, in lead piping for the vast network that supplied the Roman Empire with water. Romans were aware that lead could cause serious health problems, but chose to minimize those hazards in favor of its diverse uses.[1] Many historians have advanced a theory that lead poisoning actually contributed to the fall of the Roman Empire.

By the 20th century, the United States was the world's leading producer and consumer of refined lead. Most of the lead was used as an additive in gasoline and as the primary pigment in house paint. Smaller amounts were used as solder in plumbing and in other household uses.[2] According to the 1980 National Academy of Sciences report, the United States was using 1.3 million tons of lead each year; ten times more than used by the citizens of ancient Rome. (Source)

In the past 30 years, lead exposure levels have decreased dramatically due to its reduction or removal from paint, gasoline, industrial emissions, food canning, and other sources. Public health and housing initiatives have also worked to raise awareness to the harm lead may cause during early childhood development.[3] Currently in Kentucky, as in the rest of the United States, most cases of childhood lead poisoning can be traced to deteriorating paint in the form of dust and chips in older homes and buildings.

## HEALTH EFFECTS:

Exposure to lead, even at low levels can cause damage over time. In children, the greatest risk is to brain development, where irreversible damage may occur. Higher levels of lead exposure at can damage the kidneys and nervous system in both children and adults. Very high levels of lead exposure at may cause seizures, unconsciousness and possibly death.[4]

Symptoms of lead poisoning may vary between children and adults. In children the signs and symptoms of lead poisoning may mimic other common childhood illnesses and include:

- Developmental delay
- Learning difficulties
- Irritability
- Loss of appetite
- Weight loss
- Sluggishness and fatigue
- Abdominal pain
- Vomiting
- Constipation
- Hearing loss
- Slowed growth

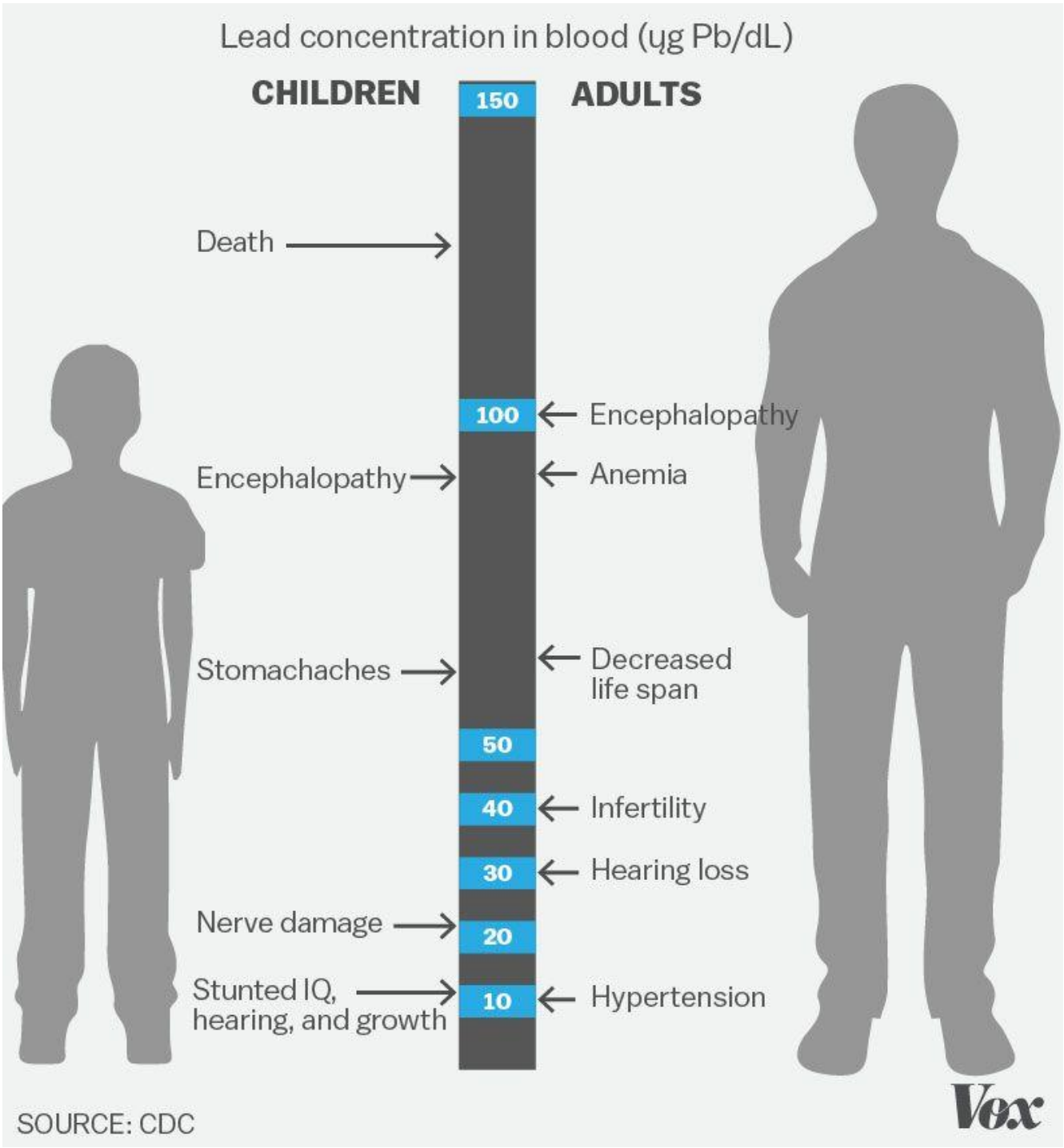
Although children are primarily at risk, lead poisoning is also dangerous for adults. Signs and symptoms of lead poisoning in adults may include:

- High blood pressure
- Abdominal pain
- Constipation
- Joint pains
- Muscle pains
- Declines in mental functioning
- Pain, numbness, or tingling of the extremities
- Headache
- Memory loss
- Mood disorders
- Reduced sperm count, abnormal sperm
- Miscarriage or premature birth in pregnant women

Early detection of lead poisoning is essential to prevent adverse health effects associated with prolonged exposure. Because of the rapid speed of brain and neurological development in early childhood, public health institutions focus their lead awareness and detection efforts on children less than six years of age. As an initial screening, the potential for lead poisoning can be based on a verbal assessment. The American Academy of Pediatrics recommends that a lead screening verbal assessment be performed at six months, nine months, 12 months, 18 months, 24 months, and at 3, 4, 5 and 6 years of age. If the assessment is positive, a blood lead level test will be performed.[5]

Lead levels in the bloodstream are measured and assessed based on micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention (CDC) considers a reference value of 5 µg/dL, although there is no safe level of lead in the blood. In Kentucky, blood lead levels between 5 and 14.9 µg/dL will trigger a home visit from the local health department and recommendations on how to minimize the child's lead hazard exposure. Per Kentucky Revised Statute 211.905, levels at 15 µg/dL and above require a lead hazard risk assessment and possible abatement of the home.

Currently, State and Federal regulations require all children enrolled in Medicaid to receive blood lead level test at 12 and 24 months of age. Children between 24 months and 72 months enrolled in Medicaid who do not have records of previous testing, should also receive a screening blood lead test.[6] There are no State or Federal regulations requiring lead level screening or testing for children of any age not enrolled in Medicare.




**RESOURCE NEEDS:**

The serious health and societal effects of lead poisoning in both children and adults are very well documented. While the number of cases has declined in recent years, the adverse effects of lead toxicity needs to be kept in the spotlight. Legislators must be made aware of the negative consequences of lead toxicity so that education, testing and abatement resources are available.

## RECOMMENDATIONS:

The Kentucky Lead Workgroup provides the following recommendations:

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- Notification of the local health department when local water utilities detect lead in the water at schools and daycares;
- Funding for Lead abatement (including water service lines, in low income households.
- Legislation for requiring blood lead level testing for all children at 12 months and 24 months old

## ACKNOWLEDGEMENTS:


- Jennifer Burt, RS, Kentucky Department for Public Health, JenniferA.Burt@ky.gov
- Susan Lawson, RN, Kentucky Department for Public Health, SusanD.Lawson@ky.gov
- Amber Agee, RS, Kentucky Department for Public Health, AmberN.Agee@ky.gov
- Thomas Rockaway, PhD, University of Louisville Civil Engineering, rockaway@louisville.edu
- Greg Heitzman, PE, MBA, BlueWater Kentucky


## *RESOURCES:*


1. *"Lead Poisoning: A Historical Perspective", Jack Lewis, EPA Journal, May 1985, https://www.epa.gov/aboutepa/lead-poisoning-historical-perspective*
2. *"Lead: Versatile Metal, Long Legacy", Emily Sohn, Dartmouth Toxic Metals Superfund Research Program website, accessed May 23, 2016, http://www.dartmouth.edu/~toxmetal/toxic-metals/more-metals/lead-history.html*
3. "Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control", Elise Gould, Environmental Health Perspectives, vol. 117(7), July 2009, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717145/
4. "Diseases and Conditions: Lead Poisoning", Mayo Clinic Staff, Mayo Clinic website, Accessed May 23, 2016, http://www.mayoclinic.org/diseases-conditions/lead-poisoning/basics/complications/con-20035487
5. "Detection of Lead Poisoning", American Academy of Pediatrics Staff, American Academy of Pediatrics website, Accessed April 3, 2017, https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/lead-exposure/Pages/Detection-of-Lead-Poisoning.aspx
6. "Lead Screening", Medicaid Website, Accessed April 3, 2017, "Detection of Lead Poisoning", American Academy of Pediatrics Staff, American Academy of Pediatrics website, Accessed April 3, 2017, https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/lead-exposure/Pages/Detection-of-Lead-Poisoning.aspx
7. "Lead Can Cause Brain Damage, Maybe Even Crime" , Susan Baldridge, Lancaster Online, March 16, 2015, http://lancasteronline.com/news/local/lead-can-cause-brain-damage-maybe-even-crime/article_48d2c008-c994-11e4-8d83-9b84285042f5.html.
8. "Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control", Elise Gould, Environmental Health Perspectives, vol. 117(7), July 2009, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717145/

# Kentucky Lead Workgroup
# Findings, Best Practices and Recommendations


**Greg Heitzman**

**BlueWater Kentucky**

**2017 Water Professional Conference**

**July 11, 2017**

**Lexington, Kentucky**

# Kentucky Lead Workgroup Members

- Jennifer Burt, Kentucky Health Department
- Obe Cox, Carroll County Water District
- Tom Gabbard, Kentucky Division of Water
- Mike Gardner, Bowling Green Municipal Utilities
- Greg Heitzman, BlueWater Kentucky
- Ron Lovan, Northern Kentucky Water District
- Brad Montgomery, GRW Engineers
- Bill Robertson, Paducah Water
- Tom Rockaway, PhD, University of Louisville
- Justin Sensabaugh, Kentucky American Water Company
- Rengao Song, PhD, Louisville Water Company
- Brian Thomas, Marion Water Department

# Kentucky Lead Workgroup Resources

- Peter Goodmann, KY Division of Water
- George Haynes, Florida Gateway College
- Samantha Kaiser, KY Division of Water
- Susan Lancho, Kentucky American Water
- Gary Larimore, Kentucky Rural Water
- Kay Sanborn, KY-TN AWWA
- Kelley Dearing Smith, Louisville Water Company
- Victoria Wilhoite, KY Division of Compliance Assistance

# Kentucky Lead Workgroup

- First meeting held April 20, 2016
- Workgroup meets monthly on third Wednesday
- Meetings open to the public
- Sub-teams established in the following areas:

  - ✓ Public health impacts of lead
  - ✓ Kentucky compliance record with Lead and Copper Rule
  - ✓ Treatment/corrosion control
  - ✓ Distribution infrastructure
  - ✓ Financing lead replacement
  - ✓ Future lead regulations and legislation
  - ✓ Communications/Education

# Kentucky Lead Workgroup

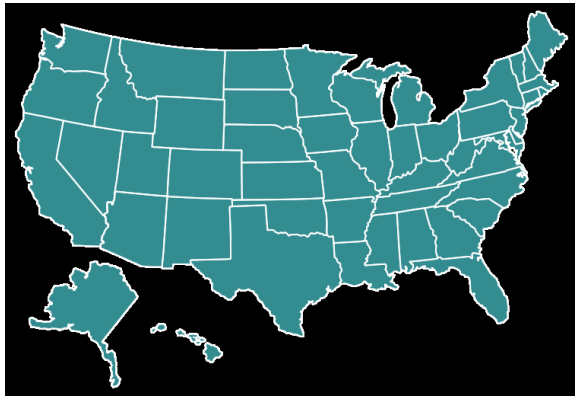
- Expect work to be completed by Fall, 2017

- Deliverables:
  - ✓ Power point presentations on each topic area
  - ✓ Briefing report by each sub-team/topic area

- Workgroup report will provide the following:
  - ✓ Summary of Kentucky's compliance with EPA's Lead and Copper Rule
  - ✓ Best practices for treatment of lead in drinking water
  - ✓ Best practices for removal of lead pipes, fixtures, etc.
  - ✓ Preparation for future regulatory changes (lower action levels)
  - ✓ Best practices for sharing lead information and educating consumers
  - ✓ Financing practices to fund replacement programs
  - ✓ Recommendations to State Agencies, Utilities, and Industry Associations

# What Have We Learned?

## US Lead Service Line Inventory



- AWWA/EPA estimates 6.1 million public Lead Service Lines (LSL) in U.S. (range of 5.5 to 7.1 million LSL)
- Includes full and partial LSL (public and private)
- Largest density is with systems serving 10,000 to 50,000 Population.
- Generally utilities transitioned from lead to copper between 1930 and 1960
- National cost estimate of $18 to $30 billion for 6.1 million LSL, assumes $3,000 to $5,000 per LSL replacement costs

# What Have We Learned?

## Kentucky Lead Service Line Inventory


- AWWA/EPA estimate 53,000 Public LSL in Kentucky
- Replacement Cost Range of $1,500 to $3,000 each
- Estimate of $79.5 to $159 million for public portion
- Estimate 13,000 Private LSL in Kentucky
- Replacement Cost Range of $1,000 to $2,000
- Estimate of $19.5 to $26 million for private portion
- Total Kentucky Estimate for removal of Public and Private LSL of $92.5 to $185 million

LEAD WORKGROUP
KENTUCKY DRINKING WATER ADVISORY COUNCIL

# How does Kentucky Compare?

- **United States Survey Data:**
  - US 2015 Population 320 million people
  - 293 million people served by Community Water Systems (92% served)
  - 97.7 million household connections (assumes 3 people per connection)
  - 6.1 million Lead Service Lines (AWWA Journal Article June 2016)
  - Estimate 6.2% of US Houses have full or partial Lead Service Lines
- **Kentucky Survey Data:**
  - Kentucky 2015 Population of 4.4 million
  - 4.2 million people served by Community Water System (95%+ served)
  - 1.4 million household connections (assumes 3 people per connection)
  - 53,000 Lead Service Lines (AWWA Journal Article June 2016)
  - Estimate 3.8% of KY Houses have full or partial Lead Service Lines

- **Kentucky Compares Favorably to Nation Average**

# Best Practices Emerging

- On-line lead service GIS database
- Free water sampling for lead
- Lead education materials
- Proactive lead replacement programs (public and private)
- Lead replacement subsidy or finance program for homeowner's portion of lead piping
- School partnerships for lead testing and lead plumbing replacement
- Optimized water treatment for corrosion
- Best practices for sampling and monitoring

# Regulatory Possibilities

- Reduction in Action Level below 10 ppb
- Possibly a MCL for Lead or a Household Action Level
- Change in sampling methods (cycles, size, frequency, locations)
- Strict water sampling protocol for lead
- Mandatory replacement programs (XX % per year)
- Mandatory lead education materials provided to for consumers, including health risk info.
- Private lead line replacement requirements for homeowners
- Specific lead action steps for schools, daycares and public facilities

# Kentucky Lead Workgroup

## State Level Recommendations (6)

1. In collaboration with utilities, develop protocol and guidance for evaluation of treatment process changes under the following conditions:
   a. a new water source is introduced (including interconnects with utilities);
   b. the water source is changed;
   c. the water treatment process is changed
   d. lead sampling is near or exceeds the EPA Action Level (currently 15 ppb);
   e. an emergency or interim supply is needed.

The protocol for treatment process or source water changes should use the guidance provided by US EPA in the report titled **Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems, published March 2016.**

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# Kentucky Lead Workgroup

## State Level Recommendations (6)

- Establish protocol and reporting requirements for utilities to use for customer requested lead samples and special lead samples.
- Update the estimate of lead service lines (public and private) in Kentucky and update cost estimate for replacement.
- Revise the criteria for prioritization of state-wide water projects to include lead service lines replacement. Include input from water industry on priority and weighting criteria.

# Kentucky Lead Workgroup
## State Level Recommendations (6)

- Develop a portfolio of funding sources for utilities to finance lead service line replacement (public and private) and lead abatement, including KIA, Rural Development, SRF funding, and State appropriations.

- Develop a lead training curriculum in partnership with utilities, state and local health departments, and water industry associations. The training should include corrosion control treatment, lead service line replacement and repair practices, flushing practices and customer communications.

# Kentucky Lead Workgroup
## Utility Recommendations (11)

Utilities should conduct Corrosion Control Evaluation and develop a Corrosion Control Plan for water treatment and distribution operations following the the guidance provided by US EPA in the Report on Optimal Corrosion Control Treatment Evaluation (OCCTE) Report, published in March 2016. The Corrosion Control Plan should be developed under the following conditions, when:

- a new water source is introduced (including interconnects with utilities);
- the water source is changed;
- the water treatment process is changed (including chemical additives);
- lead sampling is near or exceeds the EPA Action Level (currently 15 ppb);
- an emergency or interim supply is needed.

This is a complex analysis that should be conducted by qualified water quality professionals to assure optimal water quality is achieved and regulatory compliance is maintained. The Corrosion Control Plan should be developed in coordination with Kentucky Division of Water, as recommended by EPA.

# Kentucky Lead Workgroup
## Utility Recommendations (11)

Utilities should review their current lead sampling protocol and methods and adopt the EPA recommended guidelines for lead sampling.

Utilities should prepare for a reduction in the Lead Action Level from 15 parts per billion (ppb) to less than 10 ppb.

Utilities should prepare for more frequent sampling cycles and more diverse sampling locations for LCR compliance in the future.

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## Utility Recommendations (11)

Utilities should adopt a policy or practice to remove lead service lines whenever exposed during excavation and communicate the discovery of any private lead plumbing to the homeowner/occupant. This should include communication to homeowners regarding responsibility for private plumbing, flushing and the associated impacts of lead from plumbing fittings and fixtures.

Utilities should proactively investigate where lead service lines are located using various methods (historical records, maps, construction plans, field surveys, excavations, home age, etc.) and add the service line information to the water distribution inventory, maps, and records (include material, age, condition, etc.).

# Kentucky Lead Workgroup
## Utility Recommendations (11)

- Utilities should consider providing customers access to an on-line database of lead service line locations (public portion).

- Utilities should consider adopting a long term (5-20 year) goal to replace all lead service lines, with the schedule based on local conditions and financial capability.

- Utilities should make available consumer education materials on lead in drinking water in partnership with industry associations, regulators, public health officials and utilities and provide these materials to consumers through available channels (Consumer Confidence Reports, websites, social media, bill stuffers, door hangers, etc.). The communication materials should identify the homeowner responsibility for private service lines and plumbing fixtures.

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# Kentucky Lead Workgroup
## Utility Recommendations (11)

- Utilities should conduct training of field personnel in techniques to identify, locate, repair, replace lead service lines and lead-containing fittings.

- Utilities should monitor state and national best practices on managing lead and after careful review, implement these practices where feasible and practical .

# Kentucky Lead Workgroup

## Industry Association Recommendations (3)

- Identify key stakeholders and develop lead communication tools, web site links and templates for utilities to use in communicating with customers. Utilize existing resources from national and local partners. The materials should include information on the homeowner responsibility for private lead service lines and plumbing fixtures that may be sources of lead.

- Develop a utility training curriculum for communication to customers/media; lead treatment (corrosion control); water sampling protocol; system assessment for lead; lead inventory; lead service line repair; lead service line replacement (public and private) and the potential source of Lead from homeowner plumbing fixtures.

# Kentucky Lead Workgroup
## Industry Association Recommendations (3)

- Engage stakeholders into discussion and education regarding lead in drinking water, including the public health community, medical professionals, regulatory agencies, education officials, engineering professionals, building trades and other organizations that are impacted or establish policy regarding lead in drinking water. .

# Kentucky Lead Workgroup
## R & D Recommendations (5)

1. Development of technology to identify buried lead service lines (non-destructive).

2. Identify industry best practices among utilities for replacement of lead service lines (public and private) and guidance on partial lead service line replacement (public portion only).

3. Develop a Manual of Practice for utilities to determine optimal corrosion control to minimize levels of lead in the distribution system, service lines and home plumbing.

# Kentucky Lead Workgroup
## R & D Recommendations (5)

1. Conduct research on the impact of lead in drinking water on human health to assist in identifying an appropriate action level for lead in drinking water.

2. Evaluate the cost effectiveness of point of use (POU) and point of entry (POE) treatment for lead removal as an alternative for utilities to deploy as an alternative to treatment changes or lead service line replacement to meet the Lead Action Level (currently 15 ppb).

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