LWV Chicago – Environment Committee – Lead Pipes

Chicago is facing a public health crisis because lead pipes were used for water lines, and they are leaching lead into the city's drinking water. Lead has serious health impacts, particularly on children. Thus, the League of Women Voters of Chicago (the League), relying on the League of Women Voters of the U.S.'s (LWVUS's) positions regarding safe drinking water, should advocate for the replacement of service lines. Specifically, because of the social justice issues associated with the disparity in income levels across the city, the League should also advocate for an equitable funding mechanism to avoid the very real risk that only people with wealth can replace service lines.

League Positions

The League of Women Voters (LWV) has led in environmental and health protection for decades, helping to pass the Clean Water Act and amplifying the importance of the Safe Drinking Water Act.[1] LWVUS has taken the following position: "Pollution of these resources should be controlled in order to preserve the physical, chemical and biological integrity of ecosystems and to protect public health."[2] LWVUS supports "[s]tringent controls to protect the quality of current and potential drinking water supplies."[3] Additionally, "[t]he public has a right to know about pollution levels, [and] dangers to health and the environment."[4] LWVUS's policy document goes on to discuss the importance of public participation, hearings and education.[5] LWVUS has a history of acting on this position. For example, it took a stance to protect women and children from toxic mercury by urging Senators to support "a bipartisan resolution to reject

[1] League of Women Voters of the U.S (LWVUS). Impact on Issues 2016-2018: A Guide to Public Policy Positions. 55.
[2] LWVUS, 56.
[3] LWVUS, 65
[4] Ibid.
[5] LWVUS, 69.

the Environmental Protection Agency's (EPA) rule to delay reductions in mercury emissions from power plants."[6]

Health Impacts

The government has declared that there is no safe level of lead.[7] Though lead is unsafe for everyone, children are most impacted by exposure to lead.[8] Lead can come from a variety of factors (such as drinking water, lead paint, soil), so the problem of lead in drinking water is compounded by any other lead in the immediate environment of each person. Lead bioaccumulates, or builds up in our systems over time.[9] Drinking water is a major source of lead – in fact, drinking water can contribute 20 percent or more of a person's total exposure to lead. The situation is even more dire for infants who are nourished primarily by formula mixed with water. Drinking water can constitute around half of their lead exposure.[10]

The amount of lead in a person's blood, also known as blood lead level, can be measured by a clinical test. The Centers for Disease Control and Prevention (CDC) recommends that public health actions be initiated when the level of lead in a child's blood is 5 micrograms per deciliter (µg/dL) or more.[11]

Because the government uses a blood test as the primary way of determining excessive exposure to lead, there is no federal standard for the amount of lead found in tap water in residential buildings. However, studies have reported harmful effects when the amount of lead

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[6] LWVUS, 61.
[7] Ruppenthal, Alex. Could Milwaukee Be a Model for Replacing Chicago's Lead Water Pipes? WTTW. May 5, 2017. Available at: https://news.wttw.com/2017/05/05/could-milwaukee-be-model-replacing-chicago-s-lead-water-pipes.
[8] Neela-Stock, Siobhan. New Report Reveals Presence of Lead in Many Chicago Homes. WTTW. April 16, 2018. Available at: https://news.wttw.com/2018/04/16/new-report-reveals-presence-lead-many-chicago-homes.
[9] EPA. General Information about Lead in Drinking Water. Available at: https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water.
[10] Ibid.
[11] Ibid.

found in homes exceeds the FDA's standard for lead in bottle water.[12] Additionally, there is certainly a relationship between the lead in the water and blood lead level. In fact, the "EPA scientists [have] cautioned that when children under age 7 drink water containing more than 5 ppb of lead on average, the amount of the metal in their blood can rise above CDC health guidelines."[13]

Young people are more vulnerable to lead because the same amount of lead that may not negatively impact an adult could significantly negatively impact a child.[14] The impacts of exposure to low levels of lead on children include:

- damage to the central and peripheral nervous system,
- learning disabilities,
- shorter stature,
- impaired hearing,
- impaired formation and function of blood cells,
- violent behavior later in life. [15]

Even low levels of lead in the blood of children can result in:

- behavior and learning problems,
- lower IQ and hyperactivity,
- slowed growth,
- hearing problems, and
- anemia.[16]

In rare cases, ingestion of lead can cause seizures, comas and even death. Lead also has impacts on pregnant women and their fetuses, and can be transmitted through breast milk. [17] Lead effects

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[12] Hawthorne, Michael and Cecelia Reyes. Brain-damaging lead found in tap water in hundreds of homes tested across Chicago, results show. Available at: http://www.chicagotribune.com/news/watchdog/ct-chicago-water-lead-contamination-20180411-htmlstory.html
[13] Ibid.
[14] EPA. General Information about Lead in Drinking Water.
[15] EPA. General Information about Lead in Drinking Water; Hawthorne & Matuszak.
[16] EPA. General Information about Lead in Drinking Water.
[17] Ibid.

adults as well in the form of cardiovascular effects, increased blood pressure and incidence of hypertension, decreased kidney function, and reproductive problems in both sexes.[18]

Lead Pipes in Chicago

The water that enters your home is distributed through main line pipes that run under the streets, and then to service line pipes that run from the street to our homes. The mainlines are owned by the government whereas because the service lines are on the resident's property, those pipes are owned by the home or building owner. None of the main lines contain lead, but if you live in Chicago, the service lines as well as the fixtures in the home likely do.[19]

Service lines are made of lead because for a long time (until 1986), lead was the only material that plumbers were allowed to use for pipes in Chicago.[20] Lead was a popular material for piping because the pipes "don't move when the ground shifts and they don't break.[21] In 1986, Chicago stopped using lead in its pipes because Congress passed a law preventing the use of lead in pipes.[22] Unfortunately, by the point, much of the service line piping that was laid in Chicago was already in the ground and made of lead.

How Lead Gets into Our Water

Water from Lake Michigan is generally lead free. When it flows from the water mains to the service lines, however, the formerly lead-free water can pick up lead on its way into your home.[23] This can happen either if the lead pipe has corroded or the protective coating has been disturbed.[24] Pipes corrode when a chemical reaction between the water and the plumbing occurs, which causes the dissolving or wearing away of metal.[25] Both of these risk factors are activated

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[18] Ibid.
[19] Brackett, Elizabeth. Chicago's Lead Pipes: What You Need to Know. WTTW. February 18, 2016. Available at: https://news.wttw.com/2016/02/18/chicago-s-lead-pipes-what-you-need-know#transcript
[20] Neela-Stock, Siobhan.
[21] Brackett.
[22] Ibid.
[23] Hawthorne & Reyes.
[24] Brackett.
[25] EPA. General Information about Lead in Drinking Water.

when a new main line pipe is installed. Chicago Tribune reporters have watched city construction crews splice a length of copper pipe between the iron water main and lead service line – the combination of these metals can cause a reaction that corrodes the piping.[26] The protective coating can be disturbed by street work, specifically, the connection of those lead service lines to new main lines.[27] According to a US EPA study of Chicago homes in 2013, the disturbance of service lines by street work can cause high levels of lead to flow through the faucets inside homes and buildings for weeks or months after the disturbance occurred.[28]

Legal perspective

Because there is no current federal limit on the amount of lead in homes, cities, including Chicago, there is no standard to force Chicago to replace the lead service lines. The EPA has indicated that it will propose a rule with an action level at which the government will need to act, but that rule has not yet been proposed. Until that standard is proposed, "a water utility can be ordered to make repairs only if it repeatedly exceeds a systemwide benchmark intended to gauge the effectiveness of anti-corrosion treatment. Chicago officials say corrosion control in the city is effective, basing their assurances of safety on 50 federally mandated lead tests conducted every three years."[29]

According to the Safe Water Drinking Act, pipes, pipe fittings, plumbing fittings, and fixtures can be called "lead-free" if they contain a weighted average of 0.25 percent lead across the wetted surfaces of these items. For solder and flux, the weighted average must be 0.2 percent or lower to be considered lead-free.[30]

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[26] Hawthorne & Reyes.
[27] Hawthrone, Michael and Peter Matuszak. As other cities dig up pipes made of toxic lead, Chicago resists. Chicago Tribune. Sept. 21, 2016. Available at: http://www.chicagotribune.com/news/watchdog/ct-lead-water-pipes-funding-20160921-story.html
[28] Ibid.
[29] Ibid.
[30] EPA. General Information about Lead in Drinking Water.

The Safe Drinking Water Act of 1974 "requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur with an adequate margin of safety." The number that the EPA comes decides on to meet this standard for each contaminant is called a maximum contaminant level goal (MCLG). Then, for most contaminants, the EPA sets a maximum contaminant level (MCL), which, though as close to the MCLG as "possible," factors in such limitations as "cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies."[31]

The MCLG for lead is zero because, as discussed above, the EPA has determined that there is no safe level of lead exposure. For lead, instead of creating and MCL for lead, the EPA instead requires "a treatment technique" to avoid the incidence of corrosion in pipes that causes lead to enter the water. The treatment technique for lead is called the Lead and Copper Rule. [32]

The Lead and Copper Rule establishes the following requirements:

- Water systems must control the corrosivity of the water.
- Water systems must collect tap samples from sites within the service areas of the systems where lead plumbing is more likely.
- "If more than 10 percent of tap water samples exceed the lead action level of 15 parts per billion, then water systems are required to take additional actions including:
    - Taking further steps optimize their corrosion control treatment (for water systems serving 50,000 people that have not fully optimized their corrosion control).
    - Educating the public about lead in drinking water and actions consumers can take to reduce their exposure to lead.
    - Replacing the portions of lead service lines (lines that connect distribution mains to customers) under the water system's control." [33]

How Chicago Deals with Lead Pipes

The municipality has to insert a coating substance to coat the lead pipes to prevent lead from breaking off into our water. Chicago's Water Department addresses the issue with a

[31] EPA. Drinking Water Requirements for Lead. Available at: https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#regs.
[32] Ibid.
[33] Ibid.

corrosion-control program.[34] The City pumps particular chemicals into the water, which coat the pipes, thereby allowing the water to flow through the pipes without making contact with the lead pipes. [35]

What Testing Tells Us

The EPA requires Chicago to test at least 50 homes every three years, and 90% of those homes must have lead levels below 15 parts per million. Chicago tests exactly 50 homes, the bare minimum, and the locations where testing occurs are problematic. Water testers 1) took samples from homes owned by water department employees or retirees living on the far northwest and far southwest sides, 2) took few samples from homes where a water main had been replaced (and therefore potentially disturbed the chemical coating the pipes), and 3) neglected to test in any of the areas in Chicago that have had childhood lead poisoning cases.[36]

After the news about Flint, Michigan broke into public consciousness, and after the EPA's study of Chicago homes in 2013, the Chicago Water Department started to offer free water testing kits to any residents who requested them. These kits require the tester to fill one bottle with water that has not been disturbed by any household use for six hours, one bottle filled after three minutes of running water, and a final bottle after five minutes of running water.[37]

The Chicago Tribune collected and aggregated the data from these testing kits and found an alarming trend: "[L]ead was found in water drawn from nearly 70 percent of the 2,797 homes tested during the past two years. Tap water in 3 of every 10 homes sampled had lead concentrations above 5 parts per billion, the maximum allowed in bottled water by the U.S. Food and Drug Administration."[38] The results further indicated that the water in at least one home in

[34] Brackett.
[35] Hawthorne & Matuszak.
[36] Hawthorne & Reyes; Hawthorne & Matuszak.
[37] Hawthorne & Reyes.
[38] Ibid.

each of Chicago's neighborhoods is contaminated with lead.[39] The government advises people to let the water run for three to five minutes when it has not been used for hours, but the Chicago Tribune discovered that "samples contained high levels of lead after water had been running for three minutes. Even after water had been running for five minutes, 9 percent of the homes tested had lead levels above the FDA's bottled water standard."[40]

Chicago's Plan to Protect Residents from Lead

Rahm Emanuel has been systematically replacing the main lines in the city. As discussed above, this can disturb the chemical coating on the pipes and create a chemical reaction that corrodes the pipes. The City's response to potential contamination was to issue a warning to flush taps for a few minutes after not using the water for several hours, and to offer free water testing since May of 2016. However, the City appears to be engaging in a campaign of misinformation: "Between October [2015] and February [2016] the fliers omitted any reference to lead, the Tribune found, and suggested that homeowners flush taps just once after the water main work was complete." [41] Chicago promised to send a plumber and an electrician to any home where lead levels exceeded the EPA's threshold for action in order to determine where the lead originates and to put together a mitigation plan.[42] The Chicago Tribune did further analysis of the homes that qualified for this promise, and "[a]t more than 100 homes across the city where lead levels reached 15 ppb to 270 ppb in testing kit samples, water department officials conducted follow-up testing that involved drawing 10 consecutive 1-liter samples. Nearly all of those samples contained more than 5 ppb of lead, the Tribune analysis found, with levels generally increasing rather than decreasing as more water flowed out of the taps."[43]

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[39] Ibid.
[40] Ibid.
[41] Hawthorne & Matuszak.
[42] Ruppenthal.
[43] Hawthorne & Reyes.

Disparate Impact on Low-Income Communities

The lead water tests have revealed that lead is in our water across the city, but neighborhoods on the south side have even higher results: "Average first-draw concentrations of lead were even higher in 16 other community areas where at least 10 homes sent water samples to the city, including South Chicago (17.6 ppb), Chicago Lawn (16 ppb), New City, (14.3 ppb), Chatham (9.4 ppb) and Avondale (7.8 ppb)."[44] Replacing service lines would cost between $15,000 - $20,000 per home.[45] It is painfully apparent that the exact neighborhoods who need their lead service lines replaced the most are low-income communities who cannot afford it.

What Do We Do About It?

The existence of lead in our pipes is literally poisoning our children and ourselves. Partial replacement would only create more disturbance and corrosion. The experts all agree. The answer to the problem of lead leaching from lead service lines seems fairly clear: "the only effective solution is for Chicago and other cities to begin the long, costly work of replacing lead service lines."[46] But how?

Replacing lead service lines would undoubtedly be expensive. In fact, "Milwaukee has estimated that digging up and replacing all of the city's lead service lines would cost $750 million."[47] Replacing service lines in Chicago certainly would be daunting given the city's estimate that nearly 80 percent of homes and small apartment buildings are hooked up to the municipal water supply with lead pipes. If roughly 385,000 lead service lines remain in Chicago, and replacing them would cost $3,800 on average based on estimates in other cities, embarking on such a program could cost at least $1.4 billion.[48]

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[44] Ibid.
[45] Schutz, Paris. Aldermen Consider $2 Billion Plan to Get Lead Out of City Water. WTTW. Accessed 10/31/18. Available at: https://news.wttw.com/2018/10/29/aldermen-consider-2-billion-plan-get-lead-out-city-water.
[46] Hawthorne & Matuszak.
[47] Hawthorne & Reyes.
[48] Hawthorne & Matuszak.

Lead service line replacement is not impossible. In fact, a significant number of cities are finding ways to make the replacement happen: "The growing list includes Milwaukee, Boston, Philadelphia, Pittsburgh, Denver and St. Paul, all of which are adding pipe replacements to municipal construction projects by dipping into local funds, offering homeowners payment plans or taking advantage of low-interest loans funded jointly by federal and state lawmakers. Other cities have plans in the works."[49] Some mayors are leading on this issue: "Milwaukee Mayor Tom Barrett… signed an ordinance creating a plan to begin replacing Milwaukee's 68,300 residential lead pipes. [50]

Chicago could get a loan from the federal government. Congress created a fund that is explicitly intended to be used to improve and maintain public water systems: the Drinking Water State Revolving Loan Fund. States have to contribute 20% of the amount they get from the federal government. Last year, Illinois designated $148 million of the federal-state loan funds for Chicago. Emanuel is using those funds for water main repairs. The City has 20 years to pay back the loan, and it is expected to use increased water rates to make the payments, and "[a]t interest rates averaging 1.86 percent, the borrowing is significantly less expensive than other debt the city has taken on to fund municipal operations."[51]

These funds could be used on lead service lines. EPA lawyers wrote, "no law or regulation prevents the use of federal money to replace [lead service lines]….Lead pipes can contaminate water at any point, including on its way into a private home …Allowing a public water system to use its funds to replace such pipes is consistent with ... the overall health

[49] Ibid.
[50] Ruppenthal.

[51] Ruppenthal.

protections of the Safe Drinking Water Act."[52] Milwaukee plans to borrow $2.6 million from the federal-state loan fund to replace lead pipes.[53]

The first community in Illinois to secure funding for lead pipe replacements through the federal-state loan fund is Galesburg, a downstate city that has struggled for years to adequately maintain its anti-corrosion treatment….The $4 million borrowed by Galesburg will replace about half of the 10,000 lead pipes remaining in the city, said Mayor John Pritchard. Homeowners will be asked to sign waivers allowing crews to dig up their yards, with the city focusing initially on properties where high lead levels have been detected in tap water or where a child has been diagnosed with lead poisoning. "There's money available to take care of the pipes, and it's going to put people to work," Pritchard said. "You would be crazy not to take it."[54]

If this option is taken, the question becomes, how do we pay for the loan payments? Do we increase the water bill rate? Other places have done it. In Lansing, Michigan, the utility charges ratepayers for its replacement program and has developed cheaper and more efficient methods to complete the work. Philadelphia and St. Paul offer no-interest payment plans. Boston offers cash incentives.[55] Indiana American Water is a private utility that is taking this measure to address the issue in northwest Indiana.[56]

Some cities are exploring the possibility of the municipality and the property owner sharing the cost of replacing the service lines.[57] Madison, Wisconsin offered to pay up to $1000 of the replacement costs of replacing lead service lines, and this has resulted in the replacement of almost all of the lead service lines in the city. In Milwaukee, "[i]n cases of emergency pipe failures or leaks, the city will pay 100 percent of the cost for the public utility side, along with

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[52] Hawthorne & Matuszak.
[53] Ibid.
[54] Brackett.
[55] Hawthorne & Matuszak.
[56] Hawthorne & Reyes.
[57] Ibid.

two-thirds of the cost to replace privately owned lateral pipes that connect municipal water mains to residences. The cost of replacing privately owned pipes will be capped at $1,600 for owners, who will get up to 10 years to pay.[58]

Alec Messina, director of the Illinois EPA, said the administration of Republican Gov. Bruce Rauner is drafting plans to include service line replacements in more projects throughout Illinois."[59]

Chicago has about 385,000 lead service lines, and has thus far resisted replacing them despite movement on the issue in other cities.[60] The city will not replace the pipes despite the fact that the pipes are there in the first place because they city's plumbing code required the use of lead pipes.[61] Service line pipe replacement is considered the responsibility of the individual owners of the homes, but the cost can be prohibitive to homeowners.[62] Not only does digging up the main lines cause more lead to flow through people's taps, there is also a missed opportunity to take care of both the main and service lines while the streets have been dug up.[63]

There is, however, some political will to address this issue in the city government. Alderman Chris Taliaferro of the 29th Ward said, "Lead shouldn't be in our vocabulary in this day and age. We know how to get rid of it, we know how to test for it, and we know how to keep our kids safe from it."[64] Alderman Scott Waguespeck of the 32nd Ward said that "the city needs a comprehensive plan for dealing with lead that might be in water pipes." [65]

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[58] Ruppenthal.
[59] Hawthorne & Matuszak.
[60] Ruppenthal.
[61] Hawthorne & Reyes.
[62] Neela-Stock, Siobhan.
[63] Hawthorne & Reyes.
[64] CBS. Aldermen Want Public Hearing On Lead In Water at CPS. June 13, 2016. Available at: https://chicago.cbslocal.com/2016/06/13/aldermen-want-public-hearing-on-lead-in-water-at-cps/
[65] CBS.

Recently, some members of the Chicago City Council recommended that the City tax the sale of homes that are worth over $750,000.[66] This would solve the problem in an equitable way, but there has already been some push back for putting the burden on wealthy homeowners. The Chicago Association of Realtors, for example, would prefer to see another water rate increase.[67]

In the Meantime / Recommendations

First, construction on the water mains should cease. The science is clear – work on the main water lines increases the amount of lead that comes through the tap. In Milwaukee, the city stopped street work on water mains that are connected to lead service lines because the local health commissioner called these projects an "unacceptable and involuntary risk to the public."[68]

If and when the service lines are replaced, the City should start with the most vulnerable populations. Many of these cities that have taken on this task are responding to the issue of equity by focusing their efforts first on "low-income neighborhoods where childhood lead poisoning remains a persistent problem."[69]

Whether or not the city decided to replace the lead service lines, the EPA suggests actions that residents like those in Chicago can take to reduce their exposure to lead and become more aware of the levels in their homes. A resident can take measures to reduce the lead that comes out of the tap by considering the following instructions and points of information: use only cold water for drinking, cooking and making baby formula; boiling water does not remove lead from water; regularly clean your faucet's screen (also known as an aerator); consider using a water filter certified to remove lead and know when it's time to replace the filter; before drinking, flush

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[66] Cherone, Heather. Aldermen Propose Tax on Sale of Property Worth $750K+ to Replace Lead Pipes in Chicago Homes. Book Club Chicago. Accessed 10/31/18. Available at: https://blockclubchicago.org/2018/10/26/aldermen-propose-tax-on-sale-of-property-worth-750k-to-replace-lead-pipes-in-chicago-homes/; Schutz.
[67] Schutz.
[68] Hawthorne & Matiszak.
[69] Hawthorne & Reyes.

your pipes by running your tap, taking a shower, doing laundry or a load of dishes, and contact your water system to learn more about sources of lead and removing lead service lines.[70]

If there are children in the home, there are tests that can be done to determine the lead blood level. This test can be done by a family doctor or pediatrician. Health departments can also provide information on how to facilitate this testing. [71]

The League should draw on LWVUS's positions on safe drinking water to both oppose the ongoing main line replacement and support an equitable replacement of service lines. While that advocacy is in process, the League should educate people about the presence of lead pipes and advise those people on how best to mitigate harm to themselves, especially in the case of children. All of these paths need to be addressed urgently given the harmful impacts of lead in the drinking water on our communities.

[70] EPA. Basic Information about Lead in Drinking Water.
[71] Ibid.