CHEEC FACT SHEET: LEAD IN SCHOOL & CHILD CARE FACILITY DRINKING WATER

Lead as a Drinking Water Pollutant and Public Health Risk
The United States (U.S.) Centers for Disease Control and Prevention (CDC) states that no level of lead exposure is safe for children. The toxic effects of lead are well known, and elevated blood lead levels (BLLs) are linked to adverse health and developmental effects, especially in young children. The American Academy of Pediatrics (AAP) recommends reducing or eliminating all sources of lead before exposure as the most reliable and cost-effective measure to protect the public.

Lead can enter into drinking water through plumbing materials, including drinking water fountains and other fixtures. You cannot see, taste, or smell lead in water. Testing is the only sure way to tell if there are elevated levels of lead in your drinking water. Because of the legacy of lead in the plumbing of older buildings, the U.S. Environmental Protection Agency's (EPA's) *3Ts for Reducing Lead in Drinking Water Toolkit* recommends that schools test their drinking water to *"pinpoint potential lead sources to reduce their lead levels to the lowest possible concentrations."*

Regulations for Lead in Drinking Water
Historically, there has been no federal law requiring testing of drinking water in schools and child care facilities, except for those that own and/or operate their own public water supply and are thus regulated under the Safe Drinking Water Act through the Lead and Copper Rule (LCR). Instead, the EPA has elected to only provide guidance to schools through their 3Ts program. The 3Ts encourages schools and child care facilities to prioritize remediation efforts based on lead sample results and to use the steps in the toolkit to *"reduce their lead levels to the lowest possible concentrations".* The 3Ts also calls for comprehensive testing programs in schools and child care facilities, specifically noting that *"...schools and child care facilities should not use sample results from one outlet to characterize potential lead exposure from all other outlets in their facility. This approach could miss localized lead problems that would not be identified."*

EPA's recently finalized revisions to the LCR that will require limited testing in schools and licensed child care facilities. Each community water system (CWS) would be required to test 20% of K-12 schools and licensed child care facilities every year starting in 2024, with all facilities tested in a CWS distribution system every five years. The CWS must provide analytical results as soon as practicable but no later than 30 days after receipt of the results to the school or child care facility, along with information about remediation options. Results must also be shared with state and local health officials, as well as the appropriate primacy agency (i.e., the Iowa Department of Natural Resources). The revised rule would exclude facilities built after January 1, 2014 from testing.

Limitations in the Testing Program for Schools and Child Cares Mandated by the LCR Revisions
Although a step in the right direction, there are still many shortcomings with the testing approach mandated by the LCR revisions that even the EPA acknowledges. First, the new testing requirements only call for samples to be collected at 5 locations in schools and 2 locations in child cares. Many schools and child care facilities will have many more outlets from where children can consume drinking water. EPA clearly recognizes the need for more expanded testing, acknowledging in the LCR revision final rule that the new requirements are only intended to be a "*preliminary screen for lead in schools and child care facilities and….not a replacement for comprehensive testing as detailed in the 3Ts."*[1]

Another problem is that the EPA did not include requirements for CWSs to take remediation actions at facilities based on sampling results. A notable omission is an "acceptable" level of lead in school drinking water that would not require remedial action. The LCR uses a non-health based "action level" of 15 µg/L

[1] National Primary Drinking Water Regulations: Lead and Copper Rule Revisions. (2021). https://www.regulations.gov/document?D=EPA-HQ-OW-2017-0300-1550

or parts-per-billion (ppb) to regulate public water supplies, but EPA acknowledges, *"there is no evidence to support a conclusion that lead levels in drinking water near the 15 ppb are safe, especially for sensitive populations."*[2] The Food and Drug Administration regulates bottled water at 5 ppb.[3] The AAP has stated there is no safe level of lead exposure to children and advocates for an acceptable level in schools and child care facilities of 1 ppb.[4] Until January 2021, Iowa's "action level" for lead in school drinking water was 20 ppb and among the least protective in the country. When the lead level in a water sample exceeded 20 ppb, Iowa DNR advised that the water outlet should be taken out of service until remediation is completed. As of January 12, 2021, this guidance has been removed from the DNR website, and the new guidance directs interested parties to consult EPA recommendations, presumably the 3Ts, for maintenance operations and to remove an item from service if needed.[5]

CHEEC Grant to Schools Program for Lead Testing and Remediation:
Starting in 2019 the University of Iowa Center for Health Effects of Environmental Contamination (CHEEC) in partnership with Iowa State Hygienic Laboratory (SHL) began offering free lead and copper testing to Iowa elementary schools with older drinking water infrastructure. The Grants to School Program provides up to $10,000 per school to cover the cost of the work. This includes sampling at every water outlet in participating schools and providing funds to remove or replace high priority drinking water outlets that are found to have unsafe levels of lead or copper, another metal that can originate from plumbing materials.

Between 2019 to 2020, CHEEC supported testing in 8 elementary schools in Dubuque, Jones and Keokuk counties. In total over 400 individual outlets were tested across these schools. Although most drinking water outlets tested were found to be safe with concentrations below 1 ppb for lead and 1.3 mg/L or parts per million (ppm) for copper, several outlets in each school were found that had unsafe levels of lead or copper. Lead was the most commonly detected contaminant with concentrations ranging from 1 to 14 ppb. Schools used CHEEC funding to replace old water fixtures; install new, lead-free drinking water fountains and bottle fillers with carbon filters; and to post signage at low priority locations to warn against drinking water from outlets. On average the cost of all testing and remediation per school was $2,800.

Opportunities to Improve Children's Health through School and Child Care Drinking Water Improvements:
CHEEC recommends the following actions:

- Set an acceptable level for lead in drinking water at Iowa schools and licensed child care facilities that is most protective for children's health and in line with EPA 3Ts guidance of "*lowest possible concentrations*". CHEEC advocates for 1 ppb but no greater than 5 ppb;
- Additional financial assistance to allow expanded testing at *all* outlets in schools;
- Technical and financial assistance that enables schools to respond effectively to testing results;
- Ensure long-term safety of school drinking water through a "filter first" infrastructure and testing program;[6]
- Leverage COVID funding to increase installation of bottle fillers with filters certified for lead removal in schools and child care facilities.

Learn More:
Visit the Center for Health Effects of Environmental Contamination at https://cheec.uiowa.edu/ or email inquiries to cheec@uiowa.edu.

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[2] Purdue University. Center for Plumbing Safety: Resources. https://engineering.purdue.edu/PlumbingSafety/resources/EPA-Region5-Lead-Memo-2017-12-29.pdf
[3] Iowa Department of Natural Resources. (2016). Testing for Lead in Drinking Water in Iowa.
[4] Cradock, A., Hecht, C., Poole, M.K., Vollmer, L., Flax, C. and Barrett, J., 2019. *Early Adopters: State Approaches to Testing School Drinking Water for Lead in the United States*. Key Research Report. Harvard TH Chan School of Public Health and University of California. https://cdn1.sph.harvard.edu/wp-content/uploads/sites/84/2019/01/Early-Adopters_State-Approaches-to-Testing-School-Drinking-Water-for-Lead-in-the-United-States_2019.pdf
[5] Iowa Department of Natural Resources. (2021). Testing for Lead in Drinking Water in Iowa. https://www.iowadnr.gov/Portals/idnr/uploads/water/wso/files/Drinking_Water_Lead_Testing_in_Schools.pdf
[6] National Resources Defense Council. (2019). Get the Lead Out of Drinking Water in Schools: Model La. https://www.nrdc.org/experts/joan-leary-matthews/get-lead-out-drinking-water-schools