Identifying schools with high lead levels in drinking water

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Consuming lead can cause health problems for anyone, but children are particularly vulnerable because the element can interfere with their growth and development. While water systems will soon be required to

measure lead levels in school tap water, it's not clear how these measurements should be interpreted. In a new study in ACS' *Environmental Science & Technology Letters*, researchers used real-world data to determine an approach for identifying schools likely to have problematic lead levels.

Under certain circumstances, pipes, faucets and other plumbing system components can release lead into the water they carry. Research has shown that such contamination is widespread among schools, so the U.S. Environmental Protection Agency recently developed a plan to revise its rules on testing for lead in these buildings. The revision will require water systems to test for lead content based on five samples from a school. However, the amount of lead that shows up within a building's water can fluctuate, so some researchers are concerned that this approach won't accurately detect those schools with potentially problematic levels. Kelsey Pieper and colleagues wanted to take a closer look at the problem, and to see whether just five samples could be used to identify at-risk schools.

The researchers analyzed 47,727 lead measurements taken from 1,094 schools in Massachusetts. They found that water from 12% of the fixtures, such as water fountains and faucets, had lead levels of more than 15 parts per billion (ppb)—the threshold at which the state requires that a fixture be shut off. These problematic fixtures were not evenly distributed: 90% of them were located in just 34% of schools. The team also used these data, which averaged nearly 44 samples per building, to classify schools as having low or high lead levels. They then tested two ways of making the same classification with only five measurements, the results of which they verified by comparing them to those derived from the full data set. In the first, they simply counted how many of the five samples had more than 5 ppb, and for the second, they used a statistical analysis to score the five together. By combining the two approaches, they found they could most accurately identify schools at low or

increased risk of having elevated [lead levels](#). The strategy couldn't classify schools based on a lower, 1 ppb threshold. Despite that limitation, the researchers say that these results confirm that five samples could be used to prioritize lead remediation efforts if analyzed in these two ways.

More information: Using the Lead and Copper Rule Revisions Five-Sample Approach to Identify Schools with Increased Lead in Drinking Water Risks, *Environmental Science & Technology Letters* (2021). pubs.acs.org/doi/abs/10.1021/acs.estlett.1c00845

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