

# Early childhood exposure to lead in drinking water associated with increased teen delinquency risk

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Exposure to lead in drinking water, especially from private wells, during early childhood is associated with an increased risk of being reported for

delinquency during teenage years, according to a new study by Indiana University researchers.

The study, published in *Proceedings of the National Academy of Sciences*, found that [children](#) who get their [water](#) from private wells before age 6 have higher [blood lead levels](#) and, as a result, have a 21 percent higher risk of being reported for any delinquency after age 14, and a 38 percent increased risk of having a record for a serious complaint, such as felony property or weapons offenses and misdemeanor assault.

"We know that [lead exposure](#) early in life has been linked to lower IQ, reduced lifetime earnings and an increased risk for behavioral problems and [criminal activity](#)," said Jackie MacDonald Gibson, author of the study and chair of the Department of Environmental and Occupational Health at the IU School of Public Health-Bloomington. "This research highlights the need for recognition of the risks to children relying on private well water and for new programs to ensure they have access to clean [drinking](#) water. Failing to do so imposes burdens not just on the affected children and their families but also on society at large."

Researchers analyzed a 20-year dataset linking blood lead measurements for 13,580 children under the age of six to their drinking [water source](#) before age 6, and to reported juvenile delinquency records after the children reached age 14.

In addition to finding a correlation between lead exposure and [behavioral problems](#) in teens, the study also found that blood lead levels were approximately 11 percent higher in children relying on private wells, compared to children provided with community water service.

The Biden administration recently announced a federal action plan to replace lead pipes that connect some 10 million homes to community water systems. But Gibson said that while this plan is an essential step

forward in decreasing children's risk of exposure to lead in drinking water, it does not solve the problem of children's exposure to lead from private well water.

Currently, 13 percent of U.S. households rely on private wells. Domestic wells are not regulated under the Safe Drinking Water Act and are therefore rarely tested for lead or treated to prevent lead dissolution from household plumbing and fixtures, Gibson said.

She noted that lead in water from any source causes equal harm, but children with private well water are more susceptible to being exposed to lead in water because most private well owners do not have corrosion control systems in place to prevent leaching of lead from well components, plumbing and fixtures into household water. In contrast, community water systems are required to monitor their water for lead and to establish corrosion control systems if elevated levels of lead are detected.

To address this issue, researchers said neighborhoods that rely on private wells and border cities or towns but are not incorporated in them are good candidates for community water service extensions due to their close proximity to existing infrastructure. Those farther away, they said, could be provided with household water filters at subsidized rates depending on income.

"This research confirms the urgent need to prevent early-life [exposure](#) to lead in drinking water," Gibson said. "Technology to solve this problem is readily available, and putting it in place is a matter of political will and should be part of upgrading infrastructure in the U.S."

**More information:** Jacqueline MacDonald Gibson et al, Early life lead exposure from private well water increases juvenile delinquency risk among US teens, *Proceedings of the National Academy of Sciences*

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