Lead affects both adults and children. High lead levels can come from many sources. These include:
- Lead paint
- Lead particles in dust
- Lead water pipes
- Lead well packers in domestic wells
- Cosmetics
- Imported candies
- Containers, cookware, or tableware
- Toys, toy jewelry
- Stained glass

In addition, modern exposures can come from some unlikely sources:
- Folk medicines
- Cosmetics
- Containers, cookware, or tableware
- Toys, toy jewelry
- Stained glass

The brains of adults who were exposed to lead as children show decreased volume, especially in the prefrontal cortex, on MRI. Areas of volume loss are shown in color over a template of a normal brain (Cecil et al. 2008).

### About the project
In order to determine the cause of the elevated blood lead levels in rural Illinois children, the Illinois State Water survey has teamed up with the University of Illinois at Chicago and Northern Illinois University to do a pilot study in three rural Illinois counties. The team hypothesizes that the lead is coming from lead well packers in older wells and lead pipes in older homes. Their research goals include:

1. Characterize the distribution of lead concentrations and water corrosivity in homes using domestic well water in three counties in Illinois.
2. Develop and evaluate health department partnerships, participant recruitment approaches, and home sampling methods in order to inform the design of a scaled-up study.
3. If water lead levels (WLLs) are found to be elevated, options for mitigating sources of lead and/or corrosivity will be explored with owners of impacted homes and with health departments.
4. Determine if a larger study and additional interventions are needed to reduce WLLs in homes that utilize private wells. If WLLs are consistently far below 15 micrograms per liter (EPA drinking water standard) even in wells with corrosive water, further investigation may not be warranted.

### Three Illinois counties
The team proposed Peoria, Winnebago, and McHenry counties in Illinois based on previously recorded blood lead levels in children, percent of houses built before 1978 (lead paint ban), and corrosivity index in previously tested domestic well water samples. The counties may change based upon establishment of relationships and contracts with county health departments.