Lead Contamination in Scott County Iowa

Nick Torres
Augustana College, Rock Island Illinois

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Abstract

Lead is a potent toxin that has long been used for various industrial applications. Most commonly used for exterior and interior painting, lead was banned in 1978 once strong evidence indicated that it is an extremely dangerous element that leads to a multitude of neurological conditions. Scott County, Iowa has experienced high levels of child lead poisoning since 2000, having over 1,600 documented poisonings, bringing Scott County four times over the national average. The Upper Mississippi Center is working toward a solution to this problem through research into the presence of lead in local homes, with 27 homes sampled, and a partnership with the Scott County Health Department, the results proved to be helpful in finding an end to this epidemic. The data recorded from paint, dust, and house conditions of each location showed general trends that may be used to assist in solving this country wide epidemic. There were strong direct correlations with the condition of windows and the number of lead hazards within a home, as well the elevated lead levels in dust having relation to the renter occupancy. Careful analysis of the sampled data has proven to be fruitful in identifying homes that may have lead present at toxic levels.

Introduction

In 2016, Augustana College’s Upper Mississippi Center (UMC) joined a partnership with Scott County Health Department Iowa (SCHD) in an effort to investigate the ongoing lead crisis in Scott County, Iowa. With the assistance of Genesis Health, Augustana faculty members, and the SCHD, a team of Augustana College interns were brought on for the 2017-2018 academic year in order to continue the previous research that has been conducted in Scott County by the UMC. With our team’s data, the UMC and SCHD had three goals in mind. The first is to identify homes with the highest risk of lead exposure. Next, evaluate and identify alternative local funding that would match the scale of the problem at hand. Lastly, build public-private coalition of necessary organizations to advance a proactive, preventative lead poisoning program.

Methods

Paint
Goal: Sample independent sides of the house. (i.e. North and South facing doors)
Sampled Window Units: 3
• Sill, Casing, Jamb
Sampled Door Units: 2
• Casing (int.), Casing (ext.), Jamb, Door (int.), Door (ext.)

Dust
Goal: Sample areas where children are likely to be present. (i.e. Play area, living room)
Floor Samples: 1
• 12x12 sampling area
Window Samples: 1
• Ave: 0.59 ft²

Results

Lead Risk for Renter’s

Window Condition as an Indicator for Lead

Total Number of Lead Hazards Per Site

Homeowners Risk of Lead Contamination

Conclusion

• The number of hazards rise as the age of home increases. Evidence indicates it is due to the social exclusion of lead based products as 1978 approached.
• It is more likely to find lead in the dust of a renter than an owner.
• As the window’s condition worsens, the number of hazards increase. Therefore, window condition serves as a clear indicator for the presence of lead.

At the conclusion of the 27 home analysis, it is certain that lead is present in the Scott County, Iowa area at unacceptable levels. The following relationships were shown to be significant: number of hazards and the condition of windows, lead floor dust and renter occupancy, number of hazards and age of home. These relationships assist in providing a way to assume lead levels without sampling. Even though these results are promising, further research is needed to solidify these results.

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