



State of Illinois
Illinois Department of Public Health

Illinois Lead Program 2017 Annual Surveillance Report



February 2019 Edition

February 2019

Dear Colleagues,

The Illinois Department of Public Health (IDPH) is pleased to present the 2017 annual surveillance report on childhood lead-poisoning prevention activities within the state. The goals of the Illinois Lead Program are:

- Primary prevention
- Early detection through blood lead testing and surveillance
- Monitoring of children exposed to lead sources and linkage to services

There is no safe level of lead in the body. Childhood lead poisoning is known to contribute to learning disabilities, developmental delays, and behavioral problems as well as a number of other negative health effects.

The burden of Illinois childhood lead poisoning remains one of the highest in the nation. Illinois law requires reporting of all blood lead tests to IDPH. Of the 229,000 children tested in 2017, more than 7,000 had blood lead levels at the public health intervention level recommended by Centers for Disease Control and Prevention (CDC).

In January 2019, IDPH lowered the public health intervention level to the CDC reference value of 5 µg/dL. Case management services are being provided to each child with lead levels ≥5 µg/dL with committed efforts to prevent or eliminate further exposure. Environmental investigations for each child with lead levels ≥5 µg/dL are being conducted to identify lead hazards that require mitigation.

Following growing public awareness of water as a source of lead exposure, a new Illinois law requires schools built between January 2, 1987 and January 1, 2000 to test their facility's drinking water and submit results to IDPH by December 31, 2018. Schools constructed prior to January 1, 1987 were required to test and submit results to IDPH by December 31, 2017.

This report is intended to serve as a standard public reference for legislators, decision-makers, community-based organizations, city, state, and federal agencies, as well as health professionals, researchers, and all who seek information on lead poisoning prevention in Illinois.

The Illinois Lead Program looks forward to a continued collaboration with local health departments and other federal, state, and local partners.

Very truly yours,



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**To report the results of all blood lead tests or
for more information about the elimination of childhood lead poisoning, contact the
Illinois Lead Program at 866-909-3572 or 217-782-3517 or visit**

<http://www.dph.illinois.gov>

The hearing impaired may dial 800-547-0466.

Scope of the Illinois Lead Program Surveillance

- *Estimate the extent of elevated blood-lead levels among Illinois children*
- *Monitor and promote the follow-up of children with elevated blood-lead levels*
- *Identify potential sources of lead exposure and other housing related health hazards*
- *Help allocate resources for lead poisoning prevention activities*
- *Provide information for education and policy*

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Acronyms and Symbols used in this Annual Report

ABLR	Adult Blood Lead Registry
ACOG	The American College of Obstetricians and Gynecology
BLL	Blood Lead Level
CDC	U.S. Centers for Disease Control and Prevention
CLIA	Clinical Laboratory Improvement Amendments
CLRQ	Childhood Lead Risk Questionnaire
CPSC	Consumer Product Safety Commission
FDA	U.S. Food and Drug Administration
IDPH	Illinois Department of Public Health
IPCB	Illinois Polluting Control Board
DHS	Illinois Department of Human Services
EBLL	Elevated Blood Lead Level
HFS	Illinois Department of Healthcare and Family Services
HHLPS	Healthy Housing and Lead Poisoning Surveillance System
HUD	United States Department of Housing and Urban Development
IVRS	Illinois Vital Records System
IQ	Intelligence Quotient

LSL Lead service line

Acronyms and Symbols used in this Annual Report (continued)

MOU	Memorandum of Understanding
OSHA	Occupational Safety and Health Administration
PPB	Parts per billion
Program	Illinois Lead Program
STELLAR	Systematic Tracking of Elevated Lead Levels and Remediation
U.S. EPA	United States Environmental Protection Agency
µg/dL	Micrograms per deciliter
WIC	Women, Infants, and Children Nutrition Program
≥	Greater than or equal to

Definitions

Capillary blood draw: Blood samples collected by finger-stick method

Case Management: Any activity that involves coordinating, providing, and overseeing the services required to reduce blood lead levels

Children: Six years of age or younger at the time of testing unless otherwise stated

Community water system: A public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents for at least 60 days a year.

Confirmed blood lead level: A blood lead level resulting from a single venous blood test

Delegate Agency: A unit of local government or health department approved by IDPH to carry out provisions of the Act and Code

Elevated blood lead: Blood lead level ≥ 10 µg/dL

Evaluation: Administration of the Childhood Lead Risk Questionnaire (CLRQ) to the parent by a health care provider

Housing unit: A house, apartment, mobile home, group of rooms, or single room that is occupied or intended for occupancy (U.S. Census Bureau)

Lead service line: A service line constructed of lead or containing lead

Non-community water system: A public water system that is not a community water system, that has at least 15 service connections used by non-residents, or regularly serves 25 or more non-resident individuals daily for at least 60 days a year and shall include vending machines

Non-transient non-community water system: A non-community water system which regularly serves the same 25 or more persons at least 6 months a year

Percentage of children tested: The number of children tested for blood lead divided by the population of children multiplied by 100 (U.S. Census Bureau)

Reference Value: Recommended federal public health intervention level of ≥ 5 µg/dL of lead in blood

Service Line: Piping from the source of a private water supply on the premises or from the main in the street, alley or at the curb to, within and about any building or buildings where a person or persons live, work or assemble. It does not mean water distribution piping in the building or facility. (225 ILCS 320/2)

Test: The quantifiable result of a blood lead drawn on a child

Executive Summary

This is the Illinois Lead Program's 24th annual surveillance report of childhood lead poisoning prevention activities within the state from January through December 2017. This report is intended to serve as a standard reference for legislators, community-based organizations, city, state and federal agencies, as well as health care professionals and researchers who seek information on lead poisoning prevention in Illinois.

The Illinois Lead Poisoning Prevention Act [410 ILCS 45] authorizes IDPH's Office of Health Protection, Division of Environmental Health, Lead Program to promulgate, administer, and enforce the Illinois Lead Poisoning Prevention Code (77 IL Admin Code 845). In 2017, IDPH had grant agreements with 86 delegate agencies to provide case management care for lead-poisoned children in 92 of 102 counties. Additionally, 22 of the delegate agencies also had grant agreements to provide environmental investigation services. In the 10 counties with no delegate agency agreements, IDPH provided these services.

Problem: There is no safe level of lead in the body. Lead poisoning is one of the most prevalent and preventable environmental health hazards. Lead exposure can affect the brain and nervous system. Childhood lead exposure is known to contribute to learning disabilities, developmental delays, and behavioral problems as well as a number of other negative health effects.

Lead Burden: The burden of childhood lead poisoning in Illinois remains one of the highest in the nation. In 2017, there were 7,273 Illinois children tested who had blood lead levels at the federal reference value of ≥ 5 $\mu\text{g/dL}$. Of those children, 1,670 had blood lead level of ≥ 10 $\mu\text{g/dL}$.

Children at highest risk for lead poisoning: Those with persistent hand to mouth behaviors; access to lead-containing products; and those residing in or frequenting poorly maintained pre-1978 housing. Fifty-nine percent of pre-1978 housing units have lead-based paint and 70 percent of those have significant lead-based paint hazards.

Mission: The mission of the Program is to eliminate the incidence of childhood lead poisoning.

Vision: The vision of the Program is to provide a lead-safe environment for all children.

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Goals:

- Prevent childhood lead poisoning through community education and public awareness campaigns
- Identify lead-poisoned children and provide prompt interventions to reduce BLLs and improve health and developmental outcomes

Funding: The program is currently supported by the Lead Poisoning Screening, Prevention, and Abatement Fund; Illinois State General Revenue Funds; U.S. Centers for Disease Control and Prevention (CDC); and the U.S. Environmental Protection Agency (U.S. EPA).

Key Facts: Illinois 2017 Childhood Blood Lead Surveillance: According to the CDC Wonder national data system, there were an estimated 1,089,756 million children six years of age and younger in Illinois.

- A total of 229,203 children six years of age and younger were tested. About 60 percent of children tested had at least one venous blood lead test.
- Approximately 54 percent of all children have received a blood lead test at least once in their lifetime.
- Children tested with a confirmed EBLL ≥ 10 $\mu\text{g/dL}$ totaled 1,287 (0.6 percent/one in 178).
- BLLs in children averaged 1.9 $\mu\text{g/dL}$ (geometric mean of 1.5 $\mu\text{g/dL}$).
- Of the 7,273 (3.2 percent/one in 32) children tested in 2017 with BLLs at the federal reference value ≥ 5 $\mu\text{g/dL}$ for public health intervention:
 - 62 percent (4,477) had a confirmatory venous test and 38 percent were capillary tests
 - 63 percent were two years of age or younger
 - 69 percent benefited from programs administered by Medicaid
 - 30 percent were Black, 32 percent White, 17 percent Hispanic, and 21 percent other
- Approximately 65 percent of the 5.3 million Illinois housing units were built prior to the lead paint ban of 1978.

The five goals set for the federal lead strategy are:

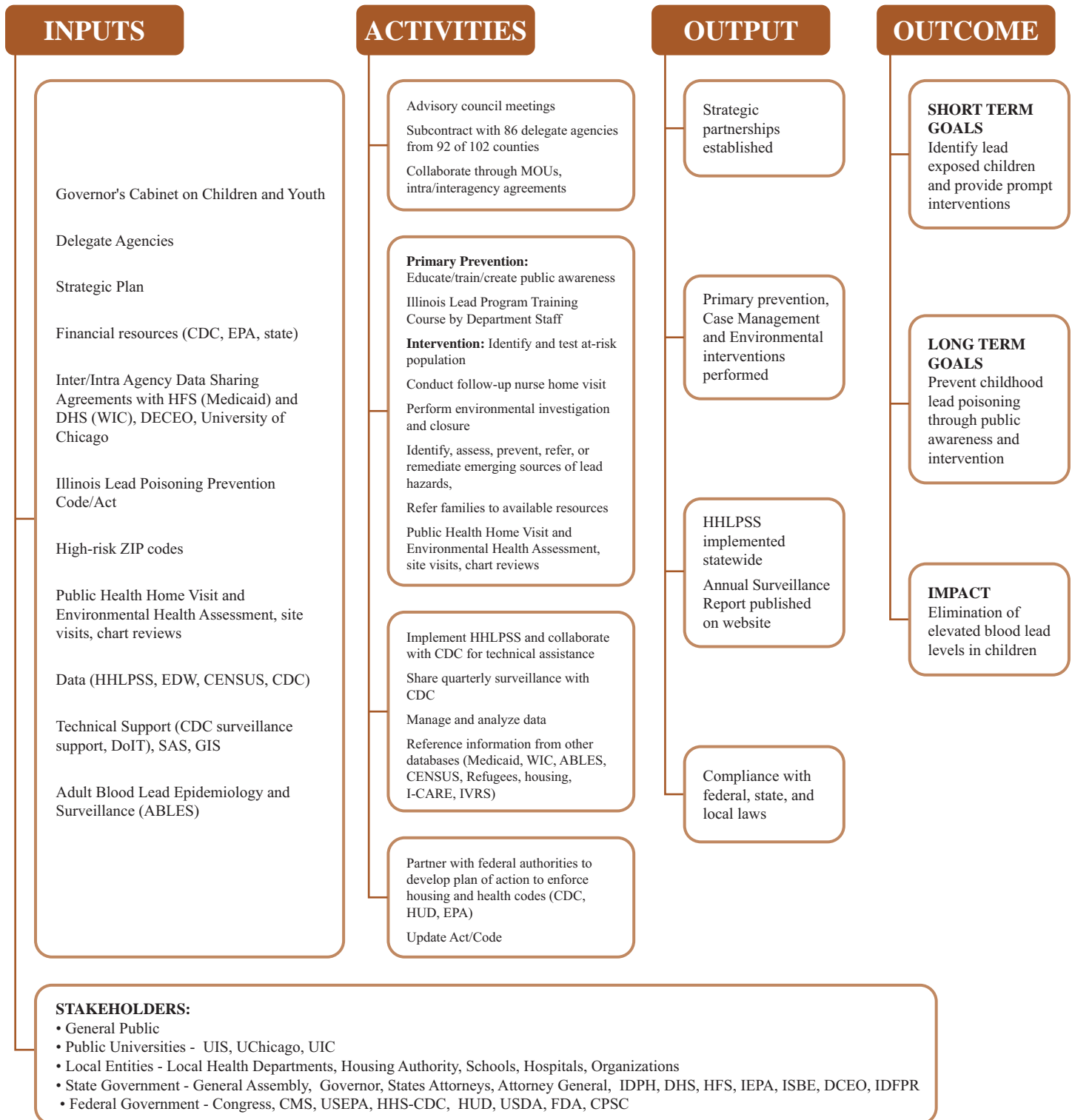
1. Reduce sources of lead in children's environments
2. Improve identification and monitoring of lead exposure to children
3. Improve the health of children identified as lead-exposed
4. Communicate effectively and consistently with stakeholders about childhood lead exposure
5. Plan cross-federal research to advance our scientific understanding of the effects, evaluation, and control of lead hazards in children's environments

www.epa.gov/newsreleases/epa-administrator-scott-pruitt-hosts-nations-leaders-discuss-efforts-reduce-childhood-0



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Figure 1: Illinois Lead Program Activities and Outcomes



Sources of Lead Exposure

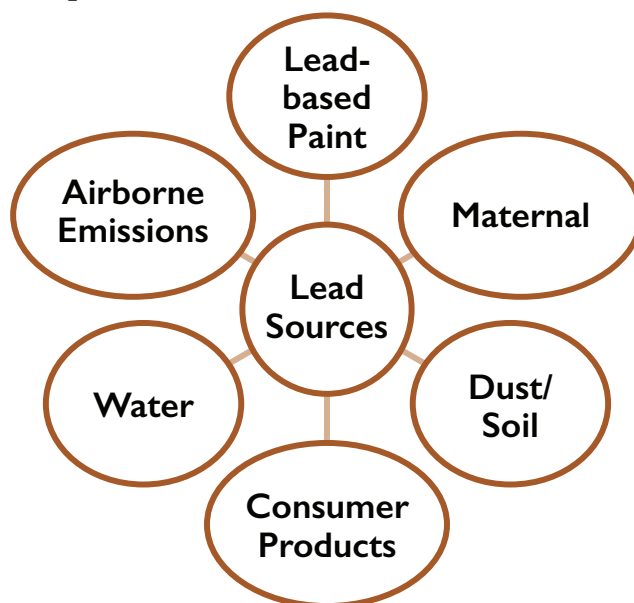


Figure 2: Sources of Lead Exposure

For more information about sources of lead exposure, refer to the following websites

dph.illinois.gov/illinoislead

<https://www.atsdr.cdc.gov/csem/csem.html>

<http://www.epa.gov/lead/pubs/leadpdf.pdf>

<https://www.cdc.gov/nceh/lead/tips/sources.htm>

In 2017, a study published by the Environmental Defense Fund (EDF), showed that approximately 20 percent of baby food samples tested from 2003 to 2013 had detectable levels of lead. Detectable levels of lead were found in 89 percent of grape juice samples, 86 percent of sweet potatoes samples, and 47 percent of teething biscuits samples.

<https://www.edf.org/health/lead-food-hidden-health-threat>

Boy Scout neckerchief slides recalled due to lead:

<http://www.wandtv.com/story/39188385/boy-scout-neckerchief-slides-recalled-due-to-lead>

Children at Highest Risk for Lead Exposure

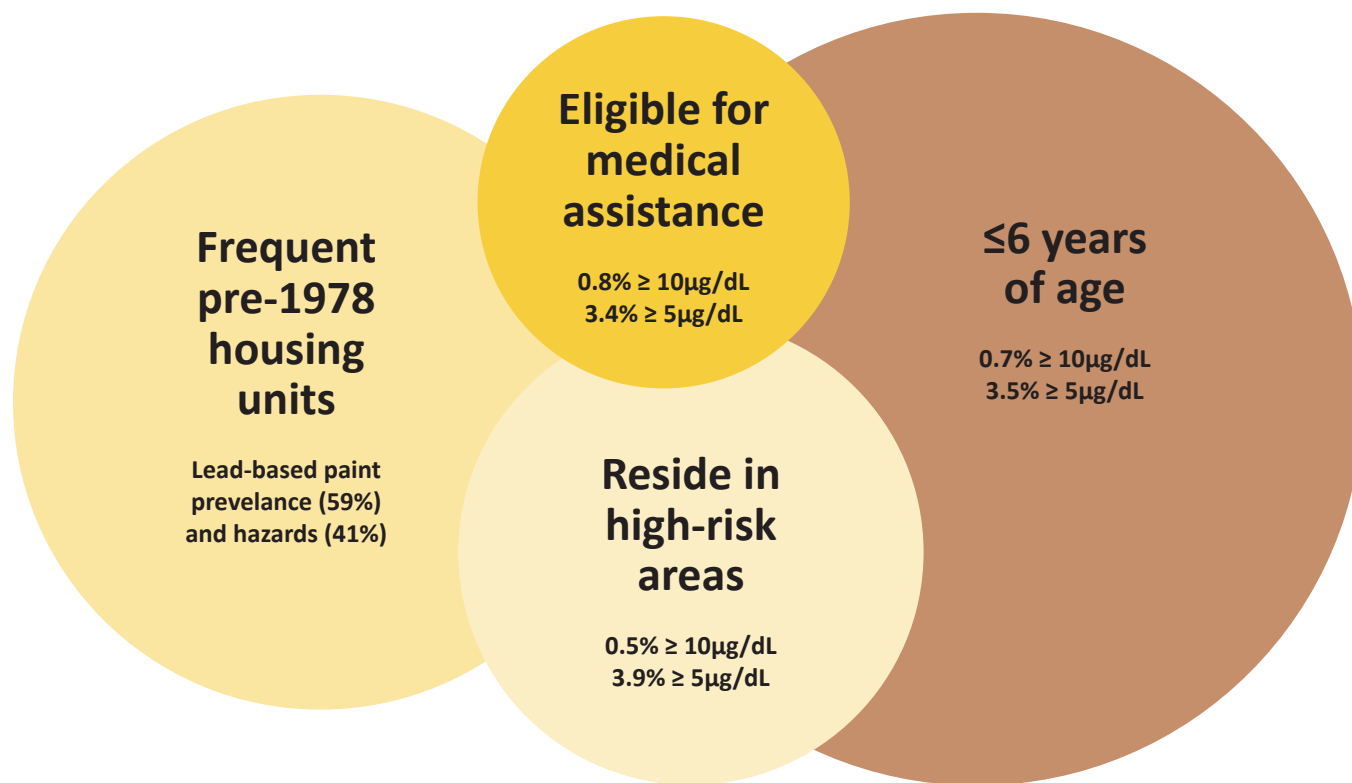


Figure 3: Children at Highest Risk for Blood Lead Exposure

Illinois 2017 Kids Count Profile – The Annie E. Casey Foundation

http://www.aecf.org/m/databook/2017KC_profiles_IL.pdf

Illinois 2017 Healthy Housing Fact Sheet

https://nchh.org/resource-library/Healthy-Housing-Fact-Sheet_IL.pdf

Lead in Water

By Darrah Dunlap, MPH and Brian Cox, PE

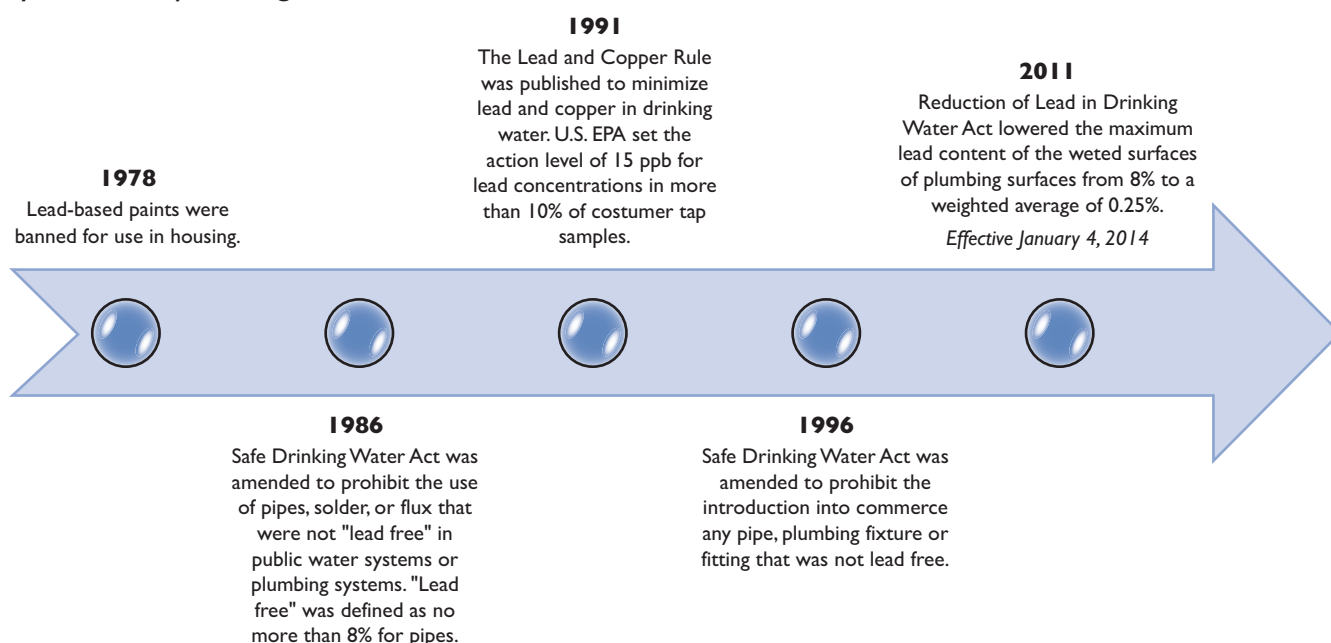
Plumbing and Water Quality Program-Illinois Department of Public Health

Sources of lead in drinking water

Drinking water is one possible source of lead exposure. U.S. EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead. Infants who consume mostly mixed formula can receive 40 to 60 percent of their exposure from drinking water. Lead can enter drinking water through plumbing fixtures, solder, and pipes, including:

- Corroded lead service lines
- Brass faucets or fixtures
- Galvanized pipe and
- Fixtures or piping with lead solder

Buildings or homes constructed before 1987 are more likely to have lead pipes, fixtures, and solder. In 1986, U.S. EPA amended the Safe Drinking Water Act to prohibit the use of lead pipes, solder, and flux in public water systems and plumbing.



Public Act 99-0922

In 2016, the General Assembly and Governor Rauner passed Public Act 99-0922 (the "Act") to address public health concerns associated with lead in drinking water. The Act amended the Illinois Plumbing License Law, the Child Care Act of 1969 and the Environmental Protection Act to initiate a multi-faceted approach to prevent lead in water exposures.

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Illinois Plumbing License Law (225 ILCS/35.5)

- Per the Act, Illinois schools constructed prior to January 1, 1987 were required to submit results of lead in water testing to IDPH by December 31, 2017. In 2017, IDPH received testing results for approximately 2,090 Illinois schools.
- The Illinois Plumbing and Water Quality Program in collaboration with the Illinois Lead Program will utilize the data collected to instruct future actions to reduce lead exposure from drinking water.
- If any sample collected exceeded 5 parts per billion (ppb), schools were required to promptly issue individual notifications to parents or legal guardians, including information such as the sampling location and the U.S. EPA's website for information on lead in drinking water.
- *Child Care Act of 1969 (225 ILCS 10/5.9)*
 - Per the Act, the Illinois Department of Children and Family Services (DCFS) shall adopt rules that prescribe the procedures and standards to be used in assessing levels of lead in water in licensed day care centers, day care homes, and group day care homes constructed on or before January 1, 2000 that serve children under the age of six.
 - In 2017, DCFS published its Policy Guide 2017.13 titled “Lead Testing of Water in Licensed Day Care Facilities,” to inform day care licensing staff and day care providers of requirements for lead in water testing for all day care homes, group day care homes, and day care centers that service children ages birth to six years, constructed on or before January 1, 2000.
- *Environmental Protection Act (415 ILCS)*
 - In accordance with the Act, Illinois community water systems are required to develop a water distribution system material inventory to be submitted to the Illinois Environmental Protection Agency (IEPA) on an annual basis commencing on April 15, 2018 and continuing on each April 15th thereafter until the inventory is completed. Inventories are required to identify the number of all known lead service lines within or connected to the distribution system, including privately owned lead service lines.
 - The following provides a preliminary report of what is known about service lines containing lead in Illinois:
 - 1,649 of 1,740 community water supplies have reported inventory information to IEPA as of August 2018.
 - Of the 3,734,194 total service lines reported 414,886 (11 percent) were constructed of or contain lead and 318,542 were reported as copper service lines potentially with lead solder.
 - Of the reported inventories, 1,503,554 (40 percent) service lines were identified as unknown.
 - The Act additionally requires community water systems to provide individual, written notice to potentially affected residences of construction or repair work on a water main or lead service lines at least 14 days prior to beginning planned work to repair or replace lead service lines. Notifications shall at a minimum include the following:

- A warning that the work may result in sediment, possibly containing lead, in the residence's water supply;
- Information concerning best practices for preventing the consumption of any lead in drinking water (e.g. flushing pipes and removing aerators); and
- Information regarding the dangers of lead for young children.

Lead and Copper Rule (LCR)

Community and non-transient community water supplies are required to monitor concentrations of lead and copper in drinking water at customer taps to comply with the LCR. The U.S. EPA has established an action level of 15 ppb for lead in water. If lead concentrations exceed 15 ppb in more than 10 percent of customer taps sampled, the water system must take actions to optimize corrosion control.

- In 2017, 615 of 1,749 community water supplies were sampled for lead and copper. Ten of these systems were over the 15 ppb lead action level. The water systems were required to make timely notification to all water consumers of the exceedance.
- At the end of 2017, 13 non-transient non-community water systems were over the lead action level. IDPH will continue to engage with these water systems to meet the lead action level and conduct follow-up activities under the LCR.

The 15 ppb action level for a public water system is not a health-based standard. The U.S. EPA action level for lead is utilized as an indicator of the efficacy of the water system's treatment process to minimize the corrosive properties of water being provided to consumers. However, an exceedance also triggers requirements for the water system to inform the public about steps they should take to protect their health. U.S. EPA has established a maximum contaminant level goal (MCLG) of zero for lead in drinking water.

Controlling or eliminating lead exposures

Lead exposure from drinking water can be reduced by:

- Using only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water.
- Removing or regularly cleaning faucet aerators (screens) whenever plumbing is known to contain lead. The screen can trap sediments containing lead.
- Consider using point-of-use filters certified for lead removal (NSF/ANSI Standards 42 and 53). After installation, filters should be maintained and replaced in accordance with the manufacturer's specification.
- Before using water for cooking or drinking, let the tap run until the water is cold.

Removing identified sources of lead is the best strategy to reduce lead concentrations in drinking water. Plumbing materials such as fixtures, piping, fittings, and service lines containing lead may be replaced with other "lead free" materials approved under the Illinois Plumbing Code (77 Ill. Adm. Code 890).

Lead service line replacement

Research indicates that while various components of a plumbing system including piping, fixtures, and solder add to lead concentrations in water; lead service lines are the major contributors to lead levels in drinking water (Sadvig et. al 2008).

A study conducted in Washington D.C. found that children living in homes with lead in at least some part of their service lines were twice as likely as those living in homes without a lead service line to have blood lead levels of 5 to 9 µg/L, and three times as likely as those without a lead service line to have levels at or above 10 µg/L (Stokes et al., 2004). Additionally, the study did not find a statistically significant difference between blood lead levels of children from homes with partial versus full lead service lines, indicating that partial replacements are inadequate in removing the lead exposure.

Local communities throughout the nation are developing and initiating lead service line replacement programs to modernize the outdated U.S. water infrastructure with support from U.S. EPA. In May 2017, IEPA provided one Illinois community a \$1,934,697 loan, all of which was forgiven, to commence a lead service line replacement project. Funds were provided by the Drinking Water State Revolving Fund (SRF). The SRF Program is administered by IEPA and receives a portion of its money to fund projects from U.S. EPA.

Regulations to reduce lead in drinking water

Safe Drinking Water Act: <https://www.epa.gov/sdwa>

U.S. EPA Lead and Copper Rule: <https://www.epa.gov/dwreginfo/lead-and-copper-rule>

Additional resources on lead in drinking water

IDPH - Lead in Water: <http://www.dph.illinois.gov/topics-services/environmental-health-protection/lead-in-water>

U.S. EPA- Basic Information about Lead in Drinking Water: <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#reducehome>

U.S. EPA -3Ts for Reducing Lead in Drinking Water Toolkit: <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water-toolkit>

U.S. EPA - A Consumer Tool for Identifying Point of Use (POU) Drinking Water Filters Certified to Reduce Lead: https://www.epa.gov/sites/production/files/2018-12/documents/consumer_tool_for_identifying_drinking_water_filters_certified_to_reduce_lead.pdf

CDC - Water: <https://www.cdc.gov/nceh/lead/tips/water.htm>

References

Sadvig, A., Kwan, P., Kirmeyer, G., Maynard, B., Mast, D., Trussell, R.R., Prescott, A. (2008). Contribution of service line and plumbing fixtures to lead and copper rule compliance issues. Retrieved from <https://archive.epa.gov/region03/dclead/web/pdf/91229.pdf>.

Stokes L, Onwuche NC, Thomas P, et al., Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water – District of Columbia, 2004; MMWR Weekly, April 2, 2004, 53(12); 268-270.

According to a 2016 study conducted by the American Water Works Association, Illinois has more LSLs than any other state in the U.S.

Lead Prevalence and Pre-1978 Housing

Older homes with deteriorated lead paint continue to be the primary source of lead exposure in Illinois. Approximately 65 percent of Illinois housing units were built prior to the residential lead paint ban of 1978.

Based on a national survey, 59 percent of pre-1978 Illinois housing units have lead-based paint; and 41 percent have significant lead-based paint hazards (Table 1).

Table 1: Estimates of Pre-1978 Housing Units with Lead Hazards in Illinois

Year Structure Built	Illinois Estimate	Prevalence of Lead-based Paint ²		Significant Lead-based Paint Hazard ¹	
		% with Lead	Illinois Units with Lead	% with Lead	Illinois Units with Lead Hazards
1960 to 1977	1,246,636	23.8	296,699	7.7	95,991
1940 to 1959	1,019,357	73.7	751,266	48.7	496,427
Pre-1940	1,175,883	82.6	971,279	68.5	805,480
Pre-1978	3,441,876	59.0	2,030,707	41.0	1,411,169

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-year estimate Year Structure Built Table B25034 , 1 Table 5-1 and 2 Table 4-1, American Healthy Homes Survey, 2011: http://portal.hud.gov/hudportal/documents/huddoc?id=AHHS_REPORT.pdf
https://nchh.org/resource-library/Healthy-Housing-Fact-Sheet_IL.pdf

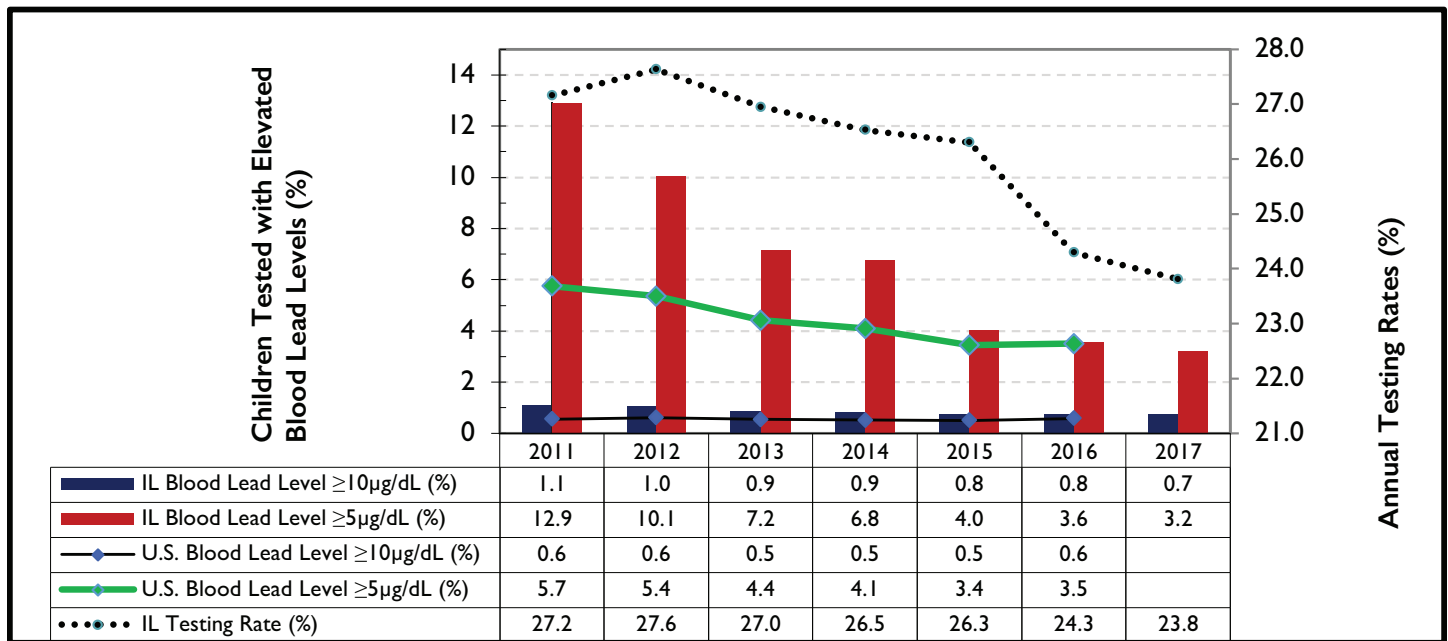
For Illinois counties estimates of pre-1978 housing units with lead hazards, click appendix I here.



Illinois and U.S. Childhood Blood Lead Prevalence: 2011 - 2017

Illinois continues to make progress in reducing childhood blood lead poisoning. Figure 4 represents the percentage of children five years of age and younger at time of testing with BLL $\geq 10\mu\text{g/dL}$ and $\geq 5\mu\text{g/dL}$, respectively. Illinois BLLs $\geq 10\mu\text{g/dL}$ has significantly decreased from 1.1 percent in 2011 to 0.7 percent in 2017.

Figure 4: Illinois and U.S. Children with Elevated Blood Lead Levels 2011 – 2017



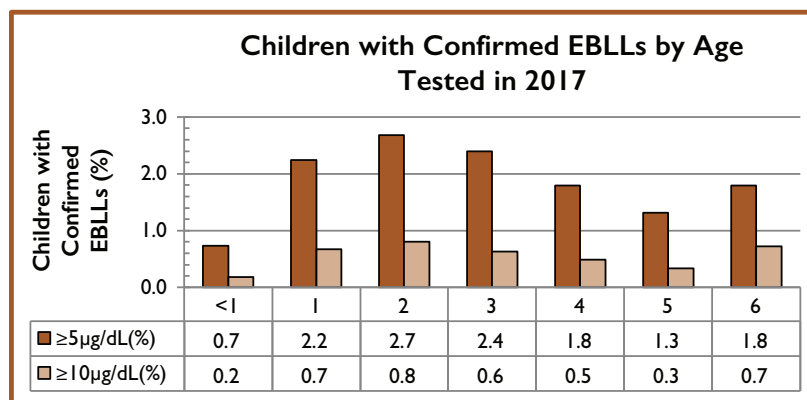
Data Source: Illinois Lead Program Surveillance Data, 2012-2017; Illinois population of five years of age and younger from CDC WONDER; the U.S. average is based on data reported by CDC at <http://www.cdc.gov/nceh/lead/data/national.htm>.

Note: In order to compare with national data compiled by CDC this figure **only** includes children five years of age and younger.

Blood Lead Levels by Age

Illinois law requires physicians to perform a blood lead test on all children six years of age or younger who live in a high-risk area. Of the 1,285 children with confirmed EBLLs ≥ 10 $\mu\text{g}/\text{dL}$, more than 73 percent were between the ages of one and three years (Figure 5). Approximately 40 percent of Illinois children reside in high risk ZIP codes, accounting for almost half of children with EBLLs ≥ 10 $\mu\text{g}/\text{dL}$.

Figure 5: Children with Confirmed Elevated Blood Lead Levels by Age



Every child must be evaluated for lead risk. Illinois law also requires parents or legal guardians to provide a statement from a physician or health care provider that the child has been evaluated and tested for lead exposure if necessary before attending a licensed daycare, kindergarten, or school.

Source: Illinois Department of Public Health - Illinois Lead Program Surveillance Database, 2017.

Confirmed EBLLs only include venous blood lead test results.

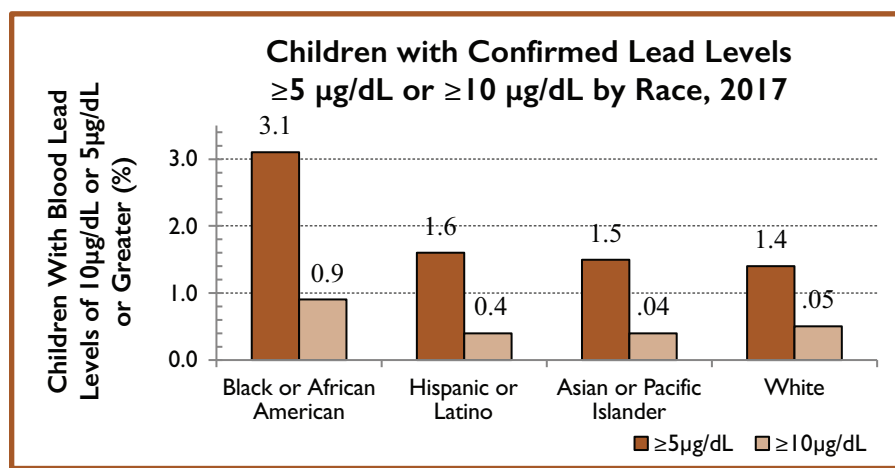
For more details on blood lead levels by age, click [appendix 2 here](#).



Blood Lead Levels by Race/Ethnicity

Black children are disproportionately affected by lead poisoning compared to their White or Hispanic counterparts. Of the 7,273 children tested in 2017 with EBLs at the federal reference value ≥ 5 $\mu\text{g}/\text{dL}$, 4,477 were confirmed. Of those confirmed, 33 percent were Black compared to 20 percent Hispanic, and 23 percent White. Similarly, of the 1,287 children with confirmed EBLs ≥ 10 $\mu\text{g}/\text{dL}$, 32 percent were Black compared to 17 percent Hispanic, and 26 percent White.

Figure 6: Childhood Blood Lead Levels by Race



Source: Illinois Department of Public Health - Illinois Lead Program Surveillance, 2017. Confirmed EBLs only includes venous blood lead test result

Race status for all children tested and recorded identified 32 percent (72,372) White, 21 percent (47,374) Black, 24 percent (55,609) Hispanic or Latino, 4.0 percent (8,810) Asian or Pacific Islander, 0.1 percent for American Indians/Alaskan Native.

Of the confirmed BLLs ≥ 5 $\mu\text{g}/\text{dL}$, 3.1 percent of 47,374 were Black, 1.4 percent of 72,372 were White, and 1.6 percent of 55,609 Hispanic or Latino (Figure 6).

For more details on blood lead levels by race/ethnicity, click [appendix 3 here](#).

Healthy Housing and Lead Poisoning Surveillance System (HHPSS)

During December 2017, IDPH implemented the CDC-sponsored, Healthy Housing and Lead-based Surveillance System (HHPSS) to replace the previous antiquated blood lead tracking application. HHPSS is a centralized web-based system that provides more immediate access to test results and collaboration between IDPH and its delegate agencies. HHPSS provides tools for delegate agencies to track and manage:

- blood lead surveillance;
- environmental investigations, abatements, and remediation; and
- case-management activities.

Estimated Population and Children Tested for Blood Lead by County and Delegate Agencies

In 2017, BLLs in children ranged from 1.0 µg/dL to 149 µg/dL with a mean of 1.9 µg/dL. The most frequent reading was 1.0 µg/dL. Table 2 reflects the number of children tested in 2017, as well as those retested for follow-up by county, lead level, and blood specimen collection type.

In 2017, there were 1,670 Illinois children six years of age and younger identified with a BLL ≥ 10 µg/dL, and 1,287 (77 percent) of them were confirmed with a venous test. Of those confirmed, 610 were identified for the first time in 2017.

Approximately 54 percent of Illinois children have received at least one test in their lifetime (*Children Ever Tested as of December 31, 2017 in below chart*).

Table 2: Children Tested for Blood Lead by County and Delegate Agencies in 2017

Illinois/ County/ Delegate Agency	Estimated Population 6 Years of Age and Younger ^a	All Children Tested in 2016				All Children Tested in 2017				Children Ever Tested as of December 31, 2017 (%)
		Total Tested 2016	Capillary and Venous in µg/dL (%) ^b			Total Tested 2017	Capillary and Venous in µg/dL (%) ^b			
			N	<5	5-9		≥10	N	<5	
Illinois	1,103,797	237,253	96.5	2.8	0.8	229,203	96.8	2.4	0.7	54
Adams	5,960	1,513	89.0	8.5	2.4	1,306	90.4	7.9	1.8	68
Alexander	648	128	90.6	5.5	3.9	96	86.5	8.3	5.2	59
Bond	1,120	227	97.8	0.9	1.3	212	96.7	2.4	0.9	64
Boone	4,367	930	98.1	1.1	0.9	1,020	98.0	1.3	0.7	54
Brown	404	68	91.2	7.4	1.5	77	90.9	6.5	2.6	63
Bureau	2,605	394	91.9	5.8	2.3	510	93.7	4.3	2.0	57
Calhoun	369	27	96.3	3.7	0.0	32	100.0	0.0	0.0	37
Carroll	956	248	94.4	3.6	2.0	239	93.7	4.6	1.7	65
Cass	1,065	283	92.9	4.9	2.1	254	92.9	6.3	0.8	79
Champaign	15,925	2,005	98.6	1.2	0.2	1,687	99.2	0.5	0.3	47
Christian	2,622	620	96.9	2.9	0.2	593	97.8	1.7	0.5	69
Clark	1,329	275	97.1	2.9	0.0	274	97.8	2.2	0.0	67
Clay	1,136	277	93.9	5.8	0.4	292	91.4	7.5	1.0	77
Clinton	2,884	363	99.2	0.3	0.6	344	98.0	1.5	0.6	39
Coles	3,566	892	97.1	2.2	0.7	851	97.2	2.5	0.4	75
Cook w/o	211,323	40,023	98.0	1.6	0.4	41,159	98.2	1.3	0.4	22
Chicago	253,669	90,571	96.8	2.5	0.7	84,209	97.3	2.1	0.6	70
Crawford	1,471	254	96.5	2.8	0.8	243	95.9	2.9	1.2	59
Cumberland	943	166	97.6	2.4	0.0	164	95.7	3.0	1.2	54
DeKalb	8,525	1,396	98.3	1.3	0.4	1,302	97.8	1.5	0.6	41
DeWitt	1,205	205	87.8	10.7	1.5	212	91.0	8.5	0.5	50
Douglas	1,900	252	94.4	2.8	2.8	255	96.9	2.4	0.8	47
DuPage	78,007	7,388	98.3	1.2	0.5	7,119	98.4	1.2	0.4	29
Edgar	1,285	321	95.0	3.4	1.6	304	93.8	4.6	1.6	75
Edwards	514	88	96.6	2.3	1.1	95	97.9	1.1	1.1	55

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		Total Tested 2016	Capillary and Venous in µg/dL (%) ^b			Total Tested 2017	Capillary and Venous in µg/dL (%) ^b			
			N	<5	5-9		≥10	N	<5	
Illinois	1,103,797	237,253	96.5	2.8	0.8	229,203	96.8	2.4	0.7	54
Effingham	3,102	479	96.7	3.1	0.2	508	97.2	2.2	0.6	43
Fayette	1,673	349	96.3	3.2	0.6	344	96.8	3.2	0.0	66
Ford	1,105	154	88.3	9.7	1.9	169	92.9	5.3	1.8	49
Franklin	3,357	582	91.6	8.2	0.2	722	95.2	4.0	0.8	54
Fulton	2,447	406	91.4	6.4	2.2	382	94.5	4.2	1.3	51
Gallatin	354	93	97.8	2.2	0.0	74	97.3	2.7	0.0	75
Greene	1,029	236	94.9	4.7	0.4	219	96.3	2.7	0.9	71
Grundy	4,529	513	96.3	3.3	0.4	517	94.6	4.8	0.6	31
Hamilton	664	115	98.3	1.7	0.0	119	97.5	2.5	0.0	60
Hancock	1,380	239	93.3	5.0	1.7	241	92.1	7.9	0.0	65
Hardin	280	50	88.0	12.0	0.0	41	100.0	0.0	0.0	52
Henderson	479	68	91.2	8.8	0.0	78	96.2	3.8	0.0	50
Henry	3,890	762	92.7	6.0	1.3	800	91.3	7.3	1.5	60
Iroquois	2,191	313	93.6	3.8	2.6	338	94.7	3.6	1.8	53
Jackson	4,210	1,010	98.0	1.7	0.3	964	98.0	1.8	0.2	62
Jasper	836	92	96.7	3.3	0.0	103	97.1	2.9	0.0	40
Jefferson	3,344	537	95.7	3.4	0.9	589	95.8	4.1	0.2	53
Jersey	1,648	430	97.9	1.6	0.5	383	95.6	3.9	0.5	78
Jo Daviess	1,460	220	95.5	2.7	1.8	327	95.7	3.7	0.6	47
Johnson	813	171	87.1	12.3	0.6	131	95.4	0.8	3.8	51
Kane	49,807	11,460	97.0	2.4	0.6	11,918	97.2	2.2	0.6	54
Kankakee	9,429	2,198	95.4	3.7	0.9	2,181	96.1	3.0	0.9	63
Kendall	12,948	786	98.3	1.4	0.3	678	98.5	1.5	0.0	19
Knox	3,642	846	89.5	7.4	3.1	487	83.2	12.9	3.9	64
Lake	59,737	8,159	98.4	1.3	0.3	7,488	98.4	1.3	0.4	37
LaSalle	8,456	1,544	93.6	4.8	1.6	1,566	94.0	4.1	1.9	52
Lawrence	1,216	259	94.2	3.1	2.7	243	93.4	2.9	3.7	73
Lee	2,482	171	94.7	4.1	1.2	352	97.7	2.0	0.3	27
Livingston	2,780	526	94.9	4.6	0.6	557	96.8	2.9	0.4	56
Logan	2,034	372	94.9	4.0	1.1	325	95.1	4.3	0.6	55
McDonough	2,066	401	92.0	5.0	3.0	387	93.5	4.1	2.3	64
McHenry	24,299	1,881	97.4	2.3	0.3	1,986	98.4	1.3	0.3	23
McLean	14,521	3,032	96.2	3.1	0.7	2,915	95.6	3.4	1.0	67
Macon	9,235	2,600	89.6	8.3	2.1	2,655	90.3	7.7	2.0	64
Macoupin	3,290	656	94.2	3.8	2.0	586	93.9	4.1	2.0	59
Madison	22,060	4,171	97.0	2.4	0.6	3,799	97.2	2.1	0.7	51
Marion	3,365	706	94.5	4.4	1.1	874	95.4	4.0	0.6	70
Marshall	883	240	91.7	6.7	1.7	112	83.0	12.5	4.5	58
Mason	996	231	88.3	8.7	3.0	238	83.2	12.6	4.2	67
Massac	1,215	138	92.8	6.5	0.7	153	96.7	3.3	0.0	41
Menard	963	95	95.8	4.2	0.0	112	92.0	7.1	0.9	38

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		Total Tested 2016	Capillary and Venous in µg/dL (%) ^b			Total Tested 2017	Capillary and Venous in µg/dL (%) ^b			
			N	<5	5-9		≥10	N	<5	
Illinois	1,103,797	237,253	96.5	2.8	0.8	229,203	96.8	2.4	0.7	54
Mercer	1,158	230	91.3	6.5	2.2	265	94.7	2.6	2.6	72
Monroe	2,534	333	94.0	6.0	0.0	253	97.6	2.0	0.4	40
Montgomer	2,181	479	96.5	2.9	0.6	426	96.9	2.6	0.5	67
Morgan	2,570	631	91.8	6.3	1.9	574	93.7	4.5	1.7	74
Moultrie	1,346	173	95.4	3.5	1.2	216	97.7	0.9	1.4	42
Ogle	3,818	444	96.6	2.7	0.7	533	97.0	2.4	0.6	35
Peoria	18,122	2,124	89.5	8.3	2.2	2,126	86.5	10.1	3.4	45
Perry	1,506	313	93.3	6.4	0.3	319	93.1	6.0	0.9	64
Piatt	1,255	151	94.7	5.3	0.0	142	97.2	2.1	0.7	41
Pike	1,224	253	94.9	4.3	0.8	298	94.0	4.4	1.7	71
Pope	180	32	87.5	12.5	0.0	25	100.0	0.0	0.0	55
Pulaski	417	68	94.1	5.9	0.0	62	96.8	3.2	0.0	51
Putnam	347	68	100.0	0.0	0.0	70	100.0	0.0	0.0	48
Randolph	2,320	370	96.5	3.2	0.3	388	98.2	1.8	0.0	52
Richland	1,360	214	94.9	4.7	0.5	225	92.9	5.8	1.3	49
Rock Island	12,901	2,949	91.9	6.2	1.9	2,674	93.6	4.6	1.8	67
St. Clair w/o ESHD	17,044	2,386	97.0	2.4	0.6	2,443	97.8	1.7	0.5	30
Saline	2,014	507	95.5	3.9	0.6	518	95.9	2.7	1.4	76
Sangamon	16,703	2,810	93.6	5.1	1.4	2,704	94.1	4.8	1.1	51
Schuyler	437	83	91.6	8.4	0.0	94	96.8	1.1	2.1	70
Scott	328	124	92.7	4.8	2.4	88	89.8	8.0	2.3	78
Shelby	1,660	282	95.4	4.3	0.4	291	97.3	2.4	0.3	51
Stark	416	129	87.6	8.5	3.9	79	84.8	11.4	3.8	76
Stephenson	3,587	1,161	86.3	8.6	5.1	1,132	88.6	8.1	3.3	77
Tazewell	11,421	1,437	96.8	2.4	0.8	443	90.1	6.8	3.2	40
Union	1,316	213	94.4	5.2	0.5	187	96.3	3.2	0.5	53
Vermilion	7,467	1,501	97.1	2.4	0.5	1,337	95.7	3.5	0.8	62
Wabash	905	185	90.3	6.5	3.2	183	94.5	3.8	1.6	66
Warren	1,566	350	92.3	4.9	2.9	275	88.7	7.6	3.6	66
Washington	1,046	145	95.2	2.8	2.1	136	98.5	1.5	0.0	38
Wayne	1,360	313	96.5	2.9	0.6	273	95.6	4.0	0.4	60
White	1,272	235	95.3	3.4	1.3	202	94.1	5.0	1.0	62
Whiteside	4,661	1,059	94.5	4.0	1.5	1,000	94.6	4.3	1.1	67
Will	58,874	9,873	97.4	2.2	0.4	9,370	97.8	1.8	0.4	40
Williamson	5,440	1,075	89.4	9.9	0.7	1,093	93.3	5.7	1.0	52
Winnebago	24,920	4,824	94.9	3.9	1.2	6,240	95.8	3.0	1.1	59
Woodford	3,497	451	96.9	1.6	1.6	214	94.9	4.7	0.5	41
Egyptian ¹	3,661	835	95.7	3.6	0.7	794	95.6	3.3	1.1	72
ESHD ²	6,611	3,073	94.6	4.2	1.2	2,795	95.9	3.5	0.6	92
Evanston	6,043	1,297	97.0	2.4	0.6	1,621	98.2	1.2	0.6	69

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		Total Tested 2016	Capillary and Venous in µg/dL (%) ^b			Total Tested 2017	Capillary and Venous in µg/dL (%) ^b			
			N	<5	5-9		≥10	N	<5	
Illinois	1,103,797	237,253	96.5	2.8	0.8	229,203	96.8	2.4	0.7	54
Oak Park	4,837	1,040	95.4	3.7	1.0	865	96.5	2.9	0.6	58
Skokie	4,980	870	98.2	1.7	0.1	1,118	98.1	1.4	0.4	53
Southern Seven ³	4,996	800	91.3	7.8	1.0	695	95.3	3.2	1.6	50
Stickney	583	110	99.1	0.9	0	114	99.1	0.9	0.0	40

Source: Illinois Department of Public Health – Illinois Lead Program Surveillance Database 2016 and 2017. ^aPopulation data compiled from bridged-race Vintage 2017 (2010-2017) post-censal population estimates (released by NCHS June 27, 2018) accessed at <https://wonder.cdc.gov/bridged-race-v2017.html> on September 5, 2018. ^bCapillary or venous blood draw. ^cConfirmed test in Illinois is a venous blood draw. Actual numbers are available at IDPH. Due to rounding, decimals may not add up perfectly.

¹Egyptian Counties: Gallatin, Saline, and White

²ESHD or East Side Health District includes the cities of Alorton, Brooklyn, Cahokia, Centreville, East St. Louis, Lovejoy, National Stock Yards, Sauget, Washington Park and Fairmont City. Source: U.S. Census Bureau, 2010 Census. Single Years of Age and Sex: Summary File 1, Table PCT12. QT-P2

³Southern Seven Counties: Alexander, Hardin, Johnson, Massac, Pope, Pulaski and Union

In 2017, most laboratories that analyzed blood lead were able to quantify and accurately report levels <5µg/dL compared to previous years. While the current acceptable error range is ±4µg/dL, most laboratories that do blood lead analyses perform at an error range within ±2µg/dL. The portable desktop blood-lead analyzers operate within ±3µg/dL error range. As required by the Act (410 ILCS 45/7), all health care providers are required by law to report all blood lead test results to IDPH. If a child has multiple tests, the highest venous result is selected. If there is no venous test on a child, the peak capillary blood lead result is selected.

As of December 31, 2017, approximately 54 percent of children aged six years of age or younger have been tested for blood lead at least once in their lifetime. In 2017, 58 percent of Illinois children tested were two years of age or younger and accounted for 63 percent of the children with BLLs ≥10 µg/dL. Based on the children two years of age or younger tested, 54 percent of Illinois counties and/or delegate agencies had blood lead prevalence above the state level ranging from 0.9-6.0 percent. Positively, 24 counties/delegate agencies had no child younger than three years of age with BLLs ≥10 µg/dL.

For Illinois counties estimates of pre-1978 housing units with lead hazards, click appendix 1 here.

For details on blood lead testing activities in Illinois, Chicago, and the United States, click appendix 4 here.

For new confirmed cases identified for the first time in 2017, click appendix 5 here.

Children's products: No person, firm, or corporation shall sell, have, offer for sale, or transfer the items... that is more than 0.004% (40 parts per million) but less than 0.06% (600 parts per million) by total weight or a lower standard for lead content as may be established by federal or State law or rule unless that item bears a warning statement...shall contain at least the following: "WARNING: CONTAINS LEAD. MAY BE HARMFUL IF EATEN OR CHEWED. COMPLIES WITH FEDERAL STANDARDS" (410 ILCS 45/6) (from Ch. 111 1/2, par. 1306) Sec. 6.b)

Lead Levels of Children by Medicaid Status

Medical assistance programs refer to the authorized Social Security Acts of Title XIX that include Medicaid, All Kids, and Moms & Babies, which are administered by HFS.

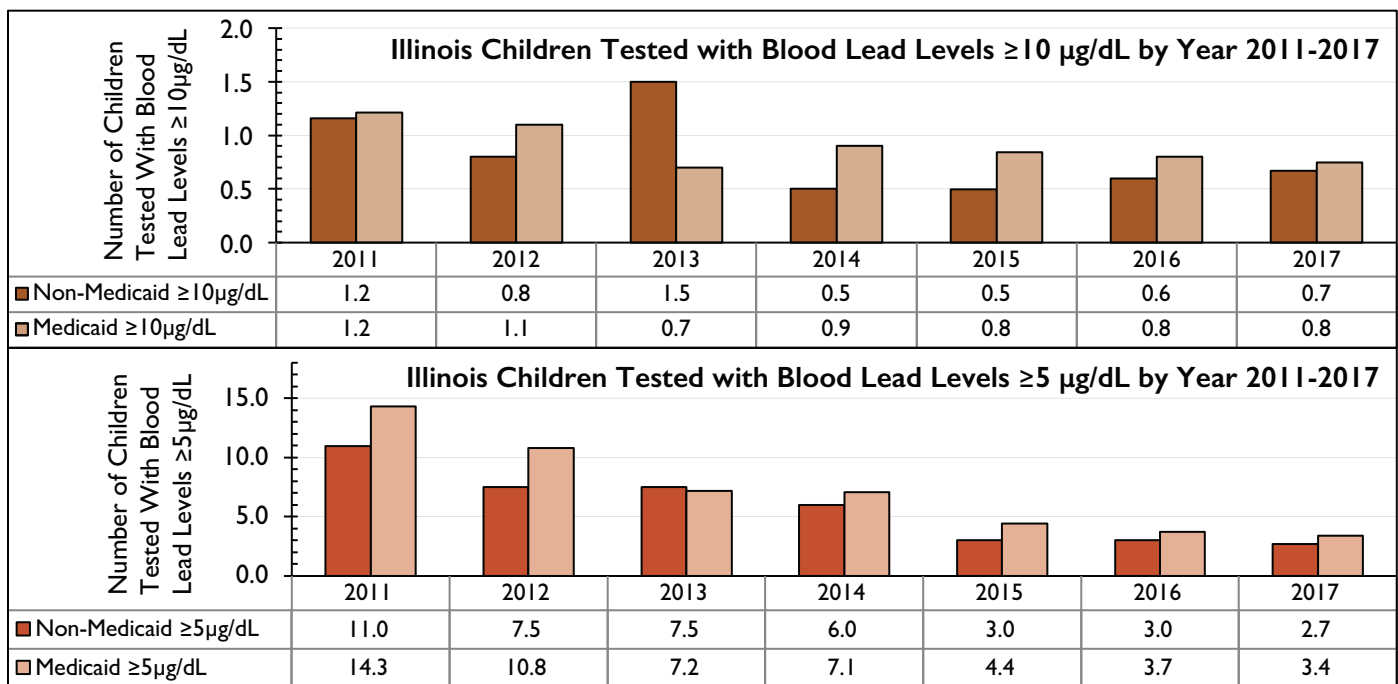
<https://www.illinois.gov/hfs/MedicalPrograms/AllKids/Pages/default.aspx>

Access Provider Handbook (HK 203.3.1) at: <https://www.illinois.gov/hfs/SiteCollectionDocuments/hk200.pdf>

State and federal mandates require that all children enrolled in HFS' medical programs be considered at-risk for lead exposure and receive a blood lead test prior to 12 and 24 months of age. If a child is 3-6 years of age and has not been tested, a blood lead test is required. All children enrolled in HFS Medical Programs are expected to be tested regardless of where they live.

Of all children tested in 2017, 69 percent were Medical Assistance Program recipients. Of the Medicaid recipients tested, 3.4 percent had lead levels $\geq 5 \mu\text{g/dL}$ compared to 2.3 percent for non-recipients. Of all children tested in 2017 with BLLs $\geq 5 \mu\text{g/dL}$, 74 percent were Medicaid-enrolled and 26 percent were non-Medicaid. Figure 7 highlights the significant decrease in elevated blood lead levels among Illinois children regardless of Medicaid eligibility status.

Figure 7: Children Tested with Elevated Blood Lead Level by Medicaid Status: 1997-2017



Source: Illinois Department of Public Health-Illinois Lead Program Surveillance Database: 2011-2017 and the Illinois Department of Healthcare and Family Services Enterprise Data Warehouse

For Medicaid and non-Medicaid enrolled children tested for blood lead by county, click [appendix 6 here](#).



Blood Lead Levels in Refugee Children

IDPH's Center for Minority Health Services Refugee Health Assessment Program monitors the testing of refugee children for blood lead poisoning following CDC guidelines as part of the initial domestic refugee health assessment.

Table 3: BLLs in Refugee Children ≤6 Years of Age in 2017

Number of Refugee Children	N	%
Total number of Refugee children who completed the initial health assessment	285	
Children who completed the initial health assessment including a blood lead test	257	90
BLL ≥5 µg/dL	49	19

In 2017, there were 285 refugee children six years of age and younger at the time of testing who completed the initial health assessment in Illinois. Of those assessed, 257 children (90 percent) had blood lead results recorded in the IDPH Refugee Health Assessment Database (Table 3). Case management services and environmental assessments are being conducted by delegated agency staff for lead-poisoned children with confirmed EBLLs ≥ 10 µg/dL. In collaboration with IDPH, these delegate agencies provided outreach and education to health care providers, families of lead-poisoned children, and the general public.

Source: Illinois Department of Public Health –

For more information on the Refugee Health Assessment Program, go to <http://www.dph.illinois.gov/topics-services/life-stages-populations/minority-health>

<http://dph.illinois.gov/sites/default/files/publications/publicationscmh2015-refugee-program-ar.pdf>

Beware of lead in some cultural products, i.e.: pay-loo-ah, daw tway gaw mo, greta, azarcon, litargirio, surma, tiro (tozali or kwalli), lozeena, tamarind, lead-glazed ceramics, make-up and beauty products.



Adult Blood Lead Registry

The Program and Adult Blood Lead Registry (ABLR) comprise the Illinois blood lead surveillance (Figure 8).

Figure 8: Illinois Blood Lead Surveillance Programs



The Adult Blood Lead Registry (ABLR), maintained by the Division of Epidemiologic Studies, collects blood lead data for adults 16 years of age and older and notifies federal enforcement agencies to trigger inspections and/or interventions. Laboratories are now mandated to report levels of ≥ 10 $\mu\text{g/dL}$.

- ABLR made seven referrals to the Occupational Safety and Health Administration (OSHA) for seven companies with employees who had BLL ≥ 40 $\mu\text{g/dL}$ in calendar year 2017. These quarterly ABLR reports to OSHA led to one safety inspection that resulted in proposed fines totaling \$220,497 in OSHA violations.
- ABLR notified OSHA within 24 hours of any case with an EBLL ≥ 60 $\mu\text{g/dL}$.
- Data collection and OSHA notification continues at ≥ 40 $\mu\text{g/dL}$ BLL.
- During the 2017 calendar year, 2,461 lab reports were added to the ABLR database, which now contains 19,206 records.

Illinois Health and Hazardous Substances Registry Annual Reports, Section 5.1:

<http://dph.illinois.gov/sites/default/files/publications/publicationsoppsfy16-ihhsr-annual-report.pdf>

<http://dph.illinois.gov/sites/default/files/publications/publicationsoppsimmb-vol-4-issue-1.pdf>

Data on 14,000 adults showed that an increase of 1 to 6.7 micrograms of lead per deciliter of blood (5 $\mu\text{g/dL}$) was significantly associated with an increase in mortality of 37% for all-causes, 70% for cardiovascular, and 108% for ischemic heart disease.....Lanphear et al., 2018

For information on the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), read WIC Participation and Blood Lead Levels among Children 1–5 Years: 2007–2014 <https://ehp.niehs.nih.gov/EHP2384/>

Blood Lead Testing During Pregnancy

Each one $\mu\text{g}/\text{dL}$ increase in umbilical cord blood lead was found to be associated with a reduction of 0.6 points in the mental development index scores of the Bayley Scales of Infant Development at age three months, with similar results at age six months (Dietrich et. al. 1987).

In October 2015, the Program started collecting blood lead data for pregnant women in accordance with Section 6.2 of the Act. <http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1523&ChapterID=35>

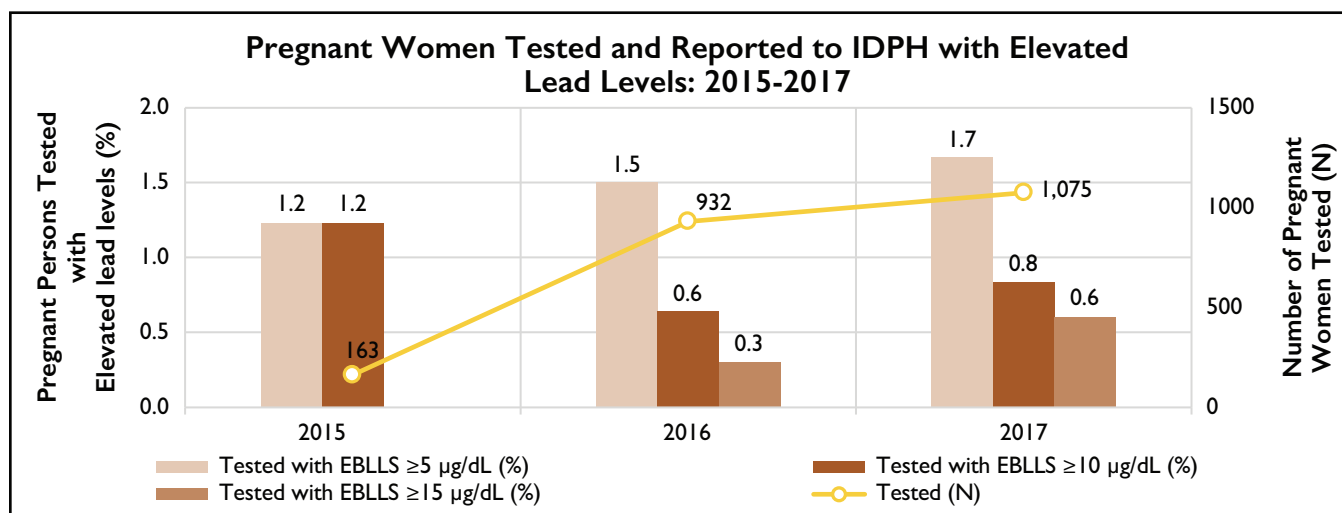
Preliminary prenatal blood lead data collected from October 2015 to December 2017 is displayed on Table 4 and figure 9.

Table 4: Prenatal Blood Lead Levels: 2015-2017

Mean Age (years)	26		
Age Range (Years)	15 - 54		
Mean BLL	2.5		
BLL, $\mu\text{g}/\text{dL}$	N	Capillary, %	Venous, %
<5	2,048	91.9	7.2
≥ 5	34	97	2.9
Pregnant Persons Tested	2,111	91.1	7.4

Source: Illinois Department of Public Health - Illinois Lead Program Database 2017. **This is an ongoing study.*

Figure 9: Prenatal Tests Reported to IDPH with Elevated Lead Levels: 2015-2017



Source: Illinois Department of Public Health - Illinois Lead Program Database 2017. **This is an ongoing study.*

More information

Stotland NE, Sutton P, Trowbridge J, Atchley DS, Conry J, et al. (2014) Counseling Patients on Preventing Prenatal Environmental Exposures - A Mixed-Methods Study of Obstetricians. PLoS ONE 9(6): e98771. doi:10.1371/journal.pone.0098771

https://www.researchgate.net/publication/263394111_Counseling_Patients_on_Preventing_Prenatal_Environmental_Exposures_-_A_Mixed-Methods_Study_of_Obstetricians

For every 5 $\mu\text{g}/\text{dL}$ increase in prenatal/childhood blood lead level, there is a higher risk of being arrested for a violent crime as a young adult by almost 50 percent

<https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0050101>

Lead Poisoning Prevention Activities

A. Educational Activities

The Program's regional nurses and the education coordinator conducted six lead poisoning prevention training sessions throughout the state. Topics covered in the training included:

- Case management and case follow-up
- Health effects and treatment of lead poisoning
- Specimen collection, submission, and analysis at IDPH's Division of Laboratories
- Outreach and education activities
- Environmental case follow-up and compliance investigations for lead-poisoned children

In early 2017, program staff began training for the implementation of the web-based HHLPS data collection system, provided by CDC, which replaced the STELLAR program. Web-based training modules were developed for delegates as well.

Childhood lead exposure can be minimized or prevented through increased public awareness.

1. Apply lead-safe work practices when disturbing lead-based paint.
2. Keep play, study, and living areas of children clean.
3. Assure that children consume a healthy diet that includes calcium and iron.
4. Apply prevention strategies that integrate health education and affordable housing, developed by the National Center for Healthy Housing in the blueprint for lead poisoning.
5. Utilize educational interventions for children affected by lead such as the one developed by the National Center for Environmental Health by an expert panel of CDC and non-CDC authors
http://www.cdc.gov/nceh/lead/publications/Educational_Interventions_Children_Affected_by_Lead.pdf
6. Ensure that all children ages six and younger receive an evaluation for lead exposure and are tested if necessary.

For more lead poisoning prevention tips, visit CDC at <http://www.cdc.gov/nceh/lead/tips.htm>.

B. Lead Licensees

IDPH is responsible for administration and enforcement of the Act. IDPH requires any person who wishes to conduct lead services in a regulated facility in Illinois to be appropriately licensed. The Program reviews and issues lead licenses for the following: lead abatement workers, lead abatement supervisors, lead inspectors, lead risk assessors, lead abatement contractors, and lead training course providers. Licenses expire annually and must be renewed (Table 5).

For a list of licensed lead abatement contractors click [here](#).

For a list of licensed risk assessors and inspectors click [here](#).

Table 5: Lead Licenses Issued 2014-2017

	2014			2015			2016			2017		
	Total	New	Renewed	Total	New	Renewed	Total	New	Renewed	Total	New	Renewed
Worker	871	247	624	950	217	733	753	201	552	805	187	618
Supervisor	406	20	386	506	45	461	413	33	380	412	13	399
Inspector	62	9	53	64	5	59	45	5	40	73	9	64
Risk Assessor	308	16	292	349	18	331	265	26	239	430	57	373
Contractor	164	15	149	168	18	150	160	15	145	154	7	147

Source: Illinois Department of Public Health - Illinois Lead Program Database 2014-2017

Lead training course providers are required to submit notification of all lead courses to IDPH no later than seven calendar days prior to the start of all IDPH approved courses (Table 6).

Table 6: Total Number of Notifications and Actual Lead Courses Held in 2014-2017

Class notifications and courses held*	2014	2015	2016	2017
Notifications of upcoming lead courses received by the IDPH	408	390	382	639
Actual number of lead courses held	207	262	220	524

Source: Illinois Department of Public Health - Illinois Lead Program Database 2014-2017.

*These numbers do not include RRP courses

For approved training providers, go to: https://data.illinois.gov/dataset/569lead_training_course_provider_list

Home inspections by regional office or delegate agency staff were all triggered by an elevated blood lead level $\geq 10 \mu\text{g/dL}$. Lead inspection/risk assessment can also be triggered when a HUD inspector conducts a general inspection of the home and finds chipping, cracking, or peeling paint. The homeowner is required to seek out a licensed professional to conduct the risk assessment.

C. Intervention - Case Management of Children with Elevated Blood Lead Levels

In 2017, IDPH had grant agreements with 86 delegate agencies to provide case management care for lead-poisoned children with confirmed EBLLs ≥ 10 $\mu\text{g}/\text{dL}$ in 92 of 102 counties (Figure 10). In collaboration with IDPH, these delegate agencies provided outreach and education to health care providers, families of lead-poisoned children, and the general public. Case management activities included a home visit by a public health nurse who provided:

- Information regarding lead poisoning prevention
- Nutritional counseling
- Information on follow-up blood testing
- Education on proper housekeeping
- Referrals to appropriate services linked to medical and developmental testing

For questions frequently asked during a case management home visit, [click here](#).

Local health departments that do not partner with the Illinois Lead Program are considered non-delegate agencies. There were 10 non-delegate agencies where case management services were provided by the IDPH Lead Program Regional Nurse Consultants (Figure 10).

IDPH had grant agreements with 22 delegate agencies to provide environmental inspection services in addition to case management services (Figure 10).



D. Intervention - Children Identified with Elevated Blood Lead Levels by Region

Investigations by regional offices and delegate agencies are all triggered by elevated blood lead levels. There are six environmental regional offices at IDPH and 86 delegate agencies. In 2017, a total of 3,069 children were identified for the first time with confirmed venous BLLs ≥ 5 $\mu\text{g/dL}$ and 808 of those children had BLLs ≥ 10 $\mu\text{g/dL}$ (Table 7 and Figure 11).

Table 7: Children Tested for Blood Lead by Region in 2017

Children Tested for Blood Lead		Champaign	Edwardsville	Marion	Peoria	Rockford	West Chicago	TOTAL (N) ³
Children Tested for the first time		8,267	5,782	10,010	9,261	7,770	90,879	131,974
New confirmed cases (venous) identified for the first time in 2016 (Incidence)	≥ 10 $\mu\text{g/dL}$	44	44	82	78	57	503	808
	≥ 5 $\mu\text{g/dL}$	130	126	241	300	188	2,051	3,036
All confirmed cases in 2017 (Prevalence)	≥ 10 $\mu\text{g/dL}$	74	39	75	215	114	770	1,287
	≥ 5 $\mu\text{g/dL}$	231	93	242	665	375	2,873	4,479
Environmental Investigations and Follow Up Conducted by Regional Environmental Health Specialist ^{**}		4	148	101	*	53	41	*

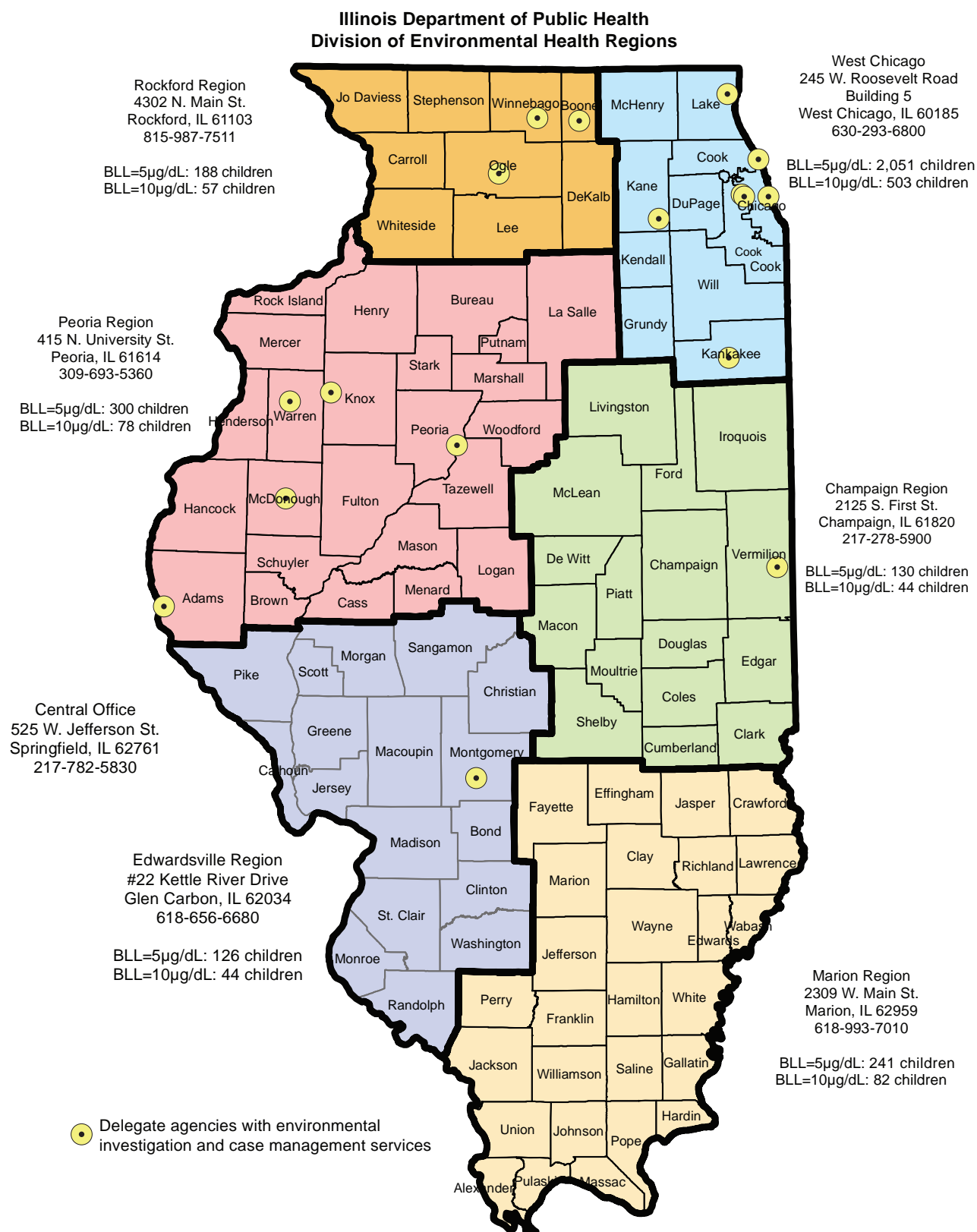
Source: Illinois Department of Public Health – Illinois Lead Program Surveillance Databases 2017. Five children had missing addresses. *incomplete data: **Does not include investigations by delegate agencies

The six environmental regional offices of IDPH each have lead risk assessors who conducted home inspections for children with a confirmed EBLL ≥ 10 $\mu\text{g/dL}$ in areas not covered by a delegate agency agreement. The risk assessor conducted a comprehensive risk assessment and developed appropriate reports. The reports were provided to the property owners who were then required to submit a mitigation plan to IDPH or the delegate agency for review and approval. Certificates of compliance were issued following the successful completion of mitigations and/or abatements and follow-up inspections. Reasons for case closures included:

- No lead hazard identified
- Residence or occupant not located
- Regulated facility demolished, or
- Administrative determination made by delegate agencies with environmental services

Environmental remediation is required by law when a lead hazard has been identified in a home where a child with an EBLL lives or frequents. Remediation is necessary to prevent on-going exposure to lead hazards. Children who receive medical chelation and return to an environment where lead hazards still exist remain at risk for further exposure.

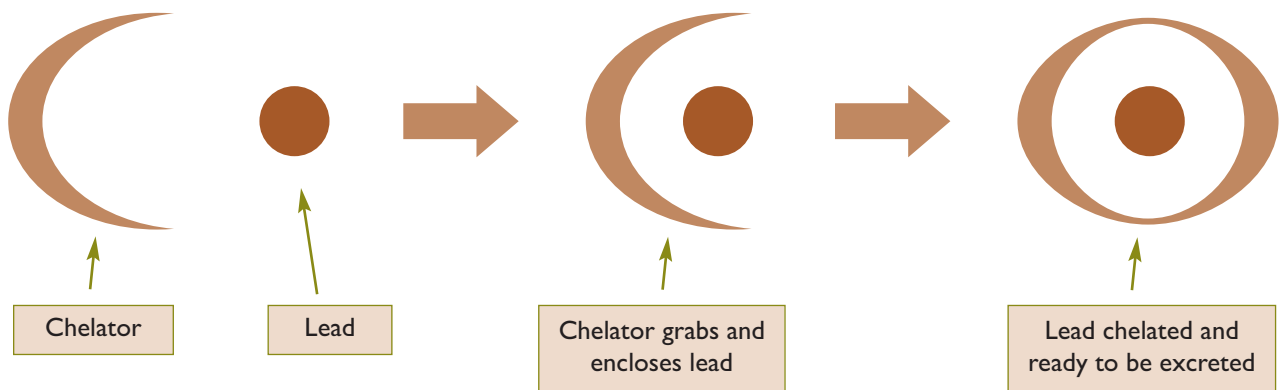
Figure 1 I: Children Identified with Elevated Blood Lead Levels for the First Time in 2017 by Region



Source: Illinois Lead Program Surveillance
Recreated 09/28/2018

E. Intervention - Chelation of Children with Elevated Blood Lead Levels

Reducing a child's exposure to lead is the best way to treat childhood lead poisoning. Medical treatment by chelation involving use of chemical compounds that bind to lead to remove the toxic metal from the body may be used for an extreme EBLL. Chemical compounds that have been used for lead chelation include succimer, penicillamine, ethylenediaminetetraacetic acid (EDTA) or BAL. According to CDC, chelation therapy is recommended for blood lead levels ≥ 45 $\mu\text{g/dL}$. In 2017, 39 children had confirmed EBLLs ≥ 45 $\mu\text{g/dL}$ while 10 children had EBLLs ≥ 70 $\mu\text{g/dL}$.



F. Compliance and Enforcement

The IEPA authorizes IDPH to carry out the compliance and enforcement aspects within the LPPC and LPPA in lieu of federal requirements. For instance, all lead abatement or lead mitigation projects are required to be conducted by an Illinois licensed lead abatement contractor who employs licensed lead abatement workers and lead abatement supervisors. IDPH is to receive notification from the contractor indicating the details of the project, which allows IDPH to conduct investigations to ensure compliance. <https://www.epa.gov/lead>

Following the Act and Code, IDPH:

- Conducted on-site investigations of lead mitigation/abatement projects statewide per notifications received by IDPH central office (Table 8).
 - Determined if individuals on-site were properly licensed
 - Ensured lead mitigation/abatement projects were conducted in compliance with the Act and Code
- Sought enforcement actions, fines, and penalties against individuals found in violation of the Act and Code, including but not limited to: individuals performing lead services such as lead inspection, risk assessment, mitigation, and abatement.

Table 8: Total Number of Abatement Projects

Compliance Type	2014	2015	2016	2017
Abatement Projects	513	560	657	659

Source: Illinois Department of Public Health - Illinois Lead Program Database 2014-2017.

Looking Forward: Illinois Adopts CDC Reference Value ≥ 5 $\mu\text{g/dL}$ of Lead in Blood

The Illinois Lead Program will be implementing the CDC reference value of ≥ 5 $\mu\text{g/dL}$ for case management beginning in 2018. Surveillance data will be used to determine the number of lead poisoned children at this new level in each jurisdiction.

Case management services are being provided to each child with lead levels ≥ 5 $\mu\text{g/dL}$ with committed efforts to prevent or eliminate further exposure.

Environmental investigations for each child with lead levels ≥ 10 $\mu\text{g/dL}$ are being conducted to identify lead hazards that require mitigation.

If you have any questions, please contact the Illinois Lead Program at dph.lead@illinois.gov.



Governor's Cabinet on Children and Youth - Reducing Childhood Lead Burden

In February 2016, Governor Bruce Rauner established the “Governor’s Cabinet on Children and Youth” with a vision to ensure that all children in Illinois are healthy, safe, well-educated, and self-sufficient. In September 2016, the 15 state agency leadership cabinet adopted “decreasing childhood lead burden” as one of its top three priority projects for fiscal year 2017. The main goal was to decrease childhood exposure to lead in Illinois through:

- increased lead prevention efforts;
- increased environmental assessment and lead mitigation efforts;
- improved, coordinated, and targeted case management and child health services; and
- more comprehensive data analyses to instruct policy decisions.

The Reducing Childhood Lead Burden committee developed five outcome workgroups:

- Improved identification and response
- Ensuring safe homes
- Data-driven decisions
- Connecting to social services
- Prevention education

For more information about the committee on decreasing childhood lead burden, contact the Division of Environmental Health at 217-782-3517

Regulations that mandated removal of lead from food canning, gasoline, new residential paint, plumbing, and other sources significantly contributed to the decrease in childhood lead poisoning.

Additional Resources

Illinois Lead Program

Illinois Department of Public Health

525 W. Jefferson St.

Springfield, IL 62761

Phone: 866-909-3572 or 217-782-3517

The hearing impaired may dial 800-547-0466

<http://dph.illinois.gov/illinoislead>

Illinois Public Health Association (IPHA)

<http://www.ipha.com>

American Public Health Association (APHA)

<http://www.apha.org>

National Center for Healthy Housing (NCHH)

<http://www.nchh.org/>

U.S. Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/nceh/lead/>

<http://www.cdc.gov/healthywater/drinking>

U.S. Consumer Product Safety Commission (CPSC)

<http://www.cpsc.gov/>

U.S. Department of Housing and Urban Development (HUD) Office of Lead Hazard Control and Healthy Homes

<http://www.hud.gov/healthyhomes>, and

lead.regulations@HUD.gov

U.S. Environmental Protection Agency (U.S.EPA)

<http://www.epa.gov/lead>

(800) 424-LEAD / (800) 424-5323

Safe Drinking Water Hotline

<http://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>

(800) 426-4791

<http://www.epa.gov>

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2. How do you use the information provided in this report?
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Please provide feedback by email: dph.lead@illinois.gov, phone: 217-782-3517 or FAX:217-557-1188



Appendix I:

Pre-1978 Housing Units and Children Two Years of Age and Younger Tested with Elevated Blood Lead Levels by County or Delegate Agencies: 2017

Illinois/County/City/ Delegate Agencies ^a	Total Housing Units (N) ^b	Pre-1978 Housing Units Estimates (%) ^c	All BLLs of Children 2 Years of Age or Younger (< 3 years of age) at Time of Testing		
			Tested (N) ^d	Tested ≥5µg/dL (%) ^e	Tested ≥10µg/dL (%) ^f
United States	134,054,899	52			
Illinois	5,310,327	65	133,707	3.4	0.8
Adams	29,991	68	922	9.0	1.5
Alexander	3,974	72	53	9.4	3.8
Bond	7,101	57	180	2.8	0.6
Boone	19,959	43	664	2.1	0.8
Brown	2,449	67	64	6.3	1.6
Bureau	15,664	76	294	6.5	1.7
Calhoun	2,843	59	20	0.0	0.0
Carroll	8,424	71	125	8.8	3.2
Cass	5,773	74	141	6.4	0.7
Champaign	89,646	54	1,217	0.5	0.0
Christian	15,501	74	390	2.3	0.5
Clark	7,759	62	202	2.0	0.0
Clay	6,363	62	228	9.6	1.3
Clinton	15,539	52	284	1.4	0.0
Coles	23,425	67	703	2.8	0.4
Cook w/o Chicago	983,244	70	23,683	1.8	0.4
Chicago	1,194,098	81	45,381	2.9	0.7
Crawford	8,657	69	193	4.1	1.6
Cumberland	4,854	61	127	3.9	0.0
DeKalb	41,017	51	652	4.0	1.2
DeWitt	7,513	72	153	7.8	0.0
Douglas	8,385	69	193	3.1	1.0
DuPage	357,549	52	4,264	1.7	0.4
Edgar	8,780	74	211	5.7	0.9
Edwards	3,164	68	41	4.9	2.4
Effingham	14,731	55	330	3.0	0.6
Fayette	9,232	64	293	2.4	0.0
Ford	6,324	78	117	4.3	1.7
Franklin	18,525	68	405	5.2	1.2
Fulton	16,190	79	212	6.6	1.9
Gallatin	2,731	65	45	2.2	0.0
Greene	6,373	76	151	4.0	0.7
Grundy	20,358	46	256	7.0	0.8
Hamilton	4,071	62	70	4.3	0.0
Hancock	9,212	74	163	7.4	0.0
Hardin	2,236	65	18	0.0	0.0

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Illinois/County/City/ Delegate Agencies ^a	Total Housing Units (N) ^b	Pre-1978 Housing Units Estimates (%) ^c	All BLLs of Children 2 Years of Age or Younger (< 3 years of age) at Time of Testing		
			Tested (N) ^d	Tested ≥5µg/dL (%) ^e	Tested ≥10µg/dL (%) ^f
United States	134,054,899	52			
Illinois	5,310,327	65	133,707	3.4	0.8
Henderson	3,827	70	45	4.4	0.0
Henry	22,096	78	485	8.5	1.6
Iroquois	13,421	75	195	6.7	2.6
Jackson	28,683	58	625	1.8	0.3
Jasper	4,324	61	80	2.5	0.0
Jefferson	16,836	57	375	5.9	0.3
Jersey	10,016	54	290	4.5	0.7
Jo Daviess	13,596	58	200	3.5	0.0
Johnson	5,561	49	80	2.5	2.5
Kane	184,075	48	6,477	3.2	0.8
Kankakee	45,182	62	1,214	3.6	0.7
Kendall	41,088	25	466	1.3	0.0
Knox	23,908	79	277	17.0	5.1
Lake	261,715	46	4,395	1.9	0.5
LaSalle	49,871	70	984	5.9	1.7
Lawrence	6,382	78	188	5.9	3.2
Lee	15,042	74	182	2.2	0.5
Livingston	15,845	74	402	4.5	0.5
Logan	11,966	79	206	5.3	1.0
McDonough	14,395	70	287	5.9	2.1
McHenry	117,242	39	1,274	1.8	0.4
McLean	71,254	50	2,284	3.9	1.1
Macon	50,321	75	1,475	9.4	2.3
Macoupin	21,556	67	439	6.8	2.1
Madison	118,170	64	2,569	2.6	0.7
Marion	18,132	63	562	5.0	0.9
Marshall	5,896	73	84	19.0	3.6
Mason	7,036	78	154	18.2	4.5
Massac	7,082	60	56	3.6	0.0
Menard	5,669	59	79	10.1	1.3
Mercer	7,368	78	183	7.1	3.8
Monroe	13,771	39	189	2.6	0.5
Montgomery	12,966	69	302	3.0	0.7
Morgan	15,412	69	353	6.8	2.3
Moultrie	6,349	71	155	3.2	1.9
Ogle	22,552	63	326	3.7	0.6
Peoria	83,487	72	1,575	13.3	3.3
Perry	9,474	66	190	7.9	1.6
Piatt	7,338	65	79	5.1	1.3
Pike	7,930	76	228	7.0	2.2

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Illinois/County/City/ Delegate Agencies ^a	Total Housing Units (N) ^b	Pre-1978 Housing Units Estimates (%) ^c	All BLLs of Children 2 Years of Age or Younger (< 3 years of age) at Time of Testing		
			Tested (N) ^d	Tested ≥5μg/dL (%) ^e	Tested ≥10μg/dL (%) ^f
United States	134,054,899	52			
Illinois	5,310,327	65	133,707	3.4	0.8
Pope	2,687	58	21	0.0	0.0
Pulaski	3,125	64	38	5.3	0.0
Putnam	3,107	60	43	0.0	0.0
Randolph	13,782	66	287	2.1	0.0
Richland	7,495	65	171	7.6	1.2
Rock island	65,800	77	1,749	6.3	1.7
St. Clair w/o ESHD	91,334	50	1,655	2.2	0.7
Saline	11,639	67	336	5.7	2.1
Sangamon	90,612	61	1,681	6.5	1.3
Schuyler	3,442	68	60	3.3	3.3
Scott	2,453	77	55	14.5	3.6
Shelby	10,475	68	235	2.6	0.4
Stark	2,665	82	50	18.0	6.0
Stephenson	21,899	73	692	10.5	3.0
Tazewell	58,172	71	269	10.0	3.0
Union	7,912	62	107	4.7	0.9
Vermilion	36,005	78	842	4.5	0.7
Wabash	5,542	72	142	7.0	2.1
Warren	7,667	83	185	12.4	4.3
Washington	6,551	64	81	1.2	0.0
Wayne	7,886	60	191	4.2	0.0
White	7,146	71	120	7.5	1.7
Whiteside	25,722	75	629	6.5	1.4
Will	239,953	37	5066	2.3	0.5
Williamson	30,794	56	635	6.6	1.3
Winnebago	125,591	63	4,167	4.5	1.1
Woodford	15,344	59	156	4.5	0.0
Egyptian ¹	21,516	68	501	5.8	1.8
ESHD ²	27,038	81	1,590	4.1	0.6
Evanston	31,829	83	1,090	1.9	0.6
Oak Park	23,261	90	619	3.9	0.6
Skokie	24,548	84	739	1.5	0.4
Southern Seven ³	32,577	61	373	4.3	1.3
Stickney	2,456	91	54	0.0	0.0

Data Source: ^{d,e,f}Illinois Department of Public Health ^aPre-1978 housing unit was estimated from U.S. Census Bureau, 2010-2014 5-Years American Community Survey, Table B25034-Year Structure Built

¹Egyptian Counties: Gallatin, Saline, and White

²ESHD or East Side Health District includes the cities of Alorton, Brooklyn, Cahokia, Centreville, East St. Louis, Fairmont City, Lovejoy, National Stock Yards, Sauget, and Washington Park

³Southern Seven Counties: Alexander, Hardin, Johnson, Massac, Pope, Pulaski and Union

^aData reported for U.S., Illinois, county, and delegate agencies

^bTotal Housing Units - U.S. Census Bureau, 2010-2014 5-Years American Community Survey, Table B25034-Year Structure Built

^cPre-1978 Housing Units Estimates: U.S. Census Bureau, 2010-2014 5-Years American Community Survey, Table B25034-Year Structure Built

^dTotal number of children 2 years of age or younger at the time of blood lead testing in calendar year 2017 (test date – birthdate \leq 2 years old). Children are considered to be 2 years of age until their 3rd birthday.

^ePercentage of children 2 years of age or younger tested with elevated blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ (numerator) based on all children 2 years of age or younger tested in 2017 (denominator).

^fPercentage of children 2 years of age or younger tested with elevated blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ (numerator) based on all children 2 years of age or younger tested in 2017 (denominator).

While the current acceptable error range is ± 4 $\mu\text{g}/\text{dL}$, most laboratories that do blood lead analyses perform at an error range within ± 2 $\mu\text{g}/\text{dL}$. The portable desktop blood-lead analyzers operate within a ± 3 $\mu\text{g}/\text{dL}$ error range.

Note: As required by the Act (410 ILCS 45/7), health care providers shall report all blood lead test results to IDPH. If a child has multiple tests, the highest venous result is selected for this report. If there is no venous test for a child, the peak capillary blood lead result is selected for this report. A child was counted only once for each year in which he or she was tested or had a follow-up test.



Appendix 2:

Children Tested for Blood Lead by Age from January 1 to December 31, 2017

Age (Years)	Estimated Population ^a		Children Tested								Geomean Blood Lead Level, µg/dL
		Total Tested	<5 µg/dL		≥5 µg/dL			≥10 µg/dL			
					n	%	n		%		
			Capillary	Venous			Capillary	Venous			
<1	153,473	32,304	31,761	98.3	308	235	1.7	45	59	0.3	1.6
1	154,981	58,150	55,992	96.3	857	1301	3.7	108	391	0.9	
2	156,904	43,826	41,988	95.8	662	1176	4.2	102	352	1.0	
3	154,130	31,569	30,433	96.4	379	757	3.6	48	200	0.8	1.5
4	153,561	29,967	29,121	97.2	308	538	2.8	45	145	0.6	
5	155,307	26,383	25,797	97.8	240	346	2.2	30	88	0.4	
6	156,856	6,915	6,755	97.7	36	124	2.3	5	50	0.8	
Total	1,103,797	229,114	221,847	96.8	2,790	4,477	3.2	383	1,285	0.7	1.6

Source: Illinois Department of Public Health - Illinois Lead Program Surveillance Database, 2017. Data includes one venous blood lead test result per child by age; if there was no venous test then the highest capillary test results were used. ^aPopulation data compiled from bridged-race Vintage 2017 (2010-2017) post-censal population estimates (released by NCHS June 27, 2018) Accessed at <http://wonder.cdc.gov/bridged-race-v2017.html> on Aug 27, 2018.

A total of 8,307 children 7 to 15 years of age were also tested for blood lead in 2017. Of the 244 children in this age group with BLLs ≥5µg/dL, 91 percent were confirmed by a venous test. Among the 66 children in this age group with EBLs ≥10µg/dL, 95 percent were confirmed by a venous test.



Appendix 3:

Children Tested for Blood Lead by Race/Ethnicity - January 1 to December 31, 2017

Racial Classification	Estimated Population ^a	Children Tested by Race in 2016									Geomean Blood Lead Level in µg/dL
		Total Tested	<5 µg/dL		≥5 µg/dL			≥10 µg/dL			
					n	%	n		%		
			Capillary	Venous			Capillary	Venous			
Black or African American	192,658	47,374	53,371	95.4	709	1,455	4.6	115	417	1.1	1.9
White	820,817	72,372	77,827	96.3	1,332	1,026	3.3	183	416	0.8	1.9
Hispanic or Latino	820,438	55,609	66,424	97.6	372	880	2.3	46	221	0.5	1.8
Asian or Pacific Islanders	9,248	8,810	8,576	97.3	99	135	2.7	11	37	0.5	
American Indian or Alaskan Native	6,367	186	172	92.5	7	7	7.5	3	1	2.2	
Unidentified ^c		44,852	15,560	97.9	275	976	2.8	45	282	0.7	
Total		229,203	221,930	96.8	2,794	4,479	3.2	383	1,287	0.8	1.9

Source: Illinois Department of Public Health - Illinois Lead Program Surveillance, 2017. ^aPopulation data compiled from bridged-race Vintage 2017 (2010-2017) post-censal population estimates (released by NCHS June 27, 2018) Accessed at <http://wonder.cdc.gov/bridged-race-v2017.html> on August 27, 2018. Data includes one venous blood lead test result per year; if there was no venous test, then the highest capillary test results were used.

Appendix 4:

Blood Lead Burden for Children Five Years of Age and Younger in Illinois, Chicago, and the United States: 2014-2017

	2014		2015		2016		2017	
	N	%	N	%	N	%	N	%
Illinois Children Tested	252,732	26.6	248,223	26.3	229,519	24.3	229,203	
BLL ≥ 10µg/dL	2,162	0.9	1,871	0.8	1,736	0.8	1,670	0.7
BLL ≥ 5µg/dL	17,063	6.8	10,040	4.0	8,154	3.6	4,477	2.0
Illinois without Chicago	160,404	63.5	161,420	65.0	143,174	62.4	144,994	63.3
BLL ≥ 10µg/dL	1,438	0.9	1,211	0.8	1,152	0.8	1,142	0.8
BLL ≥ 5µg/dL	13,357	8.3	7,033	4.4	5,399	3.8	2,192	1.5
Chicago	92,328	36.5	86,803	35.0	86,345	37.6	84,209	36.7
BLL ≥ 10µg/dL	724	0.8	660	0.8	584	0.7	528	0.6
BLL ≥ 5µg/dL	3,706	4.1	3,007	3.5	2,755	3.2	2,285	2.7
United States¹	2,496,140	10.3	2,415,604	10.0	2,517,134			
BLL ≥ 10µg/dL	12,942	0.5	12,149	0.5	12,574	0.5		
BLL ≥ 5µg/dL	97,628	3.9	84,208	3.5	88,270	3.5		

Source: Illinois Lead Program Surveillance Data, 2014-2017 and U.S. Centers for Disease Control and Prevention (CDC) Blood Lead Surveillance available at the time at: <https://www.cdc.gov/nceh/lead/data/national.htm> (downloaded September 11, 2018)

CDC only reported blood lead data for children five years of age and younger. In order to compare Illinois data to the national data published by CDC, Appendix 4 only included children five years of age and younger (<72 months) whose BLL results were reported to IDPH in 2014, 2015, 2016, and 2017. Due to strict data reporting requirements, Illinois data with missing core address fields are often under-reported nationally, which may contribute to a denominator differential of Illinois data as reported by CDC.

Appendix 5:

Children Tested and Newly Confirmed Cases in 2017

Illinois/ County/ Delegate Agency	Estimated Population 6 Years of Age and Younger ^a	All Children Tested in 2017 ^b	Children Ever Tested as of December 31, 2017 ^c	Children tested for the first time in 2017 based on all children ever tested ^d		New confirmed cases Identified for the first time in 2017 based on all children tested ^e	
						EBL ≥ 5 $\mu\text{g/dL}$	EBL ≥ 10 $\mu\text{g/dL}$
	N	N	%	N	%	%	%
Illinois	1,103,797	229,203	54	131,974	57.6	1.3	0.4
Adams	5,960	1,306	68	867	66.4	2.4	0.7
Alexander	648	96	59	64	66.7	6.3	2.1
Bond	1,120	212	64	131	61.8	0.0	0.0
Boone	4,367	1,020	54	633	62.1	1.0	0.4
Brown	404	77	63	60	77.9	5.2	1.3
Bureau	2,605	510	57	354	69.4	4.1	1.4
Calhoun	369	32	37	20	62.5	0.0	0.0
Carroll	956	239	65	153	64.0	2.1	0.8
Cass	1,065	254	79	174	68.5	3.1	0.8
Champaign	15,925	1,687	47	1,364	80.9	0.2	0.0
Christian	2,622	593	69	376	63.4	1.0	0.5
Clark	1,329	274	67	190	69.3	0.4	0.0
Clay	1,136	292	77	196	67.1	0.7	0.3
Clinton	2,884	344	39	240	69.8	0.3	0.0
Coles	3,566	851	75	569	66.9	0.1	0.1
Cook w/o Chicago	211,323	41,159	22	23,856	58.0	0.8	0.3
Chicago	253,669	84,209	70	41,666	49.5	1.7	0.4
Crawford	1,471	243	59	181	74.5	0.4	0.4
Cumberland	943	164	54	102	62.2	0.0	0.0
DeKalb	8,525	1,302	41	846	65.0	1.3	0.4
DeWitt	1,205	212	50	168	79.2	0.9	0.0
Douglas	1,900	255	47	175	68.6	0.8	0.0
DuPage	78,007	7,119	29	4890	68.7	0.6	0.2
Edgar	1,285	304	75	217	71.4	3.0	0.7
Edwards	514	95	55	65	68.4	0.0	0.0
Effingham	3,102	508	43	327	64.4	0.4	0.0
Fayette	1,673	344	66	220	64.0	0.3	0.0
Ford	1,105	169	49	116	68.6	0.6	0.6
Franklin	3,357	722	54	450	62.3	0.6	0.1
Fulton	2,447	382	51	315	82.5	1.3	0.3
Gallatin	354	74	75	47	63.5	0.0	0.0
Greene	1,029	219	71	133	60.7	0.9	0.0
Grundy	4,529	517	31	303	58.6	1.5	0.2
Hamilton	664	119	60	87	73.1	0.0	0.0
Hancock	1,380	241	65	164	68.0	3.7	0.0
Hardin	280	41	52	27	65.9	0.0	0.0
Henderson	479	78	50	54	69.2	2.6	0.0

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Illinois/ County/ Delegate Agency	Estimated Population 6 Years of Age and Younger ^a	All Children Tested in 2017 ^b	Children Ever Tested as of December 31, 2017 ^c	Children tested for the first time in 2017 based on all children ever tested ^d		New confirmed cases Identified for the first time in 2017 based on all children testede	
						EBL ≥5 µg/dL	EBL ≥10 µg/dL
	N	N	%	N	%	%	%
Henry	3,890	800	60	572	71.5	4.3	0.9
Iroquois	2,191	338	53	235	69.5	0.9	0.3
Jackson	4,210	964	62	583	60.5	0.4	0.1
Jasper	836	103	40	69	67.0	0.0	0.0
Jefferson	3,344	589	53	452	76.7	0.3	0.0
Jersey	1,648	383	78	238	62.1	1.3	0.5
Jo Daviess	1,460	327	47	235	71.9	1.2	0.0
Johnson	813	131	51	85	64.9	1.5	1.5
Kane	49,807	11,918	54	6687	56.1	0.9	0.3
Kankakee	9,429	2,181	63	1236	56.7	0.6	0.3
Kendall	12,948	678	19	501	73.9	0.4	0.0
Knox	3,642	487	64	380	78.0	9.2	2.1
Lake	59,737	7,488	37	5030	67.2	0.9	0.2
LaSalle	8,456	1,566	52	1030	65.8	2.2	0.7
Lawrence	1,216	243	73	180	74.1	1.2	1.2
Lee	2,482	352	27	299	84.9	1.7	0.0
Livingston	2,780	557	56	381	68.4	0.7	0.2
Logan	2,034	325	55	230	70.8	1.2	0.3
McDonough	2,066	387	64	258	66.7	0.0	0.0
McHenry	24,299	1,986	23	1381	69.5	0.4	0.2
McLean	14,521	2,915	67	2065	70.8	1.0	0.5
Macon	9,235	2,655	64	1445	54.4	2.0	0.4
Macoupin	3,290	586	59	385	65.7	0.7	0.3
Madison	22,060	3,799	51	2433	64.0	1.0	0.3
Marion	3,365	874	70	583	66.7	0.2	0.1
Marshall	883	112	58	71	63.4	6.3	0.9
Mason	996	238	67	145	60.9	2.5	0.8
Massac	1,215	153	41	121	79.1	1.3	0.0
Menard	963	112	38	85	75.9	0.9	0.0
Mercer	1,158	265	72	184	69.4	0.0	0.0
Monroe	2,534	253	40	176	69.6	3.6	1.6
Montgomery	2,181	426	67	298	70.0	0.0	0.0
Morgan	2,570	574	74	363	63.2	0.0	0.0
Moultrie	1,346	216	42	151	69.9	0.0	0.0
Ogle	3,818	533	35	402	75.4	0.0	0.0
Peoria	18,122	2,126	45	1619	76.2	0.0	0.0
Perry	1,506	319	64	197	61.8	0.0	0.0
Piatt	1,255	142	41	101	71.1	2.8	2.8
Pike	1,224	298	71	226	75.8	0.3	0.0
Pope	180	25	55	17	68.0	24.0	4.0

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Illinois/ County/ Delegate Agency	Estimated Population 6 Years of Age and Younger ^a	All Children Tested in 2017 ^b	Children Ever Tested as of December 31, 2017 ^c	Children tested for the first time in 2017 based on all children ever tested ^d		New confirmed cases Identified for the first time in 2017 based on all children tested ^e	
						EBL ≥ 5 $\mu\text{g/dL}$	EBL ≥ 10 $\mu\text{g/dL}$
	N	N	%	N	%	%	%
Pulaski	417	62	51	47	75.8	19.4	8.1
Putnam	347	70	48	53	75.7	18.6	4.3
Randolph	2,320	388	52	282	72.7	27.8	8.2
Richland	1,360	225	49	153	68.0	2.2	0.9
Rock Island	12,901	2,674	67	1877	70.2	0.1	0.0
St. Clair w/o ESHD	17,044	2,443	30	2802	114.7	0.2	0.0
Saline	2,014	518	76	341	65.8	1.4	0.4
Sangamon	16,703	2,704	51	1628	60.2	0.1	0.0
Schuyler	437	94	70	66	70.2	2.1	2.1
Scott	328	88	78	45	51.1	37.5	19.3
Shelby	1,660	291	51	204	70.1	13.7	2.7
Stark	416	79	76	54	68.4	35.4	10.1
Stephenson	3,587	1,132	77	623	55.0	0.1	0.1
Tazewell	11,421	443	40	314	70.9	0.9	0.5
Union	1,316	187	53	128	68.4	27.3	9.1
Vermilion	7,467	1,337	62	922	69.0	1.2	0.5
Wabash	905	183	66	145	79.2	1.6	0.5
Warren	1,566	275	66	182	66.2	12.0	3.6
Washington	1,046	136	38	101	74.3	14.7	4.4
Wayne	1,360	273	60	197	72.2	0.7	0.0
White	1,272	202	62	134	66.3	2.0	1.0
Whiteside	4,661	1,000	67	670	67.0	1.8	0.6
Will	58,874	9,370	40	5329	56.9	0.4	0.1
Williamson	5,440	1,093	52	686	62.8	0.5	0.2
Winnebago	24,920	6,240	59	3909	62.6	2.0	0.6
Woodford	3,497	214	41	153	71.5	2.8	0.0

Source: Illinois Department of Public Health - Illinois Lead Program Surveillance, 2010 – 2017. ^aPopulation data compiled from bridged-race Vintage 2017 (2010-2017) post-censal population estimates (released by NCHS June 27, 2018) Accessed at <http://wonder.cdc.gov/bridged-race-v2017.html> on August 27, 2018. ^bOnly children ≤ 6 years of age; ^cChildren tested at least once in their lifetime as of December 31, 2017 with denominator of Estimated Population 6 Years of Age and Younger^a; ^d and ^e Denominator of all children tested in 2017^b

Appendix 6:

Proportion of Children Tested for Blood Lead in 2017 by County and Medicaid Status

County	Total Number of Children Tested in 2017	Medicaid Enrolled Children (%)			Non-Medicaid Enrolled Children (%)		
		Children Tested Who Were Medicaid-Enrolled (%)	Percentage of Medicaid - Enrolled Children Tested At		Children Tested Who Were Non-Medicaid-Enrolled (%)	Percentage of Non Medicaid - Enrolled Children Tested At	
			≥ 10 µg/dL	≥ 5 µg/dL		≥ 10 µg/dL	≥ 5 µg/dL
Illinois	229,203	69.4	0.8	3.4	30.6	0.7	2.7
Adams	1,306	66.8	2.4	11.8	33.2	0.5	5.3
Alexander	96	84.4	4.9	12.3	15.6	6.7	20.0
Bond	212	74.5	1.3	4.4	25.5	0.0	0.0
Boone	1,020	75.6	0.3	1.4	24.4	2.0	3.6
Brown	77	66.2	3.9	13.7	33.8	0.0	0.0
Bureau	510	69.4	2.5	7.1	30.6	0.6	4.5
Calhoun	32	28.1	0.0	0.0	71.9	0.0	0.0
Carroll	239	66.1	1.9	8.2	33.9	1.2	2.5
Cass	254	72.0	1.1	7.1	28.0	0.0	7.0
Champaign	1,687	58.3	0.1	0.6	41.7	0.6	1.1
Christian	593	70.5	0.7	2.6	29.5	0.0	1.1
Clark	274	64.2	0.0	2.3	35.8	0.0	2.0
Clay	292	80.5	0.9	8.5	19.5	1.8	8.8
Clinton	344	59.3	1.0	2.5	40.7	0.0	1.4
Coles	851	66.7	0.2	3.2	33.3	0.7	2.1
Cook	125,368	70.1	0.6	2.6	29.9	0.5	2.1
Crawford	243	78.6	1.6	4.7	21.4	0.0	1.9
Cumberland	164	73.2	0.8	4.2	26.8	2.3	4.5
De Kalb	1,302	73.5	0.4	2.1	26.5	1.2	2.3
De Witt	212	55.2	0.9	9.4	44.8	0.0	8.4
Douglas	255	68.6	0.6	2.9	31.4	1.3	3.8
Du Page	7,119	57.6	0.4	1.5	42.4	0.5	1.8
Edgar	304	70.1	1.9	7.0	29.9	1.1	4.4
Edwards	95	66.3	1.6	3.2	33.7	0.0	0.0
Effingham	508	74.6	0.0	2.1	25.4	2.3	4.7
Fayette	344	80.2	0.0	2.9	19.8	0.0	4.4
Ford	169	69.2	1.7	9.4	30.8	1.9	1.9
Franklin	722	75.2	0.9	5.3	24.8	0.6	3.4
Fulton	382	65.7	1.2	5.2	34.3	1.5	6.1
Gallatin	74	71.6	0.0	1.9	28.4	0.0	4.8
Greene	219	70.3	1.3	5.2	29.7	0.0	0.0
Grundy	517	57.8	0.3	4.3	42.2	0.9	6.9
Hamilton	119	60.5	0.0	2.8	39.5	0.0	2.1
Hancock	241	64.3	0.0	9.0	35.7	0.0	5.8
Hardin	41	85.4	0.0	0.0	14.6	0.0	0.0
Henderson	78	73.1	0.0	3.5	26.9	0.0	4.8
Henry	800	62.4	1.8	9.4	37.6	1.0	7.6

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County	Total Number of Children Tested in 2017	Medicaid Enrolled Children (%)			Non-Medicaid Enrolled Children (%)		
		Children Tested Who Were Medicaid-Enrolled (%)	Percentage of Medicaid - Enrolled Children Tested At		Children Tested Who Were Non-Medicaid-Enrolled (%)	Percentage of Non Medicaid - Enrolled Children Tested At	
			≥ 10 µg/dL	≥ 5 µg/dL		≥ 10 µg/dL	≥ 5 µg/dL
Illinois	229,203	69.4	0.8	3.4	30.6	0.7	2.7
Iroquois	338	66.9	2.7	7.5	33.1	0.0	0.9
Jackson	964	80.3	0.1	1.8	19.7	0.5	2.6
Jasper	103	71.8	2.7	2.7	28.2	0.0	3.4
Jefferson	589	67.1	0.0	5.6	32.9	0.5	1.5
Jersey	383	58.7	0.0	7.6	41.3	0.0	0.0
Jo Daviess	327	61.5	1.0	5.5	38.5	0.0	2.4
Johnson	131	55.0	1.4	2.8	45.0	6.8	6.8
Kane	11,918	72.9	0.6	2.6	27.1	0.8	3.3
Kankakee	2,181	68.6	1.0	4.3	31.4	0.7	3.1
Kendall	678	58.8	0.0	1.8	41.2	0.0	1.1
Knox	487	61.0	4.7	19.2	39.0	2.6	13.2
Lake	7,488	59.3	0.3	1.5	40.7	0.4	1.9
La Salle	1,566	67.3	2.5	7.0	32.7	0.8	3.9
Lawrence	243	68.3	3.0	6.0	31.7	5.2	7.8
Lee	352	64.8	0.4	3.5	35.2	0.0	0.0
Livingston	557	67.5	0.5	4.0	32.5	0.0	1.7
Logan	325	68.9	0.4	5.4	31.1	1.0	4.0
McDonough	387	69.8	3.0	7.4	30.2	0.9	4.3
McHenry	1,986	60.4	0.3	1.6	39.6	0.3	1.5
McLean	2,915	53.8	0.8	4.3	46.2	1.2	4.4
Macon	2,655	76.5	1.7	9.8	23.5	3.0	9.4
Macoupin	586	71.0	2.4	6.7	29.0	1.2	4.7
Madison	3,799	69.3	0.7	2.9	30.7	0.7	2.6
Marion	874	78.8	0.4	4.5	21.2	1.1	4.9
Marshall	112	79.5	4.5	13.5	20.5	4.3	30.4
Mason	238	73.9	4.0	18.8	26.1	4.8	11.3
Massac	153	80.4	0.0	4.1	19.6	0.0	0.0
Menard	112	67.9	1.3	5.3	32.1	0.0	13.9
Mercer	265	65.7	1.7	5.2	34.3	4.4	5.5
Monroe	253	34.0	0.0	2.3	66.0	0.6	2.4
Montgomery	426	72.1	0.7	3.9	27.9	0.0	0.8
Morgan	574	67.6	1.8	6.7	32.4	1.6	5.4
Moultrie	216	67.1	1.4	2.8	32.9	1.4	1.4
Ogle	533	58.3	0.3	2.6	41.7	0.9	3.6
Peoria	2,126	80.3	3.3	13.6	19.7	3.6	12.9
Perry	319	74.3	1.3	8.0	25.7	0.0	3.7
Piatt	142	61.3	1.1	4.6	38.7	0.0	5.5
Pike	298	67.8	2.5	7.4	32.2	0.0	0.0
Pope	25	80.0	0.0	0.0	20.0	0.0	0.0
Pulaski	62	75.8	0.0	4.3	24.2	0.0	0.0

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		Children Tested Who Were Medicaid-Enrolled (%)	Percentage of Medicaid - Enrolled Children Tested At		Children Tested Who Were Non-Medicaid-Enrolled (%)	Percentage of Non Medicaid - Enrolled Children Tested At	
			≥ 10 µg/dL	≥ 5 µg/dL		≥ 10 µg/dL	≥ 5 µg/dL
Illinois	229,203	69.4	0.8	3.4	30.6	0.7	2.7
Putnam	70	60.0	0.0	0.0	40.0	0.0	0.0
Randolph	388	70.1	0.0	2.2	29.9	0.0	0.9
Richland	225	79.1	1.7	7.3	20.9	0.0	6.4
Rock Island	2,674	69.7	2.0	7.2	30.3	1.1	4.6
St. Clair	5,238	77.0	0.5	3.1	23.0	0.7	3.4
Saline	518	75.5	1.5	4.9	24.5	0.8	1.6
Sangamon	2,704	77.4	1.1	6.1	22.6	1.3	5.4
Schuyler	94	72.3	1.5	2.9	27.7	3.8	3.8
Scott	88	67.0	1.7	8.5	33.0	3.4	13.8
Shelby	291	70.1	0.5	3.4	29.9	0.0	1.1
Stark	79	69.6	1.8	10.9	30.4	8.3	25.0
Stephenson	1,132	74.2	3.6	13.0	25.8	2.4	6.8
Tazewell	443	66.4	4.4	12.2	33.6	0.7	5.4
Union	187	69.5	0.8	5.4	30.5	0.0	0.0
Vermilion	1,337	74.6	0.8	4.8	25.4	0.9	2.9
Wabash	183	66.7	1.6	7.4	33.3	1.6	1.6
Warren	275	68.7	4.2	12.7	31.3	2.3	8.1
Washington	136	48.5	0.0	3.0	51.5	0.0	0.0
Wayne	273	72.5	0.0	5.1	27.5	1.3	2.7
White	202	71.3	1.4	8.3	28.7	0.0	0.0
Whiteside	1,000	69.1	1.3	5.6	30.9	0.6	4.9
Will	9,370	66.1	0.4	2.3	33.9	0.3	2.1
Williamson	1,093	67.5	0.8	7.2	32.5	1.4	5.6
Winnebago	6,240	76.4	1.0	4.2	23.6	1.4	4.1
Woodford	214	59.3	0.0	5.5	40.7	1.1	4.6

Source: Illinois Department of Public Health – Illinois Lead Program Surveillance Database and Illinois Department of Healthcare and Family Services Enterprise Data Warehouse, 2017 through an interagency data agreement. The SAS (statistical analysis software) and SQL (Structured Query Language) codes were used to query databases.

Appendix 7:

Questions that parents frequently ask during a case management home visit

1. **Is lead found in toys?**
 - A. Lead is rarely found in toys, but may be in some household items. Lead-based paint remains the most common source of childhood lead exposure.
2. **Does a child have to eat paint chips to be lead-poisoned?**
 - A. While paint chips, if eaten, are a source of lead poisoning, the most common source is the ingestion of lead-contaminated dust through hand-to-mouth behaviors.
3. **What does lead poisoning actually do to the body?**
 - A. Lead can interfere with brain development, contribute to behavior problems and a lowered IQ, and may cause other serious health problems.
4. **What can I do to reduce my child's exposure to lead?**
 - A. Educate yourself on lead hazards and lead safe work and housekeeping practices to reduce your child's exposure to lead. Also, wash your hands frequently.
5. **How long will it take for the BLL to decrease?**
 - A. The time it takes for BLL to decrease varies depending on the child's health status, medical treatment, and how quickly the source of the lead is eliminated from the child's environment.



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