Indiana State Department of Health
Lead & Healthy Homes Program

2013 Surveillance Report

March 2013

The Indiana Lead Poisoning Prevention Program and Maternal and Child Health are pleased to present the 2013 annual surveillance report. As part of our commitment to Healthy People 2020 and the Life Course Health Systems Perspective, this report provides information regarding the number of Indiana children tested for lead poisoning, the number of children found to have elevated blood lead levels, and the number of children who, as a result of an elevated blood lead level, received case management services. The Life Course Perspective offers a broader way of looking at health, over an entire lifespan, as opposed to disconnected stages, and suggests a complex relationship between behavioral, psychological, social, and environmental factors contributing to the health outcomes across a person's life.

Lead poisoning is the most preventable condition of children in the United States. Currently, in Indiana, lead poisoning is defined as an individual having 10 micrograms of lead per deciliter of blood (10 µg/dL); however, the Centers for Disease Control and Prevention have recently reclassified the blood lead level of concern 10 µg/dL to 5 µg/dL. While levels of concern have long been classified, no safe level of lead has yet been determined by the CDC.

Lead poisoning is a preventable condition, but when it occurs, may result in harmful, irreversible health effects. These complications are variable, and may include kidney and nervous system damage, Attention Deficit/Hyperactivity Disorder (AD/HD), decreased IQ , learning disabilities, seizures, coma, and even death.

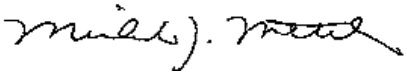
Indiana recognizes the importance of lead poisoning screening and prevention. Since 2004, the first year that Indiana made electronic data available, 413,238 children have been screen for elevated blood lead levels. The number of lead-poisoned children in Indiana has declined from 893 total in 2004 to 702 total in 2012. These elevated blood lead levels led to 639 risk assessment inspections of residences of lead-poisoned children conducted in 2012. The Indiana Lead and Health Homes Program and local health departments provided case management services, including, but not limited to, home visits, education, prevention techniques, and referrals, to 277 new, confirmed cases of lead poisoned children under the age of 7 during 2012.

Despite being banned for residential use in 1978, lead-based paint remains the leading risk factor for lead poisoning. Due primarily to the current breakdown of existing lead-based paint in older homes, ingestion and inhalation of lead-based paint particles remains a serious health concern. Nearly 2 million homes, more than 74 percent of residential structures, in Indiana were built prior to 1978, making this concern highly relevant for Indiana. Children between the ages of 1 to 3 years of age are at greatest risk for being lead poisoned due to their prevalence of hand-to-mouth activity behavior, their developing bodies and brains, and their size. Children, on a pound-for pound basis, breathe more air, drink more water, and eat more food than adults, meaning they can potentially be exposed to a higher percentage of carcinogens and chemicals.

In 2013, in order to further improve the health of Indiana families, we look forward to increasing awareness of lead poisoning hazards and health effects and raise the rates of identification of poisoned children. Awareness and identification include increased outreach and education for prevention techniques, increased rates of screening for children 7 and under, and increased timeliness and effectiveness of delivery of case management services.

Thank you for reviewing this annual report. Please direct questions regarding the data report here to Andrea Wilkes, the Child Health Coordinator of Maternal and Child Health. Ms. Wilkes may be reached by email at AWilkes@isdh.in.gov, or by telephone at (317) 233-1246.

Sincerely,



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We would like to acknowledge all of those local health departments, medical professionals and laboratory personnel who test, diagnose and treat lead-poisoned children in Indiana. We also acknowledge our debt to the State of Illinois Department of Public Health Lead Program for the design of this report.

To report the results of blood lead testing or for more information about childhood lead poisoning please contact the Indiana Lead and Healthy Homes Program at 317.233.1250, Lead Health Education at 317.234.5497, the Indiana Family Helpline toll-free at 800.421.7837 *or* visit http://www.in.gov/isdh/19124.htm

Table of Contents

List of Tables

List of Figures

Introduction

The mission of the Indiana Lead and Healthy Homes Program (ILHHP) is to eliminate the incidence of childhood lead poisoning in Indiana. The Centers for Disease Control and Prevention's (CDC) standard for an "elevated blood lead level" (EBLL) is 10µg/dL – 10 micrograms of lead per deciliter of blood. In 2012, 702 Hoosier children exhibited elevated blood lead levels compared to 893 in 2004 (the first year for which reliable electronic data is available); the number of children found to have elevated blood lead levels based on testing continues to decline. However, total screening rates remain low – only 9.1% of all children aged 7 and under were tested in 2012. Indiana law does not require universal testing of all Hoosier children; the only children who are required, by Federal law, to be tested for lead poisoning are those who receive Medicaid benefits. Unfortunately, testing for that specific population was only 28.9% in 2012. These statistics point out that the level of lead poisoning may be significantly under-reported in Indiana. Although Indiana does not have universal testing requirements in place, parents/guardians of "at risk" children are strongly encouraged to have their children tested for lead poisoning. "At risk" is defined as a child who:

- lives in or regularly visits a house or other structure built before 1978;
- has a sibling or playmate who has been lead poisoned;
- has frequent contact with an adult who works in an industry or has a hobby that uses lead;
- is an immigrant or refugee or has recently lived abroad;
- is a member of a minority group;
- is a Medicaid recipient;
- uses medicines or cosmetics containing lead; or
- lives in a geographic area that increases the child's probability of exposure to lead.

The Indiana State Department of Health has been identifying children demonstrating elevated blood lead levels and monitoring the treatment of lead-poisoned children since the early 1990s. Program activities include determining and examining potential sources of lead exposure, estimating the extent of EBLLs in Indiana, providing follow-up case management, and allocating resources for primary prevention. In 2003 the Indiana legislature enacted Article 29 of Indiana Administrative Code Title 410 to specify procedures for reporting, monitoring and preventing lead poisoning. Article 32 of Indiana Administrative Code Title 410 was enacted in 2010 to formalize definitions and enforcement for the lead-based paint program. Indiana is committed to defining roles and responsibilities and enforcement of these rules to meet Healthy People 2020[1] objectives set forth by the US Department of Health and Human Services. The primary objective is to reduce mean blood-lead levels of children by 10% and ultimately the elimination of elevated blood lead levels in children. In 2010, ILHHP revised its statewide Childhood Lead Poisoning Elimination Plan to reflect these targets. The program also worked with retailers, contractors, business owners, landlords and homeowners to comply with the Environmental Protection Agency's (EPA) Renovation, Repair and Painting (RRP) rule[2] which went into effect in April 2010. This rule requires specific work practices to prevent lead contamination in pre-1978 homes and facilities. In 2011, ILHHP expanded its programming to assess risks to Hoosier children in a more holistic fashion, collecting data reflecting the seven principles of healthy housing (keeping a home dry, clean, pest-free, safe, contaminate-free, well ventilated, and maintained),[3] which may act synergistically to affect lead poisoning.

Sources:
[1] http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=12
[2] http://www.epa.gov/lead/pubs/renovation.htm
[3] http://www.nchh.org/What-We-Do/Healthy-Homes-Principles.aspx

The information contained in this report was compiled by the Indiana Lead and Healthy Homes Program in compliance with IC 16-41-39.4-5[4] which requires:

Sec. 5.

a. The state department shall, in cooperation with other state agencies, collect data under this chapter and, before March 15 of each year, report the results to the general assembly for the previous calendar year. A copy of the report shall be transmitted in an electronic format under IC 5-14-6 to the executive director of the legislative services agency for distribution to the members of the general assembly.
b. The report transmitted under subsection (a) must include for each county the following information concerning children who are less than seven (7) years of age:
    i. The number of children who received a blood lead test.
    ii. The number of children who had a blood test result of at least ten (10) micrograms of lead per deciliter of blood.
    iii. The number of children identified under subdivision (2) who received a blood test to confirm that they had lead poisoning.
    iv. The number of children identified under subdivision (3) who had lead poisoning.
    v. The number of children identified under subdivision (4) who had a blood test result of less than ten (10) micrograms of lead per deciliter of blood.
    vi. The average number of days taken to confirm a blood lead test.
    vii. The number of risk assessments performed for children identified under subdivision (4) and the average number of days taken to perform the risk assessment.
    viii. The number of housing units in which risk assessments performed under subdivision (7) documented lead hazards as defined by 40 CFR 745.
    ix. The number of housing units identified under subdivision (8) that were covered by orders issued under IC 13-14-10-2 or by another governmental authority to eliminate lead hazards.
    x. The number of housing units identified under subdivision (9) for which lead hazards have been eliminated within thirty (30) days, three (3) months, and six (6) months.

Sources:
[4] http://www.in.gov/legislative/iac/
[5] http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=datasets_1&_lang=en&_ts=http://factfinder.census.gov/servlet/STTable?_bm=y&-context=st&-qr_name=ACS_2009_5YR_G00_S2504&-ds_name=ACS_2009_5YR_G00_&-CONTEXT=st&-tree_id=5309&-redoLog=false&-_caller=geoselect&-geo_id=01000US&-format=&-_lang=en

Summary Statistics: Indiana Childhood Lead Poisoning (Calendar Year 2012)

Table 1. Number of Children Tested for Lead in Indiana by Age, 2012

Variable	Number of Children Tested (N)	Proportion of Children Tested Based on Total Population (%)	Number of Children with EBLL >=10 µg/dL (N)	Rate of Children with EBLL >= 10 µg/dL per 1,000 Children Tested
Number of children tested[1]	57,897	3.8	277	4.8
Number of children tested, age 0-6 years[2]	55,430	9.1	267	4.8
Age				
<1	6,817	8.1	9	1.3
1	21,941	26.0	121	5.5
2	10,794	12.7	52	4.8
3	5,050	5.8	37	7.3
4	5,838	6.6	28	4.8
5	3,484	4.0	10	2.9
6	1,506	1.7	10	6.6
>7	2,467	0.3	10	4.1

[1]The 2011 estimated population of children age 16 and under (the eldest child tested in 2012) was 1,505,232.
[2]The estimated number of children age 0-6 years was 605,799.

Table 2. Number of Children Tested for Lead in Indiana by Race and Ethnicity, and Blood Lead Level, 2012

Racial Distribution[1]	Number of Children Tested (N)	Rate of Children with EBLL >= 10 µg/dL per 1,000 Children Tested
White	27,757	4.4
Black	9,243	6.0
Asian/Pacific Islander	753	6.6
American Indian/Alaska Native	91	0.0
Multiracial	514	1.9
Other	2,580	7.0
Unknown/missing	16,959	4.4
Ethnic Distribution[1]		
Hispanic	8,302	5.7

[1]Reporting race and ethnicity data remains a challenge due to inconsistent collection and inaccurate recording.

Table 3. Number of Children Tested for Lead in Indiana by Blood Lead Level, 2012

BLL in microgram per deciliter	Number of Children Tested (N)	Proportion of Total Tests Completed (%)
<=4.9 µg/dL	54,613	94.3
5 – 9.9 µg/dL	2,665	4.6
10 – 14.9 µg/dL	391	0.7
15 – 19.9 µg/dL	107	0.2
20 – 24.9 µg/dL	48	0.1
>= 25 µg/dL	73	0.1

Lead Poisoning and Screening Rates

Over the past ten years, there has been a steady decline in childhood lead poisoning rates in Indiana, from 1.1% in 2003 to 0.48% in 2012 (Figure 1). This decline, which is an even greater reduction from 1997, when the childhood lead poisoning rate was 3.1%, illustrates the effectiveness of the Indiana Lead and Healthy Homes Program. Unfortunately, over the past five years, there has also been a steady decline in the rate of children screened for lead poisoning, dropping from 10.9 % in 2007, to only 9.1% in 2012 (Figure 2). In order to raise Indiana's rate of childhood lead screening, increased awareness regarding lead poisoning hazards and the importance of early testing must occur. The effectiveness of increased awareness can be seen in data from 2007, when testing rates increased dramatically from the previous year, from 8.7% to 10.9%, correlating with a nationwide recall of toys that year that were found to contain lead.

Indiana remains committed to meeting Healthy People 2020 objectives, set forth by the US Department of Health and Human Services, and reducing mean blood-lead levels of children by 10% and ultimately eliminating elevated blood lead levels in all children.

Figure 1: Lead Poisoning Rate per 1,000 Children Tested <7 Years of Age, Indiana 2003-2012

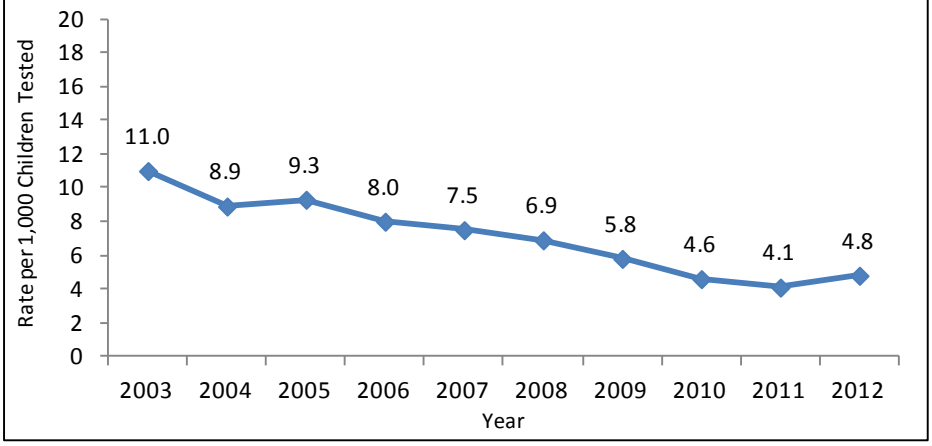
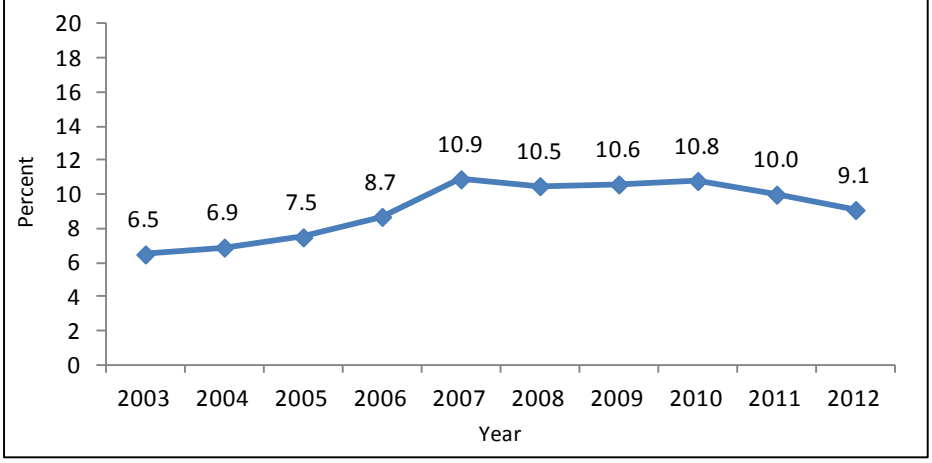


Figure 2: Percentage of Children <7 Years of Age Screened for Lead Poisoning, Indiana 2003-2012



Blood Lead Levels by Age

Lead poisoning is an environmental health issue that can affect anyone; however, children, due to their age, size, and developmental status, are particularly susceptible to sustaining irreversible health complications. Figure 3 illustrates the breakdown of children screened for lead poisoning based on age. Children, ages 1 to 3 years of age, exhibit the highest rates of lead poisoning, at 17.6 per 1,000 children (Figure 4). This is likely attributed to their frequent hand-to-mouth behavior, which creates a higher risk for poisoning by ingestion. Due to their greater risk for adverse outcomes from an elevated blood lead level, children should be tested before the age of 7. 95.7% of all Hoosier children who were screened in 2012 were between the ages of 0 and 6, while 65.2% tested (Figure 3) were in the high risk age group of 1 to 3 years of age.

Figure 3: Percent of Children Screened for Lead Poisoning by Age, Indiana 2012

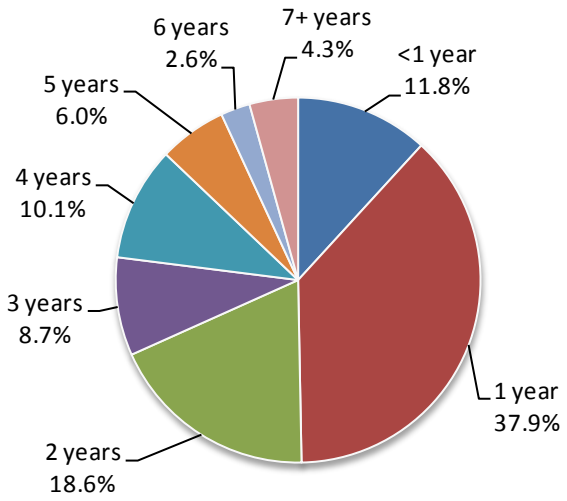
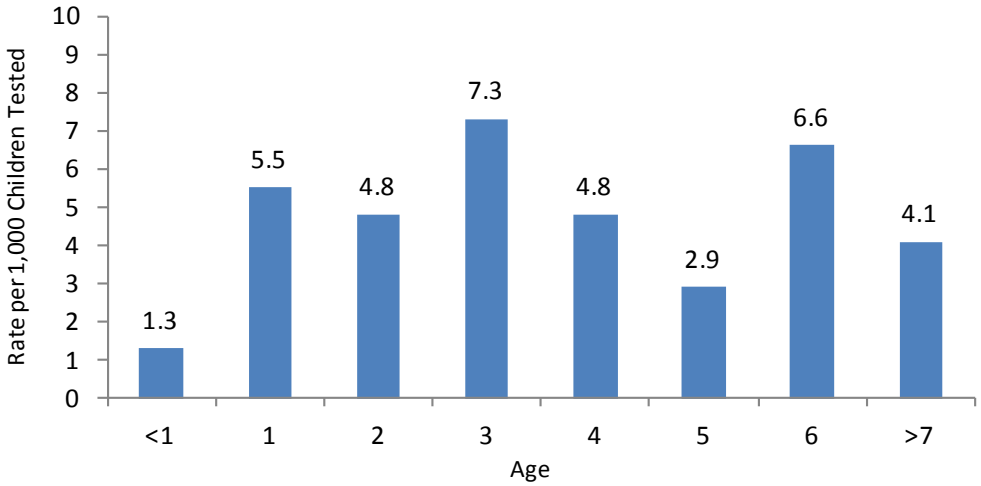


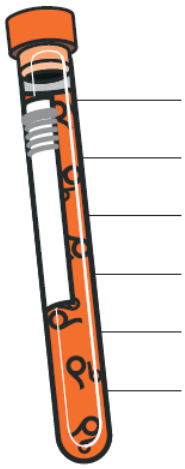
Figure 4 demonstrates the rate of lead poisoning by age per 1,000 children tested in each age group. As seen in the graph, children 3 years of age had the highest rate of poisoning, at 7.3 per 1,000 children tested in that age group.

Figure 4: Lead Poisoning Rate by Age of Child per 1,000 Children Tested, Indiana 2012



Distribution of Elevated Blood Lead Levels and Adverse Health Effects

Figure 5: Adverse Health Effects in Children by Blood Lead Level[1]



Kidney: atrophy and interstitial nephritis	80-120
Nervous system: overt clinical encephalopathy	80-100
Gastrointesintal: colic	60-100
Formation of blood cells: anemia	20-40
Formation of blood cells: biochemical (enzyme) changes	< 10 *
Nervous system: IQ/learning disruption	< 10 *

Blood lead levels in micrograms of lead per deciliter of blood (µg/dl)

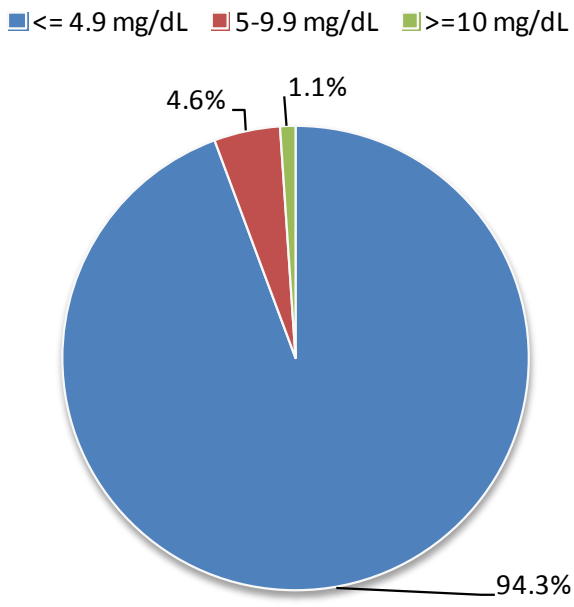
* No evidence of threshold

[1]Adapted from: http://www.chem.unep.ch/pops/pdf/lead/leadexp.pdf

At low levels of lead poisoning, there may be no overt signs or symptoms exhibited; however, low levels of lead poisoning, over time, may lead to developmental delays, learning problems, attention difficulties, and hyperactivity. Moderate levels of lead poisoning can cause constipation, abdominal pain, and poor appetite. Higher levels can lead to irritability, vomiting and lethargy. Serious health conditions, including kidney and other organ failure, encephalopathy (degenerative disease of the brain), and gastrointestinal colic. Levels above 100 µg/dL can result in death. Figure 5 illustrates the adverse health effects that may result from specific levels (µg/dL) of lead poisoning.

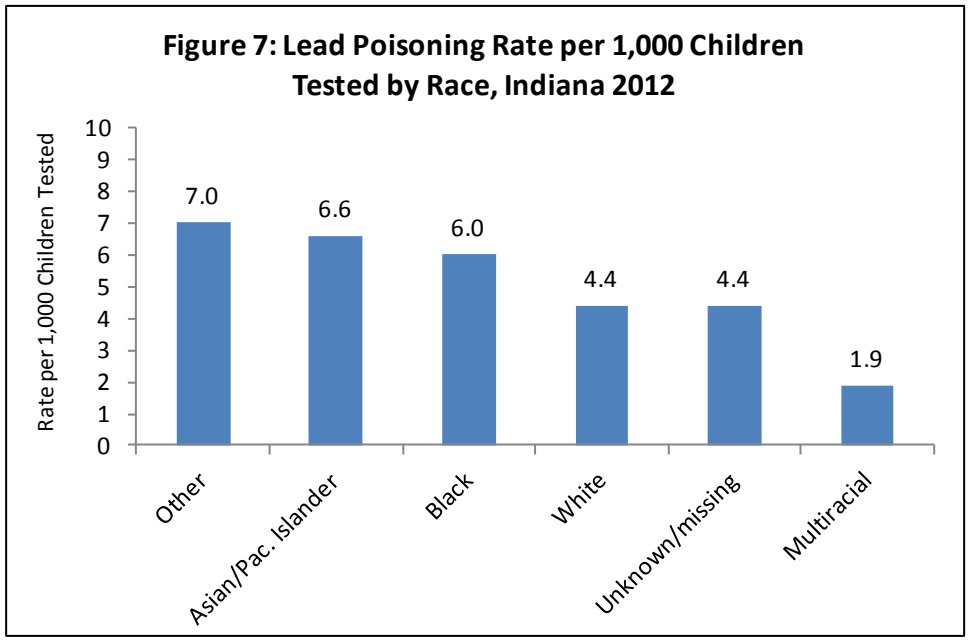
Figure 6 represents the breakdown of blood lead levels based on the total number of children tested. In 2012, 94.3% of lead tests in Indiana had a blood lead level (BLL) of <= 4 µg/dL, 4.6% had a BLL between 5 and 9.9 µg/dL, and 1.1% had a BLL of >10 µg/dL (the classified threshold in Indiana that qualifies a child for individual services).

Figure 6: Elevated Blood Lead Level Distribution, Indiana, 2012

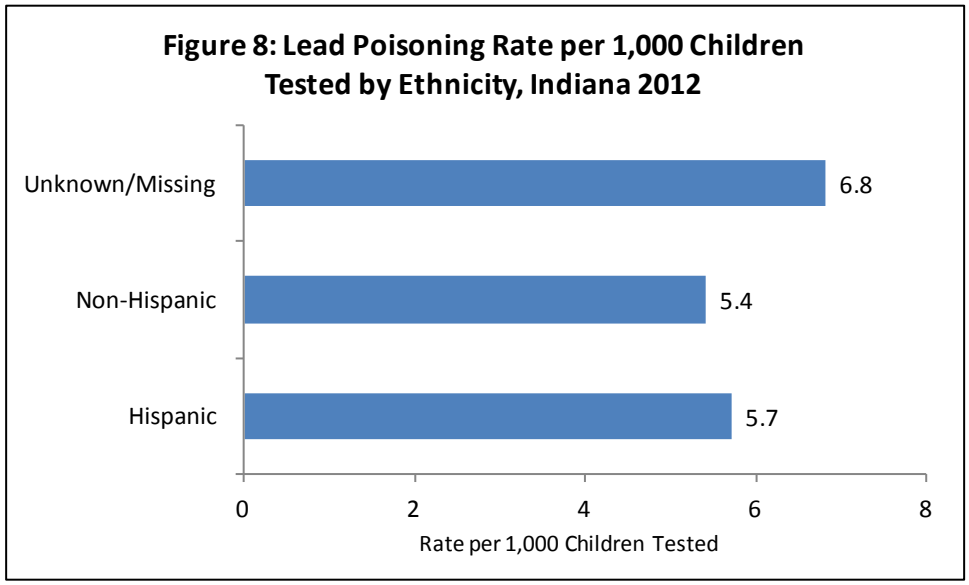


Race and Ethnicity in Relation to Lead Poisoning

Racial disparities exist in lead poisoning among Hoosier children. Belonging to a minority group is one of seven risk factors that classifies a child as being "at risk" for lead poisoning. Unfortunately, data regarding race is not consistently collected or always recorded accurately. Figure 7 shows the lead poisoning rate by racial group of children in Indiana in 2012.



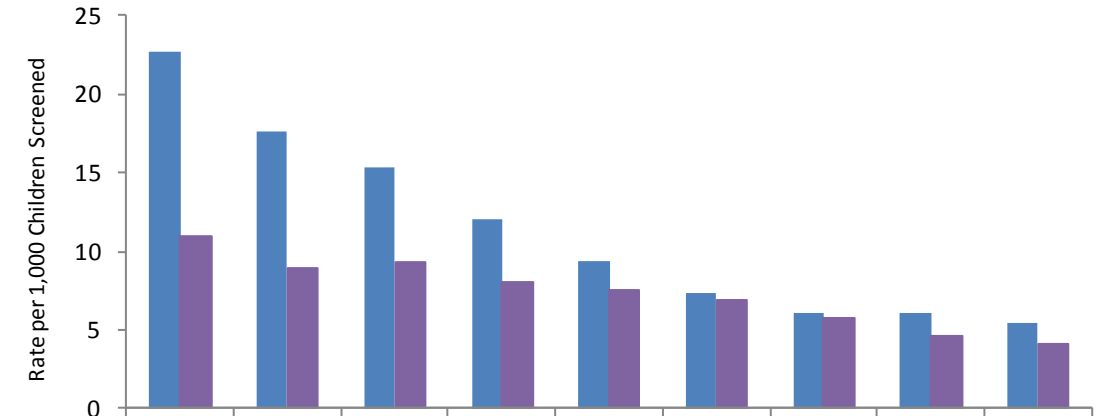
Disparities also lie in data collected regarding ethnicity among Hoosier children. As with race, it is often times difficult to measure ethnicity, leading to a lot of "unknown" or missing data. Figure 8 illustrates the rate of lead poisoning by ethnicity. Reiterating the data collection problems regarding ethnicity, children with unknown or missing data had an EBLL occurrence of 6.8 per 1,000 children tested. Hispanic children had a slightly higher lead poisoning rate (5.7 per 1,000 children tested) compared to non-Hispanic children (5.4 per 1,000 children tested). Even though these numbers are close, Hispanic children accounted for 17% of all lead poisoned children in Indiana in 2012.



Lead Poisoning Rate Comparison: Indiana & US, 1997 – 2012

Similar to lead poisoning rates for the United States (as a whole), the percentage of lead poisoned children in Indiana has steadily declined since 2003. Indiana has consistently had a lower rate of lead poisoned children compared to the U.S. As the Indiana Lead and Healthy Homes Program continues to incorporate healthy homes principles in lead poisoning outreach and prevention, it will also remain committed to its primary mission: to eliminate the incidence of lead poisoning among Indiana's children. Figure 9 provides a graphic comparison of lead poisoning rates in Indiana and for the nation for the period 2003 – 2011.

Figure 9: Lead Poisoning Rate per 1,000 Children Tested, Indiana and U.S. 2003-2011



	2003	2004	2005	2006	2007	2008	2009	2010	2011
U.S.	22.7	17.6	15.3	12.0	9.4	7.3	6.1	6.1	5.5
Indiana	11.0	8.9	9.3	8.0	7.5	6.9	5.8	4.6	4.1

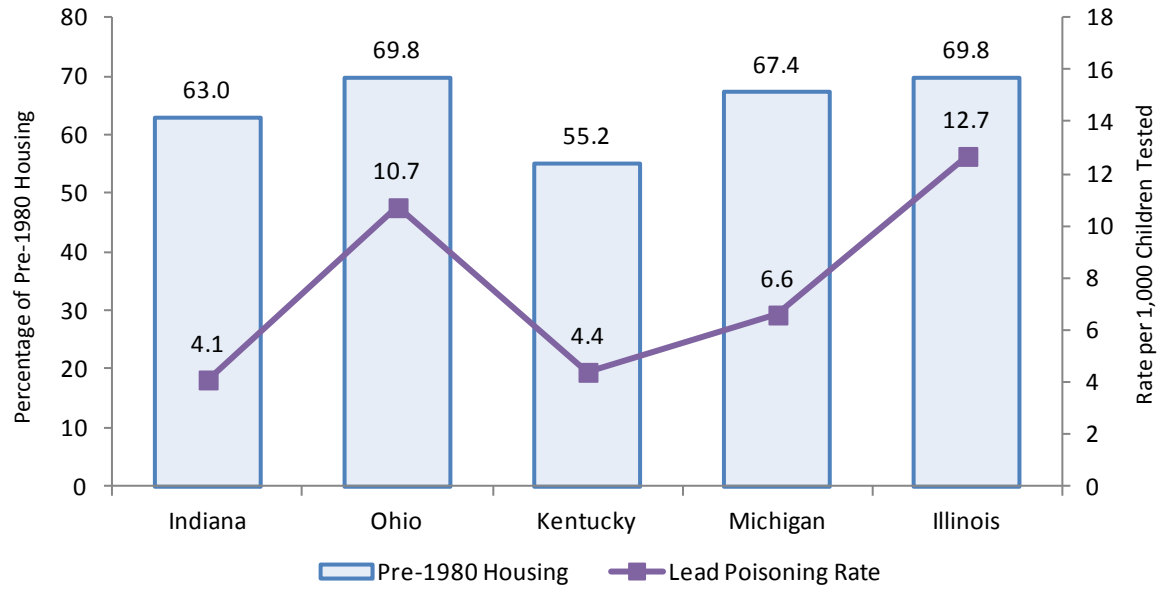
Original Data: Center for Disease Control and Prevention National Lead Surveillance Data

Pre-1980 Housing Units in Indiana and Surrounding States

A key risk factor for lead poisoning in children is exposure to lead-based paint. Lead-based paint is typically found in housing built prior to 1978, the year in which the manufacture of lead-based paint intended for residential use was prohibited by federal legislation. According to the 2009 American Community Survey data, nearly 2 million (74%), housing units in Indiana were built prior to 1980 (data is presented in 10-year increments; this is the nearest time-point to 1978 from which to derive estimates). Figure 11, on the following page, maps pre-1980 housing in Indiana by county. Only one county, Hamilton County, has less than 40% of its available housing built prior to 1980. Seventy-five out of Indiana's ninety-two counties (82%) have 41 – 80% of housing stock built before 1980. Sixteen Indiana counties have over 80% of their available housing built prior to 1980.

In comparison with surrounding states, Indiana has the highest percentage of housing stock built prior to 1980 (63%); yet, the statewide lead poisoning rates are the lowest (4.1 per 1,000 children tested). The figure below illustrates EBLL rates and percentage of pre-1980 housing for Indiana, Ohio, Michigan, Kentucky and Illinois (all EBLL rates are from 2011).

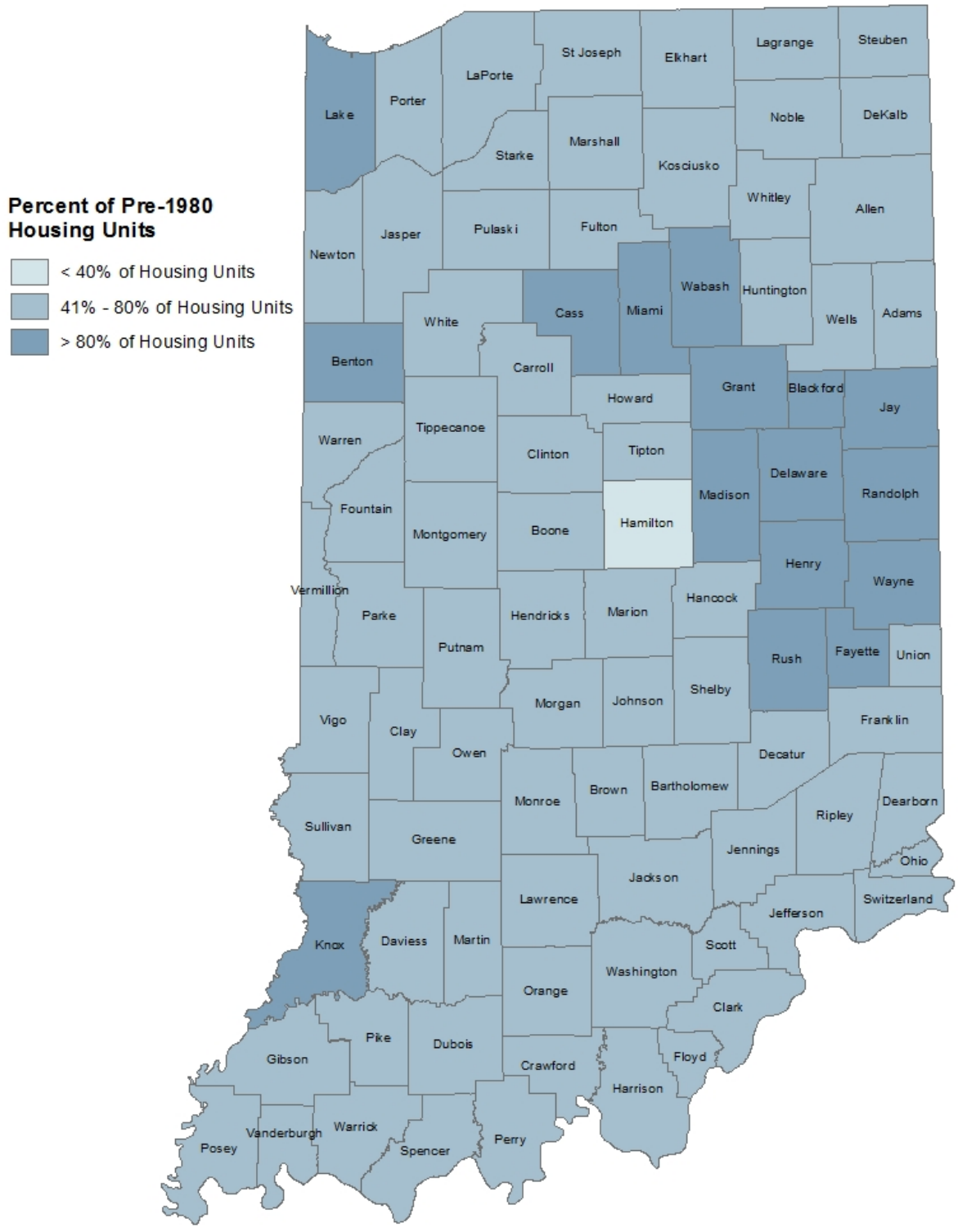
Figure 10: Percentage of Pre-1980 Housing and 2011 Lead Poisoning Rates, Indiana and Surrounding States



Original Data: Center for Disease Control and Prevention National Lead Surveillance Data

Percentage of Pre-1980 Housing Units in Indiana

Figure 11



Lead Poisoning in Medicaid-Eligible Children

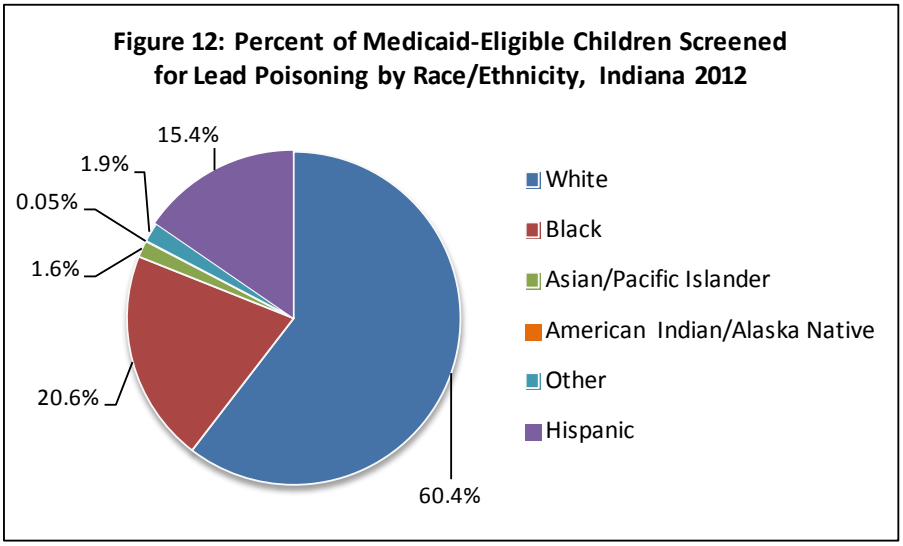
In alignment with federally-mandated standards, Indiana requires that all children receiving Medicaid benefits must be screened for blood lead poisoning at ages 1 and 2. A child receiving Medicaid benefits must also be tested any time between ages 3 and 5 if they were not previously tested between the ages of 1 and 2. In 2012, 60% of all of Indiana's children, who were between the ages of 0 and 6 years of age, were Medicaid-eligible. With over half of Indiana's child population receiving these benefits, a significant portion of Hoosier children are at at-risk for lead poisoning, and a much larger number should have been tested in 2012 (Figure 13 shows only 28.7% of Medicaid-eligible children were tested).

Table 4. Lead Poisoning in Medicaid-Eligible Children

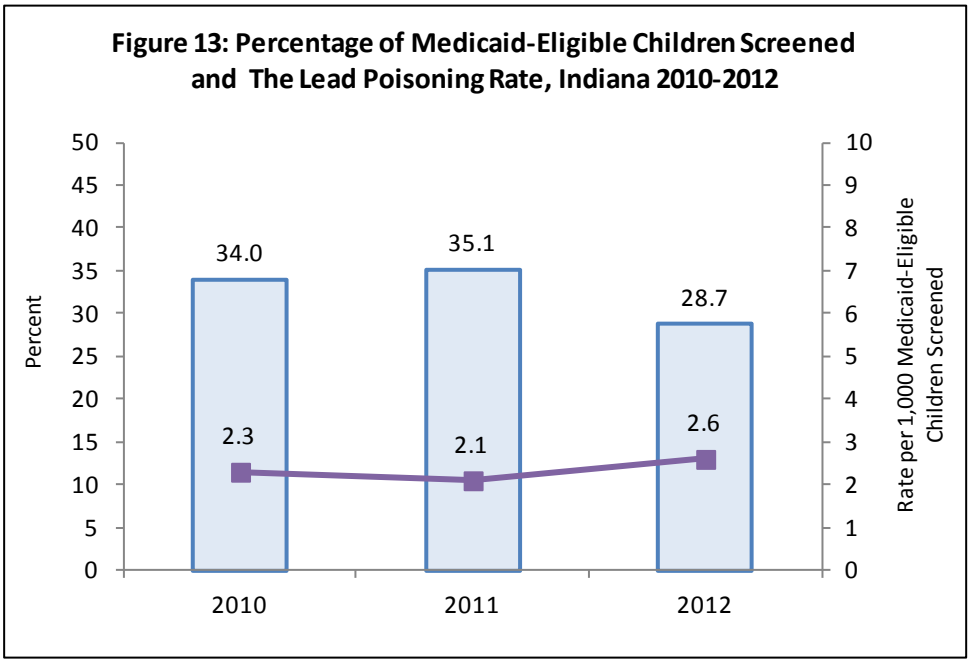
Age	Number of Medicaid-Eligible Children (N)	Number of Medicaid-Eligible Children Screened (N)	Percent of Medicaid-Eligible Children Tested (%)	Rate of Medicaid-Eligible Children with EBLL >= 10 µg/dL per 1,000 Medicaid-Eligible Children Tested
<1	48,923	254	0.5	--
1	52,780	16,666	31.6	4.6
2	45,517	17,346	38.1	3.6
3	46,002	19,172	41.7	2.6
4	45,771	19,628	42.9	2.0
5	45,485	14,975	32.9	1.7
6	78,108	18,893	24.2	1.4
Sex				
Female	177,079	51,634	29.2	2.7
Male	185,507	52,300	28.2	2.5
Race				
White	222,683	62,788	28.2	2.2
Black	75,614	21,442	28.4	3.6
Asian/Pacific Islander	5,554	1,691	30.4	1.2
Am. Indian/Alaska Native	237	50	21.1	--
Other	7,304	1,932	26.4	1.6
Ethnicity				
Ethnicity: Hispanic	51,194	16,031	31.3	2.8
Total	**362,586**	**103,934**	**28.7**	**2.6**

Table 4, as well as Figure 12 (on the following page), reveals racial disparities that lie among children who receive Medicaid benefits, with Black children experiencing a higher rate of lead poisoning (3.6 per 1,000 children tested) compared to White children (2.6 per 1,000 children tested).

Lead Poisoning in Medicaid-Eligible Children



The overall percentage of Medicaid-eligible children screened for lead poisoning was 28.7% in 2012 (Figure 13). This represents a decrease from both 2010 (34.0%) and 2011 (35.1%), and is far from optimal, considering it is Federal law that all Medicaid-eligible children are to be tested. Of all Hoosier children who were found to have lead poisoning in 2012 (with an elevated blood lead level above 10 µg/dL), 96.5% of those were Medicaid recipients. Further, even though testing rates among Medicaid-eligible children fell between 2011 and 2012, the rate of children with lead poisoning increased (from 2.1 per 1,000 children in 2011 to 2.6 per 1,000 children in 2012). When looking at this staggering data, one cannot help but question how many children in Indiana currently have unidentified lead poisoning. The Indiana Lead and Health Homes Program continues to work with the Office of Medicaid Policy and Planning (OMPP) to increase testing rates among children under the requirements of the Medicaid Early and Periodic Screening, Diagnostic, and Treatment Program (EPSDT).



2012 Indiana County Level Data

Table 5 (Required county-level data)

County	Unique Children Tested	Children with Initial EBLL[1]	Children with EBLL Capillary[2]	Children with EBLL Venous[3]	Children with Confirmed EBLL[4]	Average # Days to Confirm	Risks Assessments Performed	Hazard(s) identified	Hazard(s) remediated
Adams	156	3	2	1	1		18	11	2
Allen	2,539	46	14	33	25	20	35	31	2
Bartholomew	763	1	1	0	0		10	2	1
Benton	52	0	0	0	0		1	0	0
Blackford	147	2	1	1	1	5	0	0	0
Boone	201	4	2	2	0		0	0	0
Brown	108	0	0	0	0		0	0	0
Carroll	154	0	0	0	0		0	0	0
Cass	308	8	1	7	5	15	3	3	0
Clark	241	4	2	2	1	48	1	1	0
Clay	196	1	0	1	1		2	2	1
Clinton	261	6	3	4	3		2	2	0
Crawford	123	1	1	1	1	32	1	1	1
Daviess	134	2	0	2	1	30	33	16	16
Dearborn	170	3	0	3	3		11	9	2
Decatur	199	1	1	0	0		25	16	0
Dekalb	15	0	0	0	0		2	1	0
Delaware	641	10	5	6	6		3	1	1
Dubois	81	1	0	1	1		3	0	0
Elkhart	4,470	57	49	16	11	31	2	1	1
Fayette	248	6	3	3	1		1	1	1
Floyd	351	2	1	1	1		19	2	0
Fountain	76	1	1	0	0		4	1	0
Franklin	201	1	1	1	1	8	0	0	0

County	Unique Children Tested	Children with Initial EBLL[1]	Children with EBLL Capillary[2]	Children with EBLL Venous[3]	Children with Confirmed EBLL[4]	Average # Days to Confirm	Risks Assessments Performed	Hazard(s) identified	Hazard(s) remediated
Fulton	94	1	1	0	0		0	0	0
Gibson	208	4	4	0	0		1	1	1
Grant	1,324	9	8	4	3	11	3	1	0
Greene	347	0	0	0	0		0	0	0
Hamilton	1,298	9	7	2	2	23	3	0	0
Hancock	219	1	1	0	0		0	0	0
Harrison	360	0	0	0	0		0	0	0
Hendricks	361	1	1	0	0		1	0	0
Henry	327	3	0	3	0		2	0	0
Howard	1,008	7	1	6	5	8	1	1	0
Huntington	203	1	0	1	1		0	0	0
Jackson	215	0	0	0	0		8	2	2
Jasper	226	0	0	0	0		0	0	0
Jay	200	1	1	0	0		0	0	0
Jefferson	293	3	1	2	1	90	3	3	3
Jennings	292	1	1	1	1	29	4	1	1
Johnson	576	3	3	0	0		1	0	0
Knox	215	3	0	3	2	29	7	5	2
Kosciusko	536	8	6	2	1		0	0	0
Lagrange	87	2	1	1	1		1	0	0
Lake	4,149	42	15	29	24	31	28	19	8
LaPorte	1,048	17	9	9	9	39	13	11	5
Lawrence	627	2	2	1	1	40	10	1	1
Madison	1,129	12	7	9	7	33	7	2	1
Marion	10,870	120	39	87	66	42	188	154	36

County	Unique Children Tested	Children with Initial EBLL[1]	Children with EBLL Capillary[2]	Children with EBLL Venous[3]	Children with Confirmed EBLL[4]	Average # Days to Confirm	Risks Assessments Performed	Hazard(s) identified	Hazard(s) remediated
Marshall	397	3	1	2	1		0	0	0
Martin	82	0	0	0	0		0	0	0
Miami	278	1	0	1	0		0	0	0
Monroe	2,332	2	1	1	1		2	0	0
Montgomery	187	1	1	0	0		1	0	0
Morgan	429	2	2	0	0		0	0	0
Newton	72	1	0	1	1		1	0	0
Noble	219	2	1	1	1		0	0	0
Ohio	10	0	0	0	0		6	5	0
Orange	207	1	1	1	1	90	9	1	1
Owen	393	0	0	0	0		0	0	0
Parke	48	0	0	0	0		1	0	0
Perry	82	1	1	0	0		0	0	0
Pike	39	2	0	2	2		4	0	0
Porter	627	2	1	1	0		0	0	0
Posey	137	2	2	0	0		1	1	0
Pulaski	67	0	0	0	0		0	0	0
Putnam	263	2	2	0	0		8	6	6
Randolph	163	2	1	1	1	29	1	1	0
Ripley	284	0	0	0	0		0	0	0
Rush	102	1	1	0	0		3	1	0
Scott	121	1	0	1	1		0	0	0
Shelby	122	0	0	0	0		1	1	0
Spencer	218	2	1	1	0		1	1	0
St Joseph	4,020	69	17	57	39	35	58	49	0

County	Unique Children Tested	Children with Initial EBLL[1]	Children with EBLL Capillary[2]	Children with EBLL Venous[3]	Children with Confirmed EBLL[4]	Average # Days to Confirm	Risks Assessments Performed	Hazard(s) identified	Hazard(s) remediated
Starke	111	2	2	0	0		0	0	0
Steuben	266	0	0	0	0		0	0	0
Sullivan	110	0	0	0	0		0	0	0
Switzerland	36	0	0	0	0		0	0	0
Tippecanoe	1,795	6	6	0	2	32	7	4	3
Tipton	67	0	0	0	0		0	0	0
Union	85	0	0	0	0		23	6	3
Vanderburgh	1,523	22	16	9	9	39	12	6	0
Vermillion	84	0	0	0	0		3	1	0
Vigo	950	17	3	14	9	18	6	6	0
Wabash	272	2	2	0	0		0	0	0
Warren	49	0	0	0	0		1	0	0
Warrick	239	0	0	0	0		9	0	0
Washington	174	1	1	1	1	29	6	0	0
Wayne	1,222	48	37	20	11	35	17	9	0
Wells	164	2	2	0	0		0	0	0
White	156	0	0	0	0		0	0	0
Whitley	109	1	0	1	1		1	0	0
Unknown	1,539	11	6	7	9	17			
Indiana	**57,897**	**619**	**304**	**367**	**277**	**36**	**639**	**400**	**101**

[1]Unique children with blood levels >=10 (Venous or Capillary).
[2]Unique children with blood levels >=10 (Capillary).
[3]Unique children with blood levels >=10 (Venous).
[4]Unique children with confirmed lead poisoned (1 venous or 2 capillaries (within 84 days) or 1 capillary followed by venous) for first time confirmed children only.

Glossary

The sources for these definitions are the Medical Dictionary Online (http://www.online-medical-dictionary.org/) noted as [1], the Centers for Disease Control and Prevention Epidemiology Glossary (http://www.cdc.gov/reproductivehealth/epiglossary/glossary.htm#I) noted as [2], The Free Dictionary (http://www.thefreedictionary.com/) noted as [3], the National Center for Healthy Housing (http://www.nchh.org/What-We-Do/Healthy-Homes-Principles.aspx) noted as [4], the Centers for Disease Control and Prevention Lead home page (http://www.cdc.gov/nceh/lead/) noted as [5], the online article "The Biochemistry and physiology of vitamin D" (http://vitamind.ucr.edu/biochem.html), noted as [6].

Anemia: Reduction in the number of circulating red blood cells. [1]

Atrophy: Decrease in the size of a cell, tissue, or organ associated with pathological conditions. [1]

Blood/brain barrier: Specialized cells that form a transport barrier between the cerebral capillaries and the brain tissue. [1]

Case management: Traditional term for all the activities which a physician or other health care professional normally performs to insure the coordination of the medical services required by a patient so that care is continuous and comprehensive. [1]

Colic: Syndrome with intermittent abdominal pain characterized by sudden onset and cessation. This condition usually occurs in the abdominal region but may occur in other body regions as well. [1]

Confirmed test: A second capillary or a single venous test performed to confirm a blood lead level.

Deciliter: A metric unit of volume equal to one tenth of a liter. [3]

Elevated blood lead level (EBLL): An elevated blood lead level in a child is defined as 10 or more micrograms of lead per deciliter (µg/dL) of blood. [5]

Encephalopathy: Any degenerative disease of the brain (often associated with toxic conditions). [3]

Incidence: A measure of the frequency with which an event, such as a new case of illness, occurs in a population over a period of time. [2]

Interstitial nephritis: Inflammation of the interstitial tissue of the kidney, inflammation of kidney tubules. [1]

Lead poisoning: Lead poisoning occurs when blood lead levels are equal to or greater than 10 µg/dl (micrograms per deciliter). [5]

Medicaid-eligible: Those children who are enrolled in Medicaid but who may or may not have used Medicaid services.

Microgram: A unit of mass equal to one thousandth (10^{-3}) of a milligram or one millionth (10^{-6}) of a gram. [3]

Primary prevention: Prevention of disease in susceptible individuals or populations through promotion of health and specific protection, such as immunization, as distinguished from the prevention of complications or after-effects of existing disease. [1]

Proportion: A type of ratio in which the numerator is included in the denominator. The ratio of a part to the whole, expressed as a ``decimal fraction'' (e.g., 0.2), as a fraction (1/5), or, loosely, as a percentage (20%). [2]

Risk assessment: The qualitative or quantitative estimation of the likelihood of adverse effects that may result from exposure to specified health hazards. [1]

Seven principles of healthy housing: Homes that are *Dry***:** Damp houses provide a nurturing environment for mites, roaches, rodents, and molds, all of which are associated with asthma; *Clean:* Clean homes help reduce pest infestations and exposure to contaminants; *Pest-Free:* Recent studies show a causal relationship between exposure to mice and cockroaches and asthma episodes in children; yet inappropriate treatment for pest infestations can exacerbate health problems, since pesticide residues in homes pose risks for neurological damage and cancer; *Safe:* The majority of injuries among children occur in the home. Falls are the most frequent cause of residential injuries to children, followed by injuries from objects in the home, burns, and poisonings; *Contaminant-Free:* Chemical exposures include lead, radon, pesticides, volatile organic compounds, and environmental tobacco smoke. Exposures to asbestos particles, radon gas, carbon monoxide, and second-hand tobacco smoke are far higher indoors than outside; *Ventilated:* Studies show that increasing the fresh air supply in a home improves respiratory health; *Maintained:* Poorly-maintained homes are at risk for moisture and pest problems. Deteriorated lead-based paint in older housing is the primary cause of lead poisoning, which affects some 240,000 U.S. children. [4]

Surveillance: The systematic collection, analysis, interpretation, and dissemination of health data on an ongoing basis, to gain knowledge of the pattern of disease occurrence and potential in a community, in order to control and prevent disease in the community. [2]