

# 2017 Childhood Lead Surveillance Report

## Lead & Healthy Homes Division



Indiana State  
Department of Health

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## **Executive Summary**

The Indiana State Department of Health (ISDH) is working to increase blood lead screenings in Indiana in order to better identify and provide support to children with elevated blood lead levels. Lead is an issue that has been in the public eye for some time, but for many individuals and physicians, it has been overshadowed by multiple other health risks. Lead's health effects are often overlooked or assumed to be tied to another condition, but a greater understanding of these effects is necessary. Lead can have lifelong impact on the neurological, psychological, and emotional development of children and can only be mitigated through early testing and intervention.

The Indiana Administrative Code defines a child's blood lead level as elevated if the child has a confirmed blood lead test at or above 10µg/dL. A child's blood lead level becomes confirmed when he or she receives either a single venous blood test or two capillary blood tests that reveal a blood lead result at or above 10µg/dL. A majority of local health departments across the state use this as their standard for providing case management services. Some local health departments have adopted a lower standard of 5 µg/dL, which matches the current recommendations from the Centers for Disease Control and Prevention (CDC).

In 2017, ISDH received 69,508 test results, representing 65,318 Indiana children tested. This is a 23 percent increase from the 56,438 children tested in 2016. Of the children tested, 583 had at least one test with a blood lead level at or above 10 µg/dL. A total of 283 of those children were confirmed cases and were referred to case management.

In February 2017, the Lead and Healthy Homes Program at the Indiana State Department of Health (ISDH) re-formed as a new division under the direction of Assistant Commissioner Dr. Judith Lovchik. The programs had been housed under the Environmental and Public Health Division for nearly six years. Paul Krievins was named director of the division in November 2017.

In 2017, the division also worked with partners at the Indiana Housing and Community Development Authority (IHCDA) and Family and Social Services Administration (FSSA) to identify three new sources of funding for lead hazard control and abatement. IHCDA was able to identify funds through its Community Development Block Grant (CDBG) and HUD Demonstration Grant, while ISDH was able to partner with the FSSA's Children's Health Insurance Program (CHIP) to identify multi-year funding. These funds, totaling more than \$7.4 million in the first year, represent Indiana's commitment to helping address lead risks in communities and are the catalyst for future investments in lead-safe housing.

## **Introduction**

The Lead and Healthy Homes Division (LHHD) aims to reduce the incidence of elevated blood lead levels in children throughout Indiana. The division seeks to do this through proactive screening, treatment, case management, and remediation of lead hazards.

Lead is a heavy metal that has been a part of both the U.S. and world economies for some time. Lead has been used for a variety of industrial and residential processes, including in paint, plumbing, jewelry, and cosmetics. The most common lead exposure for children in Indiana is through lead-based paint. Lead was an additive to most paints prior to the ban on lead-based paint in 1978. As it deteriorates with age, or when it is disturbed, such as during remodeling and repair projects, lead paint can generate paint fragments, chips, and dust. These particles can be ingested or inhaled by small children, with potentially

significant health consequences. This is especially concerning in Indiana, where U.S. Census data show more than 62% of all housing was built before 1980.

Research has shown that elevated blood lead levels (EBLLs) can negatively impact cognitive function and cause behavioral disorders and slowed physical development in young children. Children under age 7 are more vulnerable to lead hazards due to the lack of a fully formed blood brain barrier and because they are more likely to put hands or other objects into their mouths. Sometimes there are no symptoms of an elevated blood lead level. In fact, signs of lead exposure could be mistaken for other conditions like ADHD, autism, or the flu. However, exposure to any level of lead could harm a child's nervous system, brain development, and growth.

Lead exposure also can have a financial impact, including increased medical and education costs through adulthood (Peter Muenning, 2009). Additional costs incurred include expenses associated with state and local county government case management and increased utilization of Medicaid (Needlemen, 1990).

Indiana law does not require universal testing of children under age 7. Only children covered by Medicaid are required by federal law to be tested for lead, with mandatory testing for those children at 12 and 24 months, or between 36 and 72 months if they have not previously been tested. However, it is important for parents and healthcare providers to recognize the importance of identifying children with elevated blood lead levels early and providing education and other resources to help decrease the long-term effects of lead. The Indiana State Department of Health's Lead and Healthy Homes Division remains committed to identifying at-risk children and monitoring the treatment of those who have confirmed elevated blood lead levels.

An at-risk child is defined by 410 IAC 29-1-2 as a child who:

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

## **2017 Highlights**

In 2017, 65,318 individual children were screened in Indiana. This includes children who received an initial screening with results below the elevated threshold and did not require a subsequent confirmatory test and those whose initial tests came in as elevated and may or may not have a subsequent confirmatory test. The number of children tested represents about 11 percent of the children under age 7 in the state, based on the U.S. Census population estimate for 2017. According to Indiana statute, a child becomes a confirmed case when he or she receives at least one venous blood test or two capillary blood tests within a three-month period with a blood lead result at or above 10µg/dL.

Among the children tested:

- 283 had a confirmed blood level at or above 10µg/dL
  - 56% were males
  - 48% were white

## **Medicaid Data**

In 2017, FSSA provided the Lead & Healthy Homes Division with an assessment showing which children receiving lead screenings were also covered by Medicaid. A total of 33,823 unique Indiana children covered by Medicaid were tested in 2017. This represents 52% of the total tests received. Of the children who had blood lead levels at or above 10µg/dL, 62% received Medicaid benefits.

One of the goals of the Lead and Healthy Homes Division in 2018 is to increase the percentage of children receiving Medicaid who are screened by their physician. Comparing the number of Medicaid-eligible children who receive their first dose of Measles, Mumps and Rubella vaccine (a requirement for all children receiving Medicaid benefits) with those who receive a blood lead test either at 12 or 24 months (also a Medicaid requirement) has shown that while 94% of all Medicaid-eligible children receive the vaccine, only 11% had a blood lead test.

The poor testing rate has necessitated an all-hands-on-deck response plan that seeks to inform and motivate parents, physicians, service providers, educators, and the general public about the importance of lead testing in young children. Specific efforts to address this will include issuing provider report cards, sending messaging to WIC recipients, a detailed review of the process and effectiveness of current surveillance systems, and increasing community engagement among at-risk populations.

## **Case Management – Training and Outreach**

In 2017, ISDH undertook a number of projects designed to increase the transparency and effectiveness of the case management process. These efforts resulted in multiple improvements in case manager understanding of state lead laws, updated state forms and processes, and movement toward a new web-based case management tool.

One of the first projects ISDH staff worked on in 2017 was a concerted effort to increase the number of local health departments whose staff have been trained on proper blood lead specimen collection, appropriate packaging and laboratory submission of specimens, and case management of children with elevated blood lead results. This training is required under the Indiana Administrative Code (410 IAC 29) for all new hires. Through a combination of in-person trainings hosted in Indianapolis at the ISDH labs and field-based trainings at local health department offices, the program saw an increase in the number of health departments trained from 71% in 2016 to 98% in 2017.

ISDH staff also updated a number of the forms and outreach materials available to local health departments and the public. Staff created a new home visit assessment form that combined the nutritional, behavioral, and developmental questionnaires into one dual-language (Spanish/English) form. Staff also updated a bilingual lead brochure. All new outreach materials can be found on ISDH's website at <http://www.in.gov/isdh/26550.htm>.

ISDH also participated in testing and training on a new web-based case management and data collection system from the Centers for Disease Control and Prevention (CDC). The new web-based system, called

the Healthy Housing Lead Poisoning Surveillance System (HHPSS), is one of two options being considered as a replacement for the current system, called the Systematic Tracking of Elevated Lead Levels and Remediation (STELLAR) tool. HHPSS has a number of advantages over the old STELLAR system, offering greater accessibility, an ability to directly accept provider data, and an ability for both ISDH and local health departments to access shared saved data. Pending additional testing, implementation of a new case management system is slated to begin in 2018 and will include training and outreach to local health departments regarding data collection and case management.

Each year, Indiana looks to improve not only statewide performance relative to screening and case management, but also to assist all 93 local health departments in their efforts to provide services to families of children with elevated blood lead levels. In order to do this effectively, ISDH supports case referral and surveillance associated with active cases for each local health department. Support can include assistance with tracking down missing lead test information, providing referrals for risk assessments, and help with tracking necessary home visits and assessments.

### **East Chicago Lead Site**

In 2017, ISDH and its agency partners, including the Indiana Department of Environmental Management and Indiana Housing and Community Development Authority, continued efforts to help address concerns about lead exposure among residents living near the former U.S. Steel federal Superfund site in East Chicago.

The ISDH's Division of Emergency Preparedness, in conjunction with the East Chicago Health Department (ECHD), between 2016 and 2017 tested a total of 2,278 individuals, including 499 children under age 7, for elevated blood lead levels. Of the 499 children tested, a total of 39 had confirmed blood lead levels at or above 5 µg/dL, the level of concern set for this population through an executive order issued by Governor Eric J. Holcomb.

Governor Eric J. Holcomb also worked to provide both short-term support to the affected citizens, in the form of Executive Orders 17-13 and 17-14, and long-term support in the form of House Enrolled Act 1344, which authorized resources needed to help with lead hazard control efforts.

In addition, in July 2016, ISDH awarded \$100,000 in funding to help ECHD hire a public health nurse and health educator and provide education and outreach at numerous multi-agency neighborhood meetings. Nearly \$80,000 of that initial allocation was carried over into a new contract that began July 1, 2017, with the same commitment to help support staff and outreach related to addressing the crisis. Through the end of 2017, the ECHD was on track to spend all awarded funds as it continued to provide testing, case management, and outreach services to those affected by lead in their community. ISDH remains committed to the well-being of citizens in East Chicago and will continue to provide support and other needed assistance throughout 2018.

### **Lead in Indiana's Burmese Population**

Over the past decade, Marion and Allen counties have experienced increases in their Burmese populations. Concerns about lead levels among these residents arose as a result of elevated blood lead levels identified within members of the community. Subsequent investigations were conducted both by the Fort Wayne Allen County Department of Health in 2014 and the Marion County Public Health

Department in 2016. The ISDH Food Protection and Environmental Public Health divisions, in partnership with the Lead and Healthy Homes Division, worked with the county health departments in 2017 to develop sampling plans for collection of traditional foods, cosmetics, and pharmaceutical products used by the Burmese population.

These efforts revealed that a number of the traditional foods, medicines, and cosmetics being used by this population had lead levels significantly in excess of those considered safe. In response, ISDH and the local health departments developed educational materials in Burmese, which were distributed by local case managers and community leaders. ISDH will continue to work with state and local partners to develop other actions regarding potential future sampling and continue to expand on education about these items and others.

### **Risk Factors Associated with Elevated Blood Lead Levels in Indiana**

In 2017, ISDH staff worked to debut an interactive map on the Lead and Healthy Homes Division website to help local health departments visualize lead risk factors within their geographic areas. This map, which can be found at <https://www.in.gov/itp/2406.htm>, is designed to provide information to local units of government and health departments on areas in their communities with the highest risk factors for lead exposure and to better identify areas in which children are more likely to be exposed to lead. The data sources used to produce this map were organized by census tract and compared data associated with housing stock (pre-1980 construction) and lower-income populations. The maps did not use blood lead levels results or information on historical elevated blood lead levels as a part of the risk criteria. Using this information would have biased the mapping in a way that doesn't represent risk today.

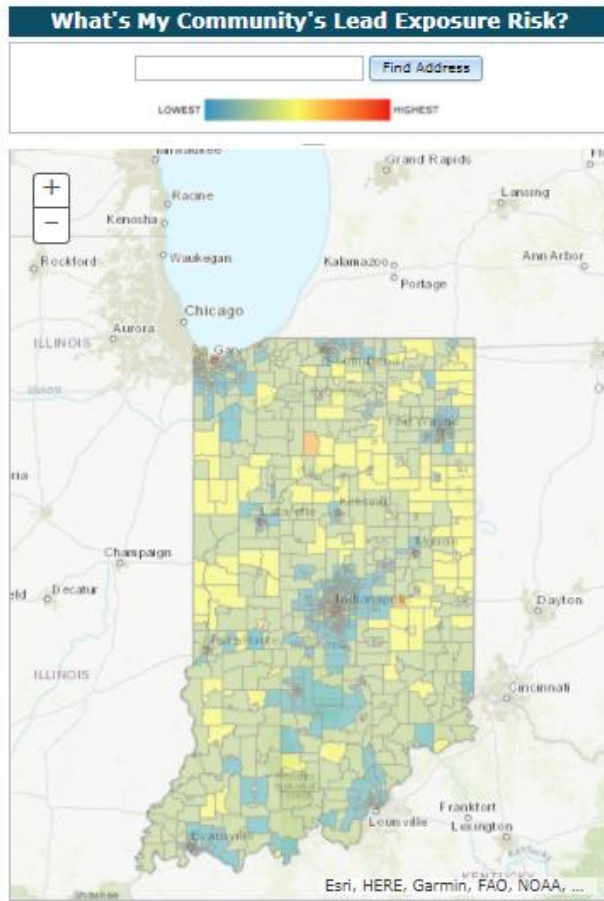


Figure 1

The lead census tract map will allow users to enter an address to assess risk level.

ISDH anticipates that with increased outreach to these high-risk areas, more elevated lead levels will be identified at the city, county, and state levels, which would increase the overall percentage of children impacted by lead in Indiana.



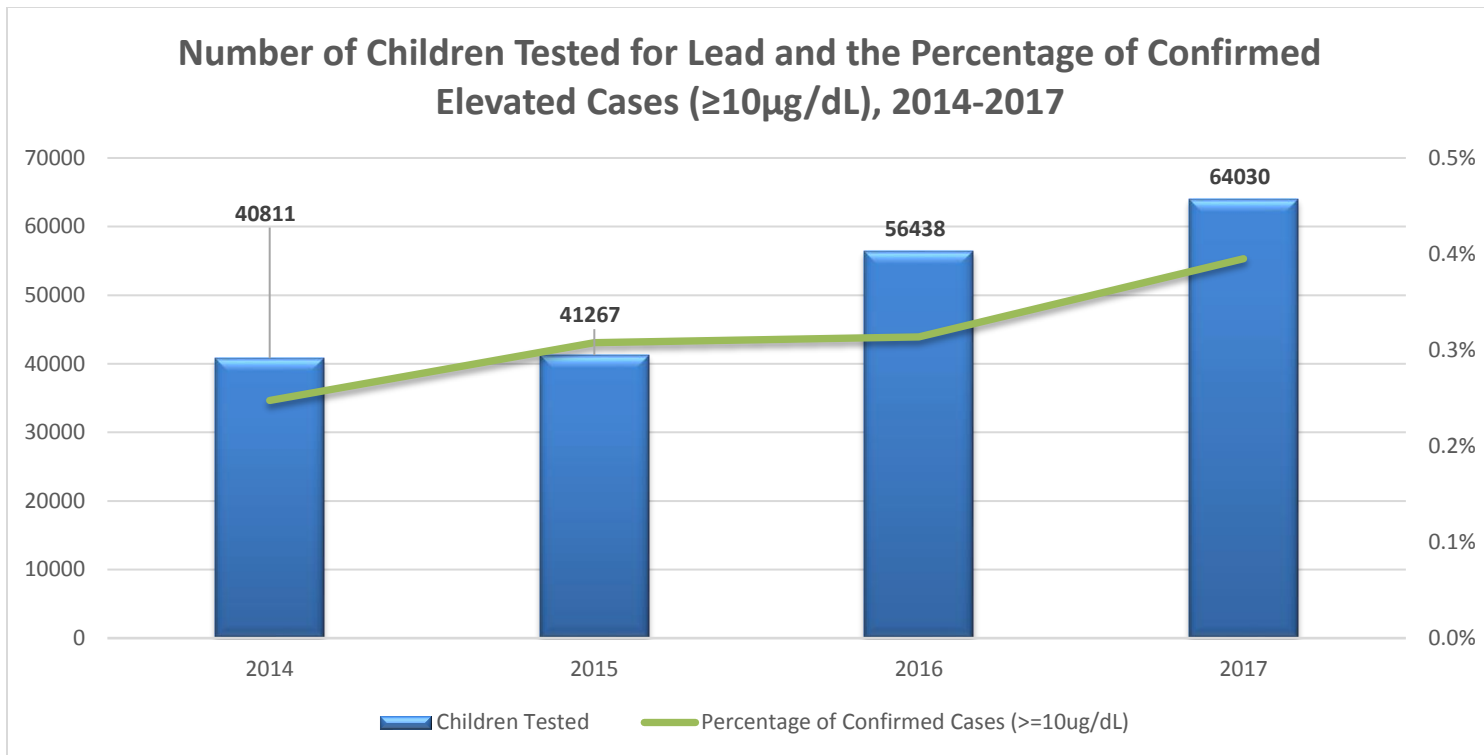


FIGURE 2

## **Indiana Blood Lead Surveillance**

In Indiana, blood lead testing is most often conducted by family physicians and pediatricians, either in-office or through a referral to a testing laboratory. Testing is also routinely conducted by local health departments through their clinical services offered in-office and remotely. Less frequently, testing is also performed by nurses and medical staff through organizations like the Indiana Women, Infants and Children (WIC) program and Head Start through private funding. Indiana Administrative Code requires that any person examining the blood of an individual for the presence of lead must report to the state health department the results of the examination not later than one (1) week after completing the examination. In order to understand the baselines in screening among communities, to identify potential lead hazards in communities, and to provide case coordination to Indiana children with elevated blood lead levels, ISDH must receive the information below per the Indiana Administrative Code (410 IAC 29-3-1 Rule 3. Reporting):

- (1) With respect to the individual whose blood is examined:
  - A. Full name
  - B. Date of birth
  - C. Gender
  - D. Full address, including street address, city, and ZIP code
  - E. County of residence
  - F. Race and ethnicity
  - G. Parent or guardian's name and phone number, where applicable
  - H. Any other information that is required to be included to qualify to receive federal funding.
- (2) With respect to the examination:
  - A. The date

- B. The type of blood test performed
- C. The person's normal limits for the test (interpreted as elevated or non-elevated)
- D. The results of the test
- E. The interpretation of the results of the test by the person who examined the specimen for the presence of lead

In 2017, the Lead and Healthy Homes Division began to improve both the quality and quantity of information being transmitted. Through work with a number of the larger health systems throughout the state, the program saw significant improvements in the accuracy of the reportable fields submitted week to week.

For additional information on the full lead result reporting code, please visit the [Indiana Administrative Code](https://secure.in.gov/isdh/files/FINAL(2.0)CD_Reportable_Diseases_List-1-7-2016.pdf). Please consult the following link for more information about reporting blood lead results: [https://secure.in.gov/isdh/files/FINAL\(2.0\)CD\\_Reportable\\_Diseases\\_List-1-7-2016.pdf](https://secure.in.gov/isdh/files/FINAL(2.0)CD_Reportable_Diseases_List-1-7-2016.pdf).

## **2017 County Data**

Data listed in the table below include the number of children with a screening result at or above 10µg/dL. It comes from a variety of sources, with limitations identified in the bullets below:

- Children whose test results did not include the required county listing are not included in these numbers.
- The number of risk assessments and identified hazards is included by county. However, risk assessments can be conducted for children who do not have an elevated blood lead level, and the number of hazards identified may be larger than the number of risk assessments done.
- Clearance exams are only conducted if lead hazards are identified during the risk assessment and if efforts have been made by the property owner to alleviate the issues. If no hazards are reported, Indiana law does not require a clearance exam. If there were fewer than 5 results for any given county data point, the values were suppressed in order to maintain confidentiality.

## 2017 County Data

County Name	Children Tested	# of Elevated Tests ( $\geq 10\mu\text{g/dL}$ )	Confirmed Venous Tests ( $\geq 10\mu\text{g/dL}$ )	Number of children who received a confirmatory test ( $\geq 10\mu\text{g/dL}$ )	Risk Assessments for children tested ( $\geq 10\mu\text{g/dL}$ )	Average of number of days taken to perform risk assessment from the case confirmation date	Number of clearance exams completed (2017)	Number of cases closed (2017) (Note: unsuppressed data)
Adams	177	-	-	-	-	-	-	1
Allen	3330	46	23	5	11	22.2	7	24
Bartholomew	813	10	*	*	*	15.6	*	2
Benton	73	*	*	-	*	44	*	1
Blackford	128	*	*	*	-	-	*	1
Boone	428	*	*	*	*	4	*	-
Brown	110	-	-	-	-	-	-	-
Carroll	264	*	-	-	-	-	-	-
Cass	617	16	9	7	*	10.25	*	1
Clark	1504	*	*	-	*	7	*	-
Clay	224	*	-	*	*	10	*	-
Clinton	426	8	*	*	*	35	*	1
Crawford	119	-	-	-	-	-	-	-

Daviess	87	-	-	-	11	-	-	1
De Kalb	237	-	-	-	*	-	-	-
Dearborn	290	*	-	*	7	65	*	1
Decatur	249	*	-	-	12	-	-	-
Delaware	824	21	8	*	8	31.6	*	2
Dubois	57	*	*	-	*	6	*	-
Elkhart	5448	58	7	7	*	20	*	8
Fayette	237	*	*	*	*	13.5	*	2
Floyd	1033	6	*	*	7	4	-	1
Fountain	106	*	*	-	*	17	*	1
Franklin	241	*	*	-	-	-	-	-
Fulton	134	*	*	-	-	-	-	-
Gibson	253	*	-	*	*	42	-	1
Grant	1087	8	*	*	-	-	-	5
Greene	463	*	-	-	*	16	*	-
Hamilton	1903	6	*	*	*	25	*	2
Hancock	242	*	*	-	6	-	-	1
Harrison	546	-	-	-	*	43	-	-
Hendricks	505	*	-	-	6	-	-	3
Henry	210	*	*	-	8	-	-	1

Howard	862	*	*	*	-	-	-	5
Huntington	172	*	*	*	*	9	*	1
Jackson	513	11	*	*	*	50	-	-
Jasper	187	-	-	-	*	-	-	-
Jay	182	*	*	-	*	8	*	-
Jefferson	355	-	-	-	-	-	-	-
Jennings	130	*	*	-	-	-	-	1
Johnson	814	7	*	*	*	22.5	-	2
Knox	223	*	*	*	*	51	-	1
Kosciusko	455	*	-	-	-	-	-	3
La Porte	1206	8	*	*	*	-	*	1
Lagrange	110	-	-	-	-	-	-	1
Lake	4799	34	22	*	13	12.6	12	23
Lawrence	755	*	*	*	*	79.5	-	1
Madison	1177	21	5	*	*	26.4	*	3
Marion	8936	83	33	23	51	12.38	28	43
Marshall	385	*	*	*	-	-	-	1
Martin	102	*	*	-	-	-	-	-
Miami	268	*	*	-	*	22	-	3
Monroe	2582	*	*	*	-	-	-	-

Montgomery	498	9	*	*	*	19.75	*	-
Morgan	761	*	-	-	-	-	-	-
Newton	89	*	-	*	-	-	-	-
Noble	199	6	*	*	*	7	*	1
Ohio	44	*	-	*	*	48	*	-
Orange	196	-	-	-	6	-	-	-
Owen	393	*	*	*	*	90	*	-
Parke	131	-	-	-	-	-	-	-
Perry	142	-	-	-	-	-	-	-
Pike	37	-	-	-	-	-	-	-
Porter	927	*	*	-	*	-	*	1
Posey	163	*	-	-	-	-	-	-
Pulaski	94	*	-	-	-	-	-	-
Putnam	239	*	*	-	*	15	-	-
Randolph	108	*	-	-	-	-	-	-
Ripley	348	*	-	-	-	-	-	-
Rush	71	*	-	*	*	9	*	1
Scott	279	*	*	-	*	62	*	-
Shelby	109	*	*	*	*	7	*	1
Spencer	177	-	-	-	-	-	-	1

St Joseph	4430	54	23	16	6	35	-	21
Starke	142	-	-	-	-	-	-	-
Steuben	189	*	-	*	*	14	*	-
Sullivan	116	-	-	-	-	-	-	1
Switzerland	68	*	*	-	*	7.5	*	-
Tippecanoe	1668	22	10	*	6	12.13	*	8
Tipton	94	-	-	-	-	-	-	-
Union	110	-	-	-	-	-	-	1
Vanderburgh	1427	17	12	*	*	12	*	4
Vermillion	198	*	*	*	*	122	*	1
Vigo	1204	9	6	*	*	10.8	*	4
Wabash	182	*	*	*	-	-	-	1
Warren	49	*	*	-	-	-	-	-
Warrick	239	-	-	-	-	-	-	1
Washington	357	*	*	*	*	15	*	-
Wayne	1353	14	6	*	6	10.8	6	9
Wells	264	*	*	-	*	-	*	-
White	331	-	-	-	-	-	-	2
Whitley	323	*	*	*	-	-	-	-
Unknown	990	11	*	-	-	-	-	-

\* means that data less than 5 have been suppressed to protect confidentiality. Risk assessments and hazards identified from I-Lead reporting.

## **ENDNOTES**

The information contained in this report was compiled by the Lead and Healthy Homes Program in compliance with IC 16-41-39.4-5.

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