2015 Blood Lead Surveillance Report

Minnesota Department *of* Health
HEALTH RISK INTERVENTION UNIT

2015 Blood Lead Surveillance Report

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Contents

Acronyms and Abbreviations

ABLES	Adult Blood Lead Epidemiology and Surveillance Program
BLIS	Blood Lead Information System
CDC	Centers for Disease Control and Prevention
DHS	Minnesota Department of Human Services
EBLL	Elevated blood lead level
EPSDT	Medicaid's Early and Periodic Screening Diagnosis and Treatment Program
LPHHP	MDH Lead Poisoning and Healthy Homes Program
M-CLEAN	Minnesota Collaborative Lead Education and Assessment Network
MDH	Minnesota Department of Health
MEDSS	Minnesota Electronic Disease Surveillance System
MNOSHA	Minnesota Occupational Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
RFP	Request for Proposals
µg/dL	Micrograms of lead per deciliter of whole blood

Executive Summary

This 2015 Blood Lead Surveillance Report describes the activities of the Minnesota Department of Health (MDH) Lead Poisoning and Healthy Homes Program (LPHHP) and the data analysis from the MDH Blood Lead Information System (BLIS) for the 2015 calendar year.

The report contains a description of the trends in lead testing and elevated blood lead levels in Minnesota and summarizes activities taking place in Minnesota to prevent childhood lead exposure. The intent of this report is to provide information for stakeholders in Minnesota, document activities of the LPHHP, and assist local efforts to address housing-based health threats.

As the number of elevated blood lead cases in Minnesota has continued to steadily decline, the MDH LPHHP has also been incorporating “healthy homes” approaches into routine lead program activities. Applying healthy homes strategies will help use existing lead poisoning prevention resources to address additional housing-based environmental health threats, including asthma, pests, fire safety, radon, carbon monoxide, and mold/moisture. This report contains an overview of steps taken to implement a healthy homes program in Minnesota.

Lead Exposure

Although the toxicity of lead has been known for thousands of years, lead remains one of the most common environmental health threats to children. There are many sources of lead, such as soil contaminated from years of leaded gasoline use, lead dust accidentally brought home from parents' workplaces and hobby areas, lead in plumbing, and some imported products and traditional remedies. However, deteriorated lead paint in homes is the main source of lead exposure for U.S. children today. As lead paint deteriorates, it creates fine dust that is identical in appearance to ordinary house dust. Although lead paint was banned for residential use in 1978, many older homes still contain lead paint. It is estimated that nearly one million homes in Minnesota still have lead paint. These homes may be found in both urban and rural areas.

Elevated levels of blood lead occurring during the first years of life may not produce symptoms until the children enter school and display learning difficulties, reduction in IQ, or behavior problems.

Children less than six years old are most vulnerable to lead's toxicity due to their growing bodies, nutritional needs, mouthing behavior, and spending time on the floor. Pregnant women and the developing fetus are also at greater risk because lead easily passes through the placenta to the fetus. The changing nutritional needs of the mother also cause release of lead stored in bone. Certain populations are at increased risk of lead exposure. For example, children enrolled in medical assistance programs are more likely to live in poverty and therefore live in old, poorly maintained housing, which is more likely to contain lead paint hazards.[1,2] Refugees arriving in Minnesota have also been found to be at increased risk for elevated blood lead levels, potentially due to lead exposure prior to their arrival.[3,4]

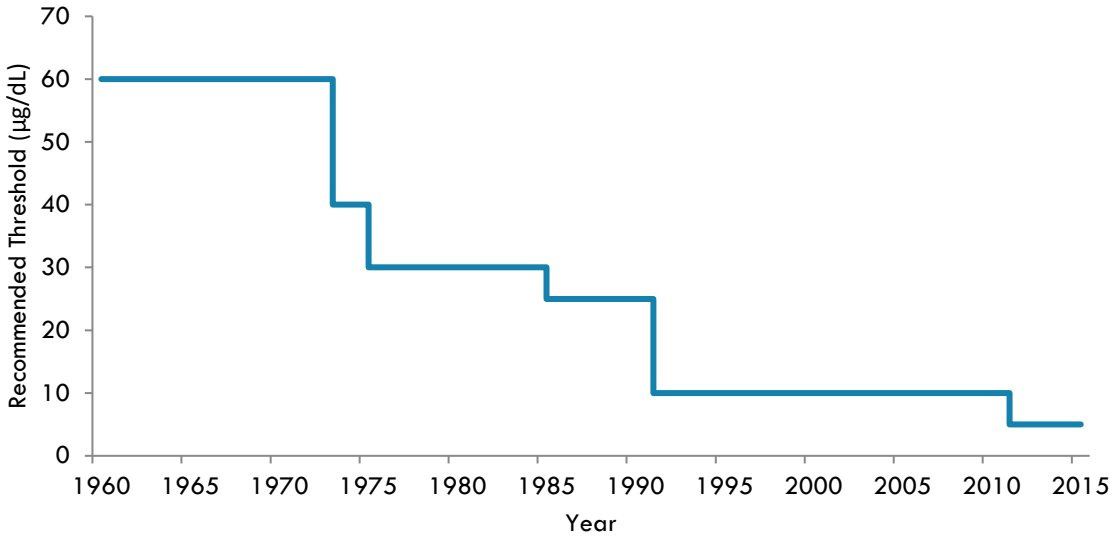
Elevated Blood Lead Levels

The Centers for Disease Control and Prevention's (CDC) current reference level for an elevated blood lead level is 5 micrograms of lead per deciliter whole blood (µg/dL) (**Figure 1**). This value is based on the 97.5th percentile of the blood lead distribution among U.S. children and is expected to be lowered as average blood lead levels continue to decline. Confirmed blood lead test results above the 5 µg/dL reference value are expected to trigger a public health response. CDC also acknowledges that there is no safe level of exposure to lead, and the effects of lead exposure appear to be irreversible. Therefore, primary prevention, or preventing lead exposure before it can start, is crucial.

In April 2014, Health Commissioner Dr. Edward Ehlinger issued a finding that changed the definition of an elevated blood lead level (EBLL) under Minnesota Statute 144.9501, Subd. 9 to a diagnostic blood lead test of at least 5 µg/dL. The previous definition of an EBLL had been 10 µg/dL. The commissioner's finding makes the statute consistent with the existing Minnesota case management guidelines and CDC recommendations.

Minnesota Statute 144.9504 mandates environmental interventions for confirmed blood lead levels of 15 µg/dL or greater in children less than six years old. For levels of 5 µg/dL or greater, local public health nurses work with families to bring down elevated lead levels. For most children and adults exposed to lead, identification and elimination of the source of lead is the primary intervention.

Figure 1. Historic CDC Recommendations of Elevated Blood Lead Level Thresholds for Public Health Response



State Blood Lead Guidelines

MDH has a set of four guidelines available for lead: Blood Lead Screening for Pregnant Women, Childhood Blood Lead Screening, Childhood Blood Lead Case Management, and Childhood Blood Lead Clinical Treatment, which may be found at the MDH Web site at www.health.state.mn.us/lead. These guidelines are intended to establish standardized screening practices and minimum levels of care for providing services to children. However, local health departments that have greater resources available may wish to take a more rigorous approach to case management.

Blood Lead Screening Guidelines for Pregnant Women

Revised August, 2015

The Blood Lead Screening Guidelines for Pregnant Women in Minnesota are designed to assist health care providers in screening pregnant women for elevated blood lead levels. Not every woman is at risk for lead exposure, so a risk screening questionnaire should be used to decide whether testing is recommended. Examples of risk factors for lead exposure include occupational exposure of the mother or other household contact, remodeling a home containing lead paint, using non-commercial home remedies that contain lead, and pica behavior of the mother. Identifying and preventing elevated blood lead levels in pregnant women also serves to protect the developing fetus. MDH updated its guidelines for lead screening and treatment of pregnant and breastfeeding women in 2015. The updated guidelines reflect the current definition of an elevated blood lead level (≥5 µg/dL), provide additional details on sources of lead, and include resources specific to Minnesota.

Childhood Blood Lead Screening Guidelines

Revised March, 2011

The MDH Childhood Blood Lead Screening Guidelines direct physicians to order blood lead tests for:

1. Children residing in specific geographic areas that have high rates of elevated blood lead
2. Children matching specific groups that have high rates of elevated blood lead

Universal testing is recommended for children residing in Minneapolis and St. Paul and those recently arriving from other major metropolitan areas or other countries. Testing is also recommended for children receiving Medicaid. The tests are typically performed when the child is one and two years old, but may be done at any time if the parent is concerned or if a high-risk activity (e.g. remodeling a home built before 1950) has recently occurred. It is recommended that physicians use the Minnesota blood lead screening risk questionnaire to help determine if a child is at high risk for lead exposure (http://www.health.state.mn.us/divs/eh/lead/reports/screening/blsg4mn.pdf).

Childhood Blood Lead Case Management Guidelines

Revised March, 2011

The Case Management Guidelines work in concert with the MDH Blood Lead Screening Guidelines for Minnesota to identify and manage lead exposure in children. A qualified case manager should oversee the treatment and recovery of each child, and ensure that steps are taken to prevent further exposure of the child to potential sources of lead. Appropriate steps are presented for both capillary and venous test results.

Childhood Blood Lead Clinical Treatment Guidelines

Revised March, 2011

The Childhood Blood Lead Clinical Treatment Guidelines are designed to assist physicians in treating patients in Minnesota with elevated blood lead levels, thus ensuring that all cases receive a consistent level of care. Because the CDC and MDH now recognize that there are no safe levels of exposure to lead, the clinical treatment guidelines recommend engaging families through education at blood lead levels of 5–10 µg/dL. Additional diagnostic tests and interventions, such as radiographs, additional bloodwork, and chelation therapy, are recommended for higher blood lead levels.

Data Collection

Lead Testing

Since not all Minnesota children have a high risk for lead exposure, targeted testing based on established risk factors is recommended for most areas of the state. Children should be evaluated using a screening questionnaire to determine whether they have risk factors for lead exposure; the goal is to test all children who are at risk for exposure to lead. Because lead testing is neither universal nor randomly sampled, the data in this report are not generalizable and cannot be used to interpret the prevalence or incidence for the overall population of children living in Minnesota.

The blood specimens used in blood lead testing are drawn from either capillaries or veins (venous specimens). Tests on capillary blood are considered "screening" tests. They are drawn from a finger stick, allowing them to be performed in a wide range of settings. However, it has been estimated that approximately 70% of initial elevated capillary results are false positives.[5,6] Venous specimens are drawn from a vein and are considered "diagnostic" because they are less prone to false positives than capillary tests. However, they can be more difficult to obtain. Venous tests are required to initiate an environmental investigation of an elevated lead result.

The MN Blood Lead Information System (BLIS)

MDH maintains a blood lead information system (BLIS) for tracking and monitoring trends in blood lead levels in adults and children in Minnesota. Analytical laboratories submit results to the LPHHP, as mandated by Minnesota Statute 144.9502. The data are used to help identify populations at risk for elevated blood lead levels (EBLLs), ensure that screening services are provided to groups identified as having the highest risk of lead exposure, and ensure that environmental and medical follow-up are provided to children with EBLLs. Data are also used to plan, develop, and implement primary prevention programs.

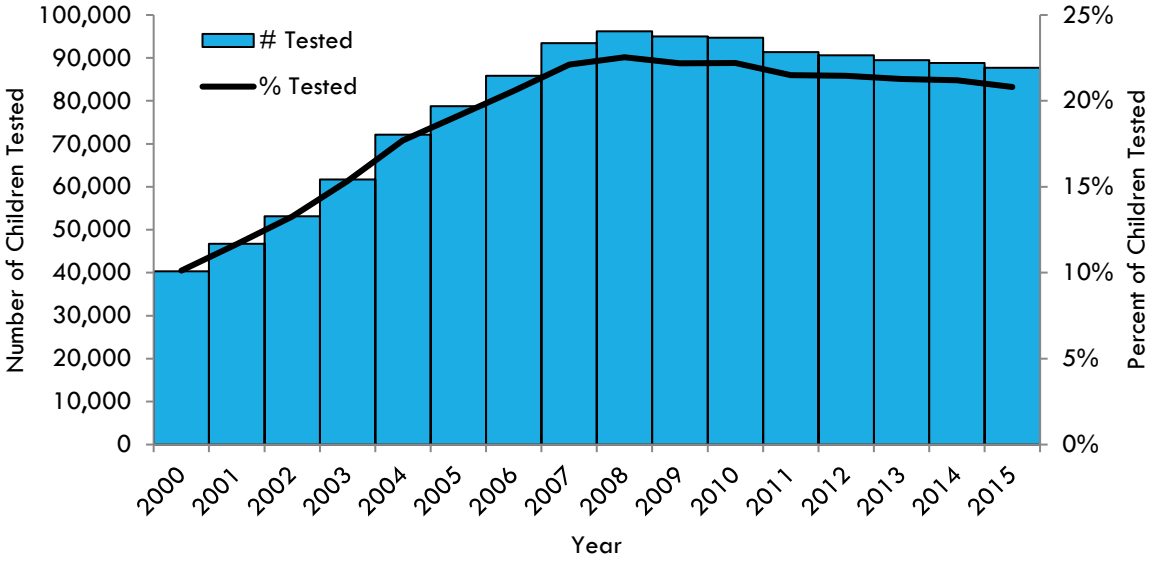
Statewide Surveillance Data

Statewide data are available starting from 1995. Data for years 2000–2014 are shown for comparison to the 2015 data. In 1995, fewer than 40,000 children were tested for lead and more than 900 (3%) children had venous blood lead levels of at least 15 µg/dL.

The number and percent of children tested for lead in Minnesota increased from 2000 through 2008, then began to decrease during 2009–2015. In 2015, 87,728 children were tested (**Figure 2**).

The decrease in the number of children tested for lead might be partially attributable to the loss of Medicaid withholds. Since 2013, Medicaid no longer withholds a portion of the reimbursement to clinics for well child visits unless a blood lead test is conducted. This has decreased the incentive for health care providers to ensure that all children receiving medical assistance are screened for lead at one and two years of age. It is also a possibility that there has been a reduction of the total number of children at risk for lead exposure, leading to physicians ordering fewer lead tests. Further research into the causes of the decrease in the number of children tested is needed.

Figure 2. Number and Percent of Children Tested Less than 6 Years of Age



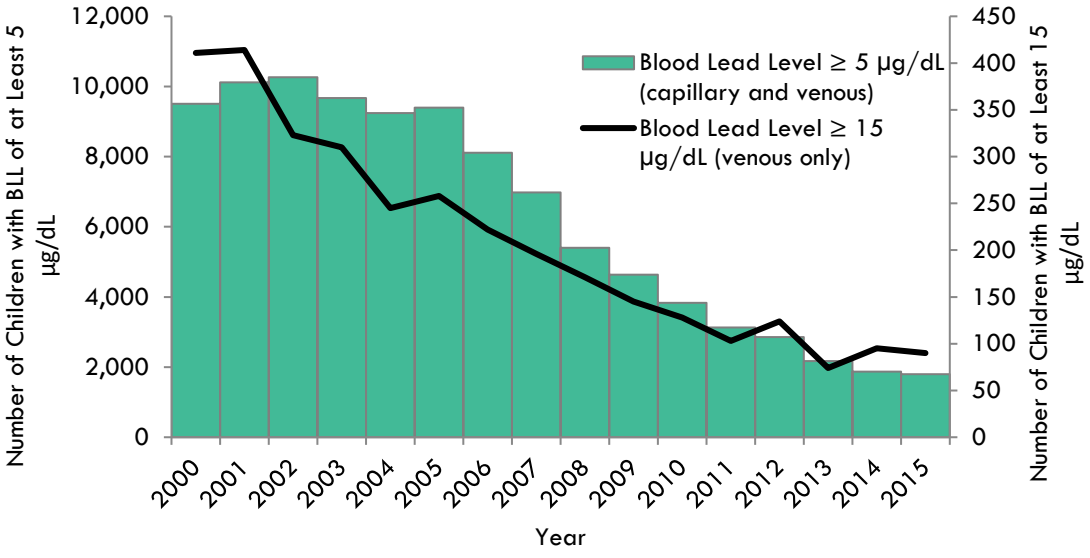
Elevated Blood Lead Levels in Children

The trends in the number of EBLL cases in Minnesota children may be compared across years (**Figure 3**). Thanks to ongoing prevention efforts, the number of EBLL cases has continued to decrease. However, in 2015, there were still 90 Minnesota children who had venous blood lead levels of at least 15 µg/dL among those children who had their blood lead level tested. The highest venous blood lead level identified in a child from Minnesota in 2015 was 58 µg/dL.

In 2015, there were 2,658 venous and capillary test results from 1,798 children of at least 5 µg/dL. Guidelines recommending using 5 µg/dL as the threshold for public health action were adopted in Minnesota in 2011 and the statutory definition of an elevated blood lead level was changed to 5 µg/dL in 2014. Data for years 2000–2014 are shown for comparison.

Children with blood lead levels at or above 5 µg/dL should receive follow-up testing and educational materials, according to the Minnesota case management guidelines. Data on numbers of test results confirmed are shown in the Case Management section of this report. Higher levels may require additional public health actions such as more intensive case management to ensure the family has access to resources and environmental risk assessments to determine the source of the lead exposure.

Figure 3. Number of Children with Blood Lead Levels (BLL) of at Least 5 µg/dL and 15 µg/dL



Blood Lead Testing by County

County-specific data on blood lead testing and blood lead levels are provided at the end of this report in **Appendix A**.

Case Management

The LPHHP provides technical assistance to local public health agencies in the state of Minnesota through the State Case Monitor. Assistance is provided to ensure case management services are available for children with blood lead levels of at least 5 µg/dL. These activities include:

- Assuring case management activities and follow-up testing for children and pregnant women are performed in accordance with MDH guidelines;
- Providing educational materials, in appropriate languages, to assist in communicating lead exposure prevention measures;
- Communicating regularly with the Asbestos and Lead Compliance Unit to assess progress on open lead cases and facilitate communication between the Asbestos and Lead Compliance Unit and local lead case managers;
- Helping clinicians improve their adherence to Minnesota blood lead guidelines;
- Collaborating between public health and housing staff at both the state and local levels.

Follow-up Testing

MDH recommends follow-up tests for children with elevated blood lead levels. The period of time recommended for re-testing varies according to the initial blood level and the test type. Diagnostic venous testing is recommended for all capillary results of 5 µg/dL or greater. Of the 1,798 Minnesota children identified with a blood lead level of 5 µg/dL or greater in 2015, 1,371 (76%) were first identified through a capillary test. Of these, 891 (65%) received a diagnostic venous test. The maximum acceptable time between the initial elevated capillary result and the diagnostic venous test depends on the level of the initial result. These recommended times and the frequency with which each time is met are summarized below **(Table 1)**.

TABLE 1. VENOUS CONFIRMATION AFTER AN ELEVATED CAPILLARY BLOOD LEAD TEST

Blood Lead Level of Capillary Test (µg/dL)	Recommended Maximum Time to Diagnostic Venous Test	Number of Children with an Initial Capillary Result in Range	Children with any Diagnostic Venous Test, N (%)	Children with a Diagnostic Venous Test Within Time Range*, N (%)
5 – 9.9	3 Months	1,096	662 (60%)	537 (49%)
10 – 14.9	3 Months	168	136 (81%)	123 (73%)
15 – 44.9	1 Week	102	89 (87%)	55 (54%)
45 – 59.9	48 Hours	1	0 (0%)	0 (0%)
60+	Immediately	4	4 (100%)	3 (75%)

* A diagnostic test within the time range was assessed by the time from the analysis date of the initial capillary test to the draw date of the diagnostic venous test. The diagnostic venous test was not necessarily in the same blood lead level range as the initial capillary test.

Special Populations

Medicaid Children

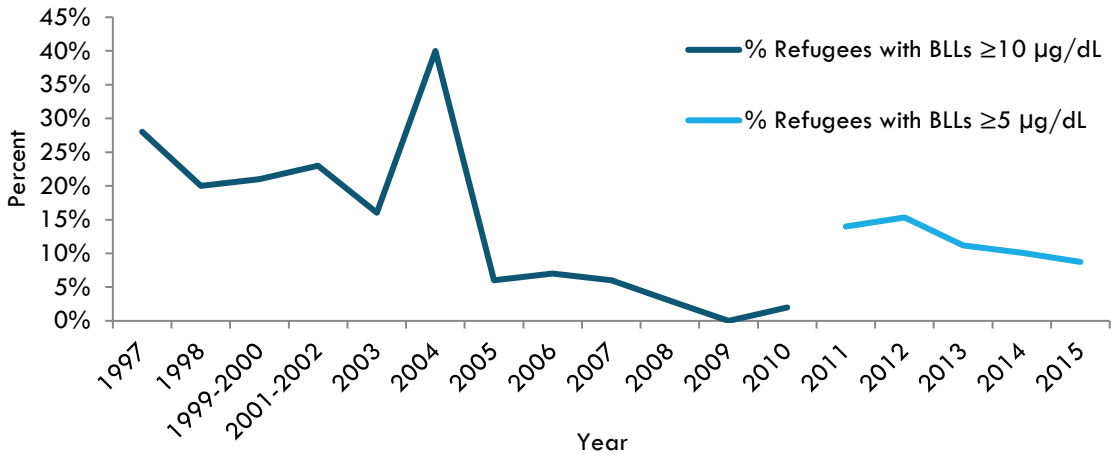
Medicaid's Early and Periodic Screening Diagnosis and Treatment (EPSDT) program requires that well-child visits include blood lead testing at both 12 and 24 months. National studies have shown that Medicaid-enrolled children are more than twice as likely to have elevated blood lead levels than non-enrolled children.[7] However, this disparity may differ between states and the CDC has recommended states develop screening plans consistent with their local risk patterns.[1] An analysis of Minnesota data from 1999–2003 showed that Medicaid enrolled Minnesota children were twice as likely to have elevated blood lead levels than other Minnesota children.[8] The Minnesota DHS no longer provides monetary incentives to health plans to encourage blood lead testing.

Refugee Children

Refugees are persons who are forced to leave their home country because of disasters, war, or persecution. Refugees come to Minnesota with a special immigration status and are a population at high risk for lead exposure due to a combination of exposures prior to and after arrival in Minnesota.[3,4] The Division of Infectious Disease Epidemiology, Prevention, and Control at MDH collects demographic data on refugee children aged less than 17 years entering the state who receive an initial health screening.

Blood lead tests are routinely matched to refugee information (**Figure 4**). The rate of elevated blood lead levels for newly arrived refugees has been declining, although it is over six times as high as the percentage of elevated blood lead levels among Minnesota children in general.

Figure 4. Elevated Blood Lead Levels (BLLs) among Refugee Children Less than 17 Years of Age Who Received a Blood Lead Test



Adults

The Adult Blood Lead Epidemiology and Surveillance (ABLES) program is an active surveillance program that identifies adults in Minnesota with EBLLs and ascertains the cause of elevation. The current funding for ABLES allows active surveillance on adult BLLs ≥ 10 µg/dL. This includes calling physicians to determine the source of an adult's lead exposure, including his or her employer information, job title, known non-occupational lead exposures, and pregnancy status. The National Institute for Occupational Safety and Health (NIOSH), CDC, and the State of Minnesota use a reference value of 5 µg/dL in adults, as well as children. The Minnesota Occupational Safety and Health Administration (MNOSHA) recently changed the BLL threshold at which they conduct inspections from 40 µg/dL down to 25 µg/dL. A BLL of 25 µg/dL or higher from an occupational exposure now triggers an inspection of facilities by MNOSHA. Adult lead testing is most common among adults working in high-risk industries and pregnant women with both occupational and/or non-occupational risk factors for lead exposure. In adults, lead exposure can lead to increased risk for chronic diseases such as hypertension and kidney disease.

The total number of BLL tests reported for adults in 2015 in Minnesota is presented in **Table 2**. There were 9,392 BLL tests performed in 2015 on 8,068 adults (aged ≥ 16 years). Of those 8,068 adults, 3,816 (47%) were men, 4,249 (53%) were women, and 3 had an unreported gender. Pregnancy status was unreported too often for reliable estimates. Of the adults tested, 510 (6%) had an EBLL of 10 µg/dL or greater; this included 457 (90%) individuals whose highest BLL was 10–24 µg/dL, and 53 (10%) individuals whose highest BLL was 25 µg/dL or greater.

Although more women than men were tested during 2015, 95% of adults with an EBLL of at least 10 µg/dL were men. This was likely due to more men than women working in industries and occupations with high risk for lead exposure. Of the 510 adults with BLLs 10 µg/dL or greater, 425 (83%) were fully or partially due to occupational exposures, 32 (6%) were due to non-occupational exposures, and 53 (10%) were due to unknown exposures.

Table 2. Minnesota Residents above 16 years old[9] with Reported Blood Lead Levels (BLL)

2015 BLL Data	BLL <10 µg/dL	BLL 10–24 µg/dL	BLL ≥25 µg/dL	Total
Number of BLL Tests	8,144	1,140	108	9,392
Number of individuals tested	7,558	457	53	8,068
Number of Men tested	3,332	434	50	3,816
Number of Women tested	4,223	23	3	4,249
Number of people with unreported gender tested	3	0	0	3
Occupational Exposure		381	44	425
Non-Occupational Exposure		26	6	32
Unknown exposure source		50	3	53

EBLLs caused by occupational exposures were analyzed and are reported in **Figure 5**. Fifty-four percent of the occupational exposures occurred in the secondary smelting industry, 24% occurred in the sporting and athletic goods manufacturing industry, 6% in the construction industry, 3% in the recreation industry, and 3% occurred due to work in small arms ammunition manufacturing. **Figure 6** displays the EBLL data for work-related exposures by occupation. Shooting firearms as a hobby was the most common cause of an EBLL that was not occupational. The highest EBLL due to non-occupational exposures was 65 µg/dL, obtained via casting bullets.

Figure 5. Work Related EBLLs Greater than or Equal to 10 µg/dL, by Industry

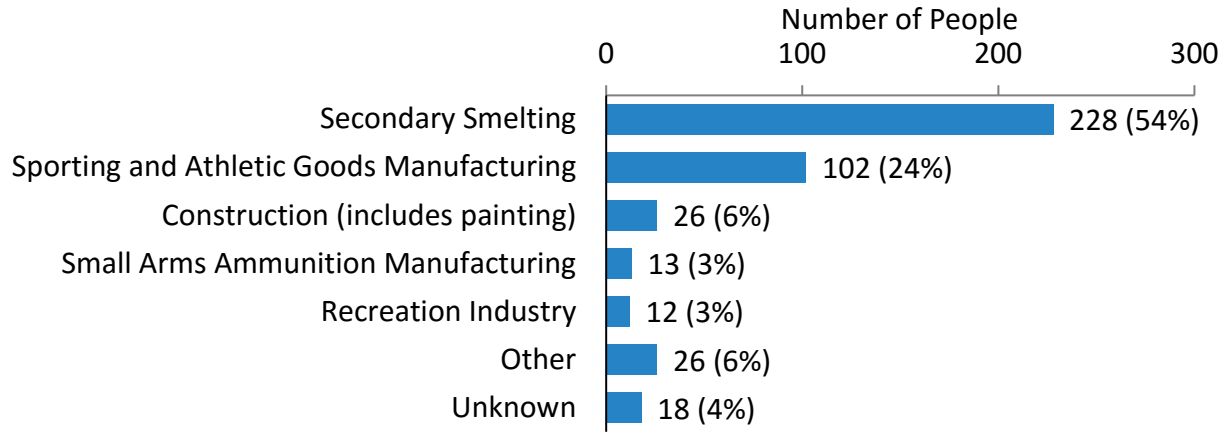
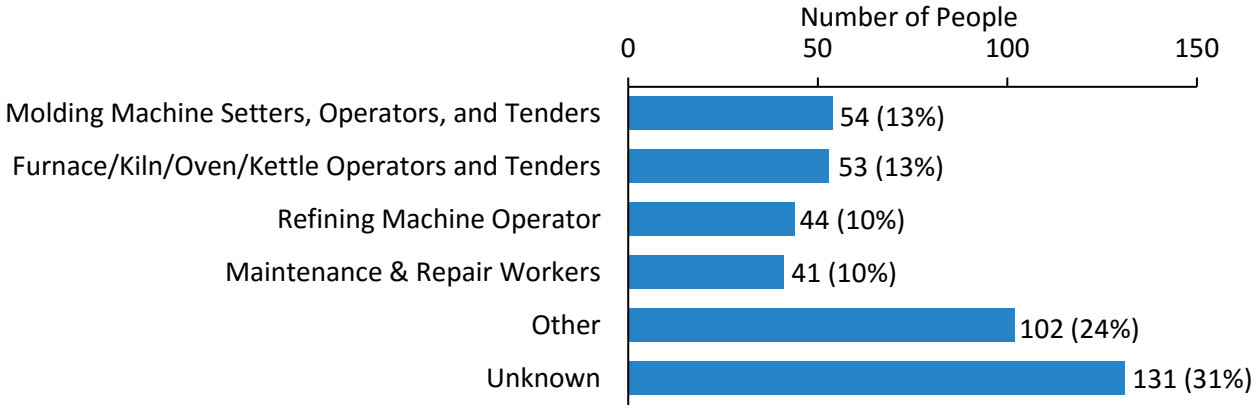


Figure 6. Work Related EBLLs Greater than or Equal to 10 µg/dL, by Occupation



Evaluation of BLIS

The use of electronic reporting formats allows for greater efficiency in handling large numbers of records. The LPHHP works with the Minnesota Electronic Disease Surveillance System (MEDSS) to incorporate electronic reporting of blood lead test results into routine data handling by MDH.

In 2015, there were 105,552 total blood lead tests reported to BLIS, 72% of which were received electronically (**Table 3**). Electronic reporting significantly improves timeliness and requires less staff time for entry of records into BLIS compared to paper reporting. The majority of tests received were capillary tests. Tests were received from 81 separate laboratories during 2015. Of these, 32 submitted primarily electronic records and 49 submitted primarily paper records.

Extensive efforts are made by MDH staff to ensure the completeness of data in BLIS. During 2015, both city and zip code were missing from entered data only 0.8% of the time, (down from 9% in 2006). The patient's date of birth was available for all but 13 records; the patients with a missing date of birth are known to be adults.

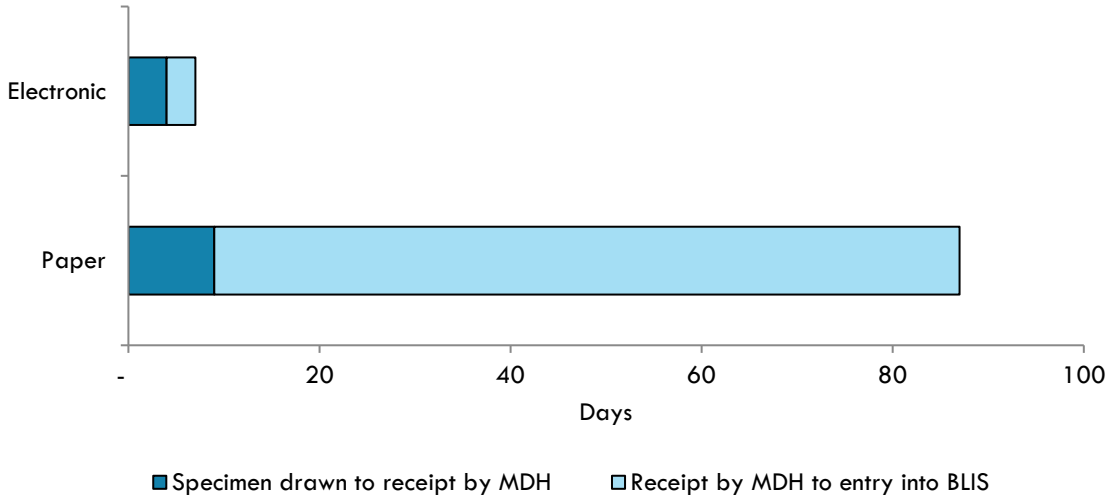
TABLE 3. NUMBER AND TYPE OF BLOOD LEAD TEST RESULTS REPORTED TO BLIS

	2015	
	No.	(%)
Blood Lead Tests Reported	105,552	--
Paper Reporting (*Mail or Fax*)	29,516	(28)
Electronic Reporting (*Encrypted Email or Secure Web Downloads*)	76,036	(72)
Blood Test Type		
Capillary	76,245	(72)
Venous	27,320	(26)
Unknown Test Type	1,987	(2)

The median total time from specimen collection to entry into BLIS was 8 days for electronic records during 2015 (**Figure 7**). The loss of CDC funding in 2011 led to a reduction in LPHHP staffing, causing an increase in the median time between specimen date and entry date for paper records from 35 days in 2011 to 166 days in 2013. State funding was made available to recover some of this capacity, so the median time required to enter records received by paper decreased to 131 days in 2014 and 88 days in 2015. This delay applies to blood lead test results below 5 µg/dL; results at or above 5 µg/dL are separated and entered immediately upon receipt.

Support of the state's capacity to enter all records in a timely manner remains critical to addressing the needs of children who have been exposed to lead. In addition, the infrastructure for electronic laboratory reporting is critical to ensuring a timely public health surveillance system.

Figure 7. Median Timeframes for Electronic and Paper Blood Lead Test Results Reported to BLIS, 2015



Other Resources Available from LPHHP

The Lead Program maintains a web page through the MDH Web site that provides a number of lead education materials for providers, regulated parties, and the general public (www.health.state.mn.us/lead). This site contains information on hot topics (including current data, projects and requirements), numerous fact sheets, a list of "frequently asked questions", all publications and reports (including guidelines for screening children and pregnant women, case management, and clinical treatment in children), and links to many external lead resources.

M-CLEAN

The Minnesota Collaborative Lead Education and Assessment Network (M-CLEAN) is a workgroup that discusses lead exposure prevention initiatives and legislative developments. Membership is open to all interested stakeholders. Organizations that typically participate in M-CLEAN include MDH, local public health agencies, other governmental agencies, community action agencies, non-profit organizations, and industry groups. M-CLEAN meetings restarted in 2015 following a hiatus during the period when CDC was not funding lead poisoning prevention programs. More information on M-CLEAN meetings can be found at http://www.health.state.mn.us/divs/eh/lead/mclean/index.html.

Swab Team Services Grants

MDH has collaborated with community partners through Swab Team Services Grants since 2006. The grants are authorized under Minnesota Statute 144.9512.

MDH's Swab Team Services Grant provides nonprofit organizations with funding to:

- Increase the screening of children under six years and pregnant women to identify elevated blood lead levels (EBLL) in populations at high risk for lead exposure
- Plan, implement, and execute successful lead screening events in communities with high lead exposure
- Provide education and outreach services when an EBLL is identified
- Provide swab team services to protect populations from identified lead hazards in their residences

Organizations funded by the Swab Team Services Grants during 2015 were Sustainable Resources Center, CLEARCorps USA, and Frogtown Neighborhood Association. More information can be found at http://www.health.state.mn.us/divs/eh/lead/stsgrant.

Further Lead Information

More information about lead exposure prevention in Minnesota is available at the MDH Lead Program web site: http://www.health.state.mn.us/lead or by calling 651-201-4620.

Transition to Healthy Homes

Minnesota data compiled by MDH show that the following housing-based hazards can have a significant impact on health and wellness:

- One in three Minnesota homes has high levels of radon and there is no area of the state that has a "low" radon exposure potential. Radon exposure increases the risk for lung cancer in Minnesota residents.
- Over 100,000 unintentional falls statewide were reported to the Minnesota Injury Data Access System in 2014; CDC estimates that about half of falls reported each year occur in the home.
- There were over 19,000 emergency department visits for asthma in 2013; over 7,000 of those visits were among children aged less than 15 years.
- From 2010 through 2014, 59 Minnesotans died from unintentional exposure to carbon monoxide. The majority of these deaths occurred in the home.

Healthy Homes Grants

In 2014, the Minnesota Legislature passed Minnesota Statute 144.9513, which defined healthy housing and established healthy housing grants. In July 2014 MDH issued a Request for Proposals (RFP) from local boards of health, community action agencies, and nonprofit organizations to participate in implementation grant agreements for healthy homes. The housing-based health threats to be addressed through these grants include:

- Lead
- Asthma
- Radon
- Injuries
- Smoking
- Excessive moisture/mold
- Pests
- Carbon monoxide
- Fire hazards
- Private wells

The scope of work in the RFP had a number of specific focus areas from which the grantees could choose, including:

- Primary Prevention
- Training and Technical Assistance
- Developing Evidence-Based Best Practices
- Community Engagement and Education
- Healthy Home Assessments and Interventions
- Coordination with Health Care/Secondary Prevention

Each grant agreement is for three years, contingent on continued appropriations. Awards were divided into two funding levels. The larger awards are for $40,000 annually and the smaller awards are for $20,000 annually. One of the smaller awards is designated for mini grants. The organization administering the mini grant awards will administer five grants per year of approximately $2,000 each. The goal of the mini grants is to promote health equity by funding smaller organizations that would not have the capacity to apply for larger state grants. Grantees were distributed through metro and non-metro areas of the state, and are listed below and shown in the map (**Figure 8**).

Awards of $40,000 Per Year:

- Hennepin County
- Meeker-McLeod-Sibley Community Health Services
- Southwest Health and Human Services
- St. Paul-Ramsey County Public Health

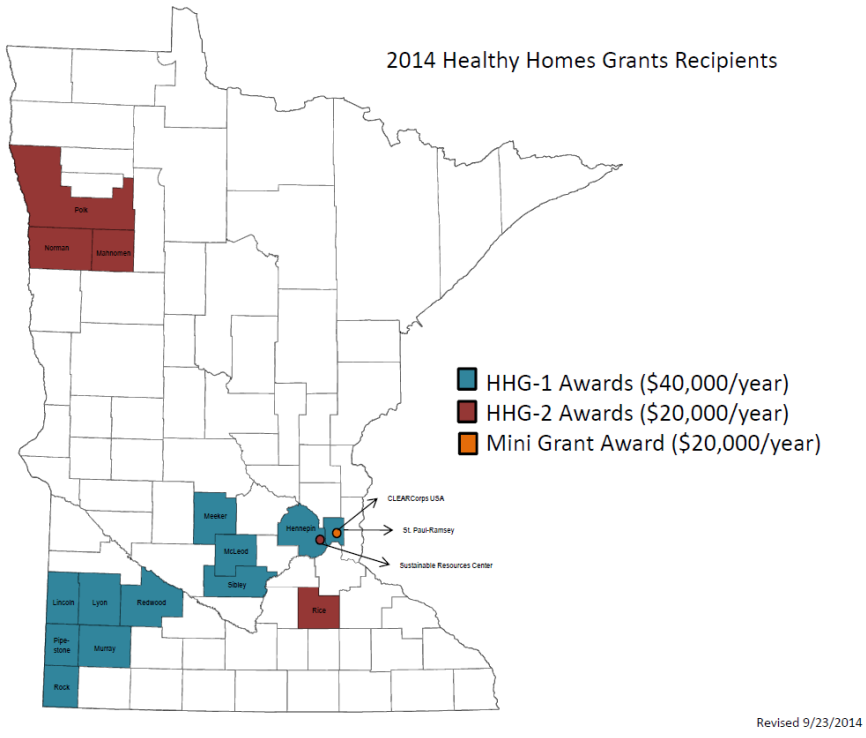
Awards of $20,000 Per Year:

- Polk-Norman-Mahnomen Community Health Board
- Rice County Community Health Services
- Sustainable Resources Center
- CLEARCorps USA (Mini Grant Award Administration)

Mini Grant Recipients and Project Overview

- Corcoran Neighborhood Organizations
    - Introducing healthy homes concepts and issues into existing community outreach efforts
- MIRA (Modulo de Informacion, Recursos y Apoyo)
    - Organizing tenants in a multi-family housing complex with known healthy homes issues
- Powderhorn Park Neighborhood Association
    - Organizing healthy homes workshops with Latino renters in specific multi-family buildings
- Rebuilding Together
    - Organizing community meetings that include education about healthy homes issues
- Spring Lake Park Fire Department
    - Visiting homes in a specific mobile home park to identify healthy homes issues and distribute safety devices

Figure 8. Grant Recipients for the 2014 Healthy Homes Grants



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Appendix A: Blood Lead Testing by County

County	5–14.9 µg/dL*		15 µg/dL or greater*		Total Children Tested Under 6 Years		
	Venous	Capillary	Venous	Capillary	Any Test Type	Population (2014)†	Percent Tested
Aitkin	0	2	0	0	107	792	14%
Anoka	12	22	2	0	5,969	25857	23%
Becker	3	8	0	0	570	2546	22%
Beltrami	2	4	0	0	638	4228	15%
Benton	2	0	0	0	932	3244	29%
Big Stone	0	0	0	0	71	368	19%
Blue Earth	9	3	3	0	847	4418	19%
Brown	6	5	1	0	428	1715	25%
Carlton	2	3	0	0	536	2450	22%
Carver	5	1	1	0	1,094	7728	14%
Cass	2	4	0	0	563	1938	29%
Chippewa	6	1	1	0	231	870	27%
Chisago	3	4	0	0	638	3571	18%
Clay	8	7	1	0	1,053	4930	21%
Clearwater	0	1	0	0	69	654	11%
Cook	0	0	0	0	32	255	13%
Cottonwood	3	2	1	0	120	902	13%
Crow Wing	6	4	1	0	937	4506	21%
Dakota	24	9	1	0	6,871	32669	21%
Dodge	3	7	0	0	244	1590	15%
Douglas	0	6	0	0	493	2376	21%
Faribault	4	4	1	0	179	967	19%
Fillmore	1	2	0	0	161	1549	10%
Freeborn	14	6	2	0	452	2170	21%
Goodhue	6	3	1	0	558	3252	17%
Grant	3	0	0	0	121	411	29%
Hennepin	206	152	24	5	21,009	95124	22%
Houston	2	1	0	0	221	1151	19%
Hubbard	1	3	0	0	138	1425	10%
Isanti	2	4	0	0	575	2807	20%

County	5–14.9 µg/dL*		15 µg/dL or greater*		Total Children Tested Under 6 Years		
	Venous	Capillary	Venous	Capillary	Any Test Type	Population (2014)†	Percent Tested
Itasca	1	4	0	0	759	2,980	25%
Jackson	1	2	0	0	128	728	18%
Kanabec	1	1	0	0	187	957	20%
Kandiyohi	10	5	3	0	789	3,281	24%
Kittson	1	0	0	0	21	274	8%
Koochiching	0	0	0	0	153	647	24%
Lac Qui Parle	4	0	0	0	81	420	19%
Lake	1	1	0	0	131	647	20%
Lake of the Woods	0	0	0	0	30	213	14%
Le Sueur	2	1	1	0	347	1,957	18%
Lincoln	2	0	0	0	79	397	20%
Lyon	2	3	0	0	614	2,218	28%
McLeod	2	7	0	0	490	2,635	19%
Mahnomen	0	0	0	1	71	666	11%
Marshall	0	0	0	0	77	692	11%
Martin	2	4	1	0	260	1,328	20%
Meeker	1	5	0	0	341	1,753	19%
Mille Lacs	2	1	0	1	378	2,011	19%
Morrison	1	5	1	0	592	2,434	24%
Mower	12	3	4	0	511	3,312	15%
Murray	1	0	1	0	126	591	21%
Nicollet	2	1	0	0	454	2,301	20%
Nobles	6	1	0	0	544	2,064	26%
Norman	1	1	0	0	73	430	17%
Olmsted	15	2	1	0	972	12,682	8%
Otter Tail	4	2	0	0	655	4,026	16%
Pennington	0	0	0	0	144	1,124	13%
Pine	1	2	0	0	308	1,735	18%
Pipestone	2	1	1	0	130	719	18%
Polk	1	2	0	0	361	2,462	15%
Pope	1	1	0	0	148	775	19%
Ramsey	143	94	21	5	11,646	44,894	26%
Red Lake	0	0	0	0	21	345	6%
Redwood	4	6	0	0	246	1,182	21%

County	5–14.9 µg/dL*		15 µg/dL or greater*		Total Children Tested Under 6 Years		
	Venous	Capillary	Venous	Capillary	Any Test Type	Population (2014)†	Percent Tested
Renville	5	6	1	0	280	1,056	27%
Rice	19	11	0	0	1,237	4,578	27%
Rock	1	2	0	0	107	742	14%
Roseau	0	0	0	0	102	1,139	9%
St. Louis	16	13	3	1	3,054	12,509	24%
Scott	2	6	1	0	2,328	12,396	19%
Sherburne	0	4	1	0	1,394	7,454	19%
Sibley	2	4	1	0	237	1,100	22%
Stearns	5	10	1	0	2,828	11,239	25%
Steele	2	6	0	0	578	2,973	19%
Stevens	2	3	1	0	119	625	19%
Swift	3	0	0	0	185	677	27%
Todd	2	3	0	0	386	2,001	19%
Traverse	1	0	0	0	47	203	23%
Wabasha	1	1	1	0	198	1,515	13%
Wadena	0	4	0	0	282	1,030	27%
Waseca	4	5	1	0	309	1,358	23%
Washington	5	12	1	0	3,206	18,625	17%
Watonwan	1	2	0	0	189	890	21%
Wilkin	1	1	0	0	77	455	17%
Winona	9	1	3	0	407	2,770	15%
Wright	5	7	1	0	1,969	11,629	17%
Yellow Medicine	0	0	0	0	160	777	21%
Unknown	0	0	0	0	325	N/A	N/A
Total	647	524	90	13	87,728	419,084	21%

*When multiple results were available, the highest venous result was used to categorize the individual. If no venous results were available, the highest capillary result was used.

†Population data obtained from: US DHHS, CDC, NCHS, United States July 1st resident population by state, county, age, sex, bridged-race, and Hispanic origin. Compiled from bridged-race Vintage 2014 (2010-2014) postcensal population estimates. Accessed at CDC WONDER On-line Database: http://wonder.cdc.gov/bridged-race-v2014.html on May 6, 2016.