



2010 Blood Lead Surveillance Report



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Introduction

This 2010 Blood Lead Surveillance Report describes the activities of the Minnesota Department of Health (MDH) Childhood Lead Poisoning Prevention Program (CLPPP) and the data resulting from the MDH Blood Lead Information System (BLIS) for the 2010 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 poisoning. The intent of this report is to provide information for lead poisoning prevention stakeholders in Minnesota, document activities of the CLPPP, and assist local efforts to prevent childhood lead poisoning, and is also a companion to the State of Minnesota plan to eliminate childhood lead poisoning.

As the number of elevated blood lead cases in Minnesota has continued to consistently decline, the MDH CLPPP has 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. Additional information on healthy homes is included later in this report.

The 2010 Blood Lead Surveillance Report will be the last report focusing exclusively on lead. Future reports will include activities addressing a range of housing-based public health threats as part of transitioning the MDH lead program to a healthy homes program.

Lead poisoning

Although the toxicity of lead has been known for thousands of years, lead poisoning 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, lead dust accidentally brought home from parents’ workplaces and hobby areas, and imported candies, traditional remedies, pottery, and toys. However, deteriorated lead paint in homes is the primary source of lead exposure for U.S. children today.

Lead paint is most often found in homes built before 1950, but may be found in any home built before 1978, the year lead paint was banned for residential use. More than 80% of all homes built before 1978 in the U.S. have lead based paint. This correlates to nearly one million homes in Minnesota. Old homes with lead paint may be found in both urban and rural areas. Lead paint may deteriorate as visible paint chips, but is more commonly found as fine dust, identical in appearance to ordinary house dust. Lead-painted windows are a special problem because the action of raising and lowering the window creates lead paint dust that settles on floors and window wells, even when new paint is put over the old lead paint. Remodeling activities in old homes can create large quantities of lead dust that may be inhaled or ingested by all family members.

Children less than six years old, and especially ages one to three years, 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 risk because lead easily

passes through the placenta to the fetus, and the changing nutritional needs of the mother cause release of lead stored in bone. The Centers for Disease Control and Prevention (CDC) and MDH consider children and pregnant women to have elevated blood lead levels (EBLLs) if their blood test results are greater than or equal to 10 micrograms of lead per deciliter whole blood ($\mu\text{g}/\text{dL}$).

Certain populations of children are at increased risk of lead poisoning. For example, children enrolled in Medicaid or other medical assistance programs are more likely to live in older homes in poor condition, have poor nutrition, and live in urban areas that may contain lead-contaminated soils. Refugees and immigrants are also at increased risk because they are likely to have lead exposure in their home countries, may have poor nutritional status, and may live in substandard housing once in the U.S.

Recognizing and treating lead poisoning can be difficult. Elevated levels of 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. At that point it is too late for prevention of lead poisoning and the effects are likely to be permanent.

Minnesota statute 144.9504 mandates environmental interventions for venous blood lead levels of 15 $\mu\text{g}/\text{dL}$ or greater in children less than six years old. For levels of 5 $\mu\text{g}/\text{dL}$ or greater, local public health nurses work with families to identify potential exposure routes and bring down elevated lead levels. For most children and adults with lead poisoning, identification and elimination of the source of lead is the main treatment. Chelation to quickly reduce the blood lead level is advised only for blood lead levels of 45 $\mu\text{g}/\text{dL}$ or greater. Research has shown no benefit in long-term outcome for chelation of blood lead levels less than 45 $\mu\text{g}/\text{dL}$. For this reason, primary prevention, or preventing lead poisoning before it can start, is crucial.

Lead Poisoning Elimination Plan

In 2004 a workgroup consisting of partners from federal, state, and local governments, community based organizations, housing, real estate, landlord, and tenant organizations, and many other disciplines (Advisory Members), created the State of Minnesota Childhood Lead Poisoning Elimination Plan (Plan). The plan advocates for a collaborative, housing-based approach to promoting primary prevention of childhood lead exposure, while incorporating ongoing lead poisoning prevention programs at both the state and local level. This is consistent with the federal strategy to act before children are poisoned, identify and care for lead poisoned children, conduct research, and measure progress to refine lead poisoning prevention strategies.

The stated goal of the Plan is: “To create a lead-safe Minnesota where all children have blood lead levels below 10 $\mu\text{g}/\text{dL}$ by the year 2010.” As we enter 2010, there has been tremendous progress in lowering exposure to lead, both nationally and in Minnesota (in Minnesota there were over 4300 EBLLs 1995 and only 617 in 2010). While the CDC has issued the “Healthy People 2020” objective to “eliminate elevated blood lead levels in children” there is ongoing discussion in the lead community regarding what constitutes “elimination” at the national and state level. During the creation of the Plan in 2004 the consensus of the group was that Minnesota should strive for “0% of at-risk children” as a goal. Discussions held with Advisory

Members in 2010 confirmed that their desire was to have Minnesota continue to strive for 0% children with EBLL.

The 2010 version of the Plan updates the version of the Plan released in July 2008. As with all previous versions of the Plan, the 2010 version of the Plan contains background on lead exposure in Minnesota, an assessment of risk factors for lead, and an overview of modifications to the Plan proposed by Advisory Members. Major differences between the 2008 and 2010 versions of the Plan include a dramatic increase in the number of healthy homes tasks, removal of tasks that have been completed or deemed too problematic to implement, and an increase in the number of tasks which are “ongoing” and have been incorporated into routine program activities at the state and local level.

Progress reports and all previous versions of the Plan are available at the MDH Lead Program website: www.health.state.mn.us/lead .

The MN Blood Lead Information System (BLIS)

MDH maintains a blood lead information system (BLIS) for the purpose of monitoring trends in blood lead levels in adults and children in Minnesota. Analyzing laboratories submit results to the MDH lead program, as mandated by Minnesota Statute 144.9502. The data are used to help identify populations at risk for elevated blood lead levels (EBLLs), to help ensure that screening services are provided to groups identified as having the highest risk of lead poisoning and to ensure that environmental and medical follow up are provided to children with EBLLs. In April 2010 MDH entered the millionth record into BLIS, which was started in 1995.

It can often take several weeks for blood lead data to be reported and processed into the MDH surveillance database. The CLPPP is addressing this issue by promoting use of electronic reporting formats, which allow for greater efficiency in handling large numbers of records. MDH currently receives approximately 85% of reports electronically, up from 27% in 1997. In 2010 the CLPPP also worked with the Minnesota Electronic Disease Surveillance System (MEDSS) to incorporate electronic reporting of blood lead test results in to routine data handling by MDH and to explore the possible migration of BLIS to MEDSS.

Statewide surveillance data

The two main types of blood specimens used in blood lead testing are capillary and venous. Capillary blood specimens are drawn from a finger stick and the blood is collected either in capillary tubes or on filter paper. They are considered “screening” tests because they are prone to falsely high results due to surface contamination when hands are not properly washed with soap and water. However, capillary tests tend to be more acceptable to parents and may be performed in a wider range of settings. Venous specimens are considered “diagnostic” tests because they are drawn directly from a vein, but they can be less acceptable to some parents due to discomfort for the child, and necessitate greater expertise in drawing the blood.

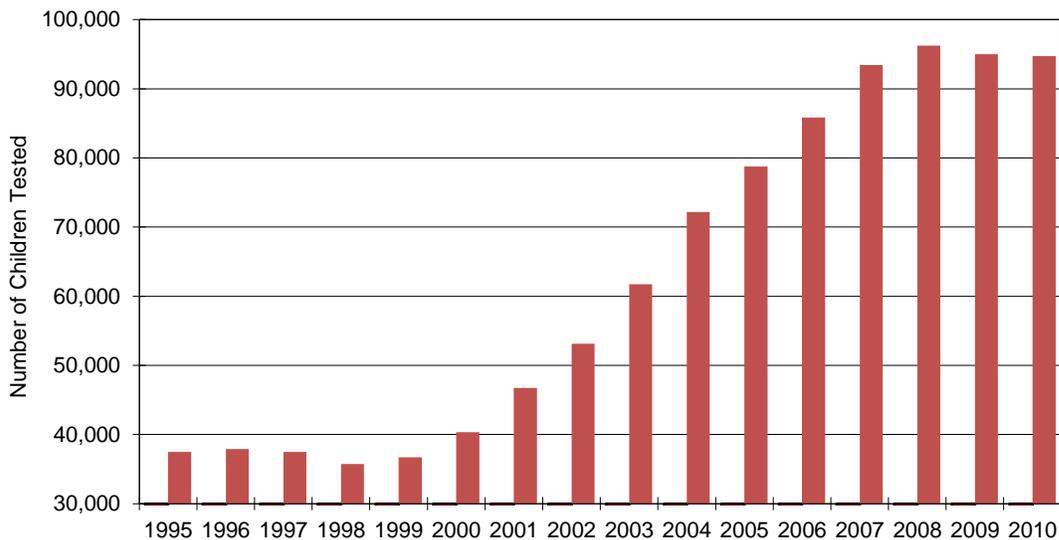
In 2008 MDH completed a study requested by the Legislature to evaluate blood lead testing methods used to confirm elevated blood lead status. The study assessed the accuracy and

methods for performing capillary blood lead testing, reviewed existing state and federal guidelines, and provided recommendations on blood lead testing issues. Surveillance data showed that 68% of elevated capillary results reported to MDH were false positives. An overview of methods demonstrated that hand washing was a key step in preventing contamination in capillary samples. In the report MDH recommended that capillary tests not be used to initiate an environmental investigation of an elevated lead result (currently, venous tests are required) and that the environmental investigation threshold should remain at 15 ug/dL (rather than be lowered to 10 ug/dL). The full report is available at: <http://www.health.state.mn.us/divs/eh/lead/reports/legislativerept07.pdf>.

Since not all Minnesota children have a high risk for lead exposure, targeted screening based on established risk factors is currently recommended for most areas of the state. Universal screening is recommended for children at one and two years of age, and children up to six years of age who have not previously been screened, and for children living within the city limits of Minneapolis or St. Paul. The goal is to test all children at risk for exposure to lead.

The number of children tested for lead in Minnesota increased dramatically between 1998 and 2008 and has recently leveled off, with 94,716 children tested in 2010 (Figure 1).

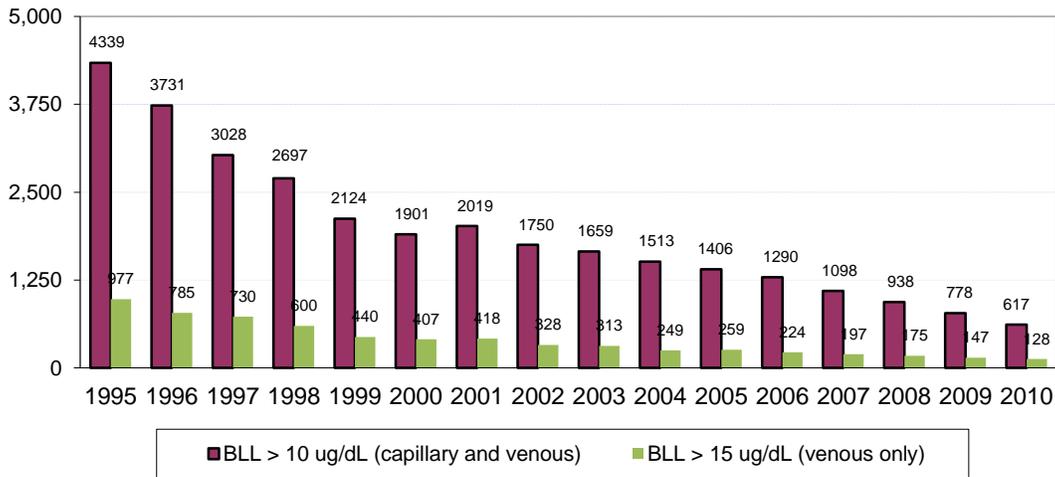
Figure 1: Number of Children Tested (Less than 6 Years of Age)



Blood Lead Levels in Children

The trends in the number of EBLL cases in Minnesota children may be compared across years (Figure 2). Fortunately the number of EBLL cases has continued to decrease. In 2010 there were 617 Minnesota children with blood lead levels of 10 µg/dL or greater, and 128 children had venous blood lead levels of 15 µg/dL or greater.

Figure 2: Number of Children with Elevated Blood Lead Levels



County-specific data on blood lead testing and EBLL rates are provided at the end of this report in Table 3.

Case Management

The CLPPP provides technical assistance to all local public health agencies in the state of Minnesota through the State Case Monitor position. Assistance is provided to ensure case management services are available for children with EBLs. These activities include:

- Assuring case management activities and follow-up testing for children and pregnant women that have EBLs above 10 µg/dL are performed consistent with MDH guidelines;
- Providing educational materials, in other languages as needed, 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.

Case monitoring activities have helped clinicians improve their adherence to Minnesota Guideline procedures and have provided increased collaboration between public health and housing staff at both the state and local level.

Follow-up Testing

MDH guidelines recommend follow-up blood lead tests for children with elevated blood lead levels. The period of time recommended for re-testing varies according to the initial blood level, but the maximum time is 90 days for any child with a blood lead level of 10 µg/dL or greater (e.g. an EBL). Of the 617 Minnesota children identified with EBLs in 2010, 418 (68%) received a follow-up test. Of these, 353 (57% of the total children with EBLs) were retested within 90 days of their initial EBL. While the number of EBLs in Minnesota has been steadily declining for the past 15 years, rates for the total number of follow-up tests and those done

within 90 days have remained relatively consistent, at about 60% and 50%, respectively over the past six years. Increasing the follow-up rate and reducing the time between tests will take the combined efforts of providers, case managers, families, and the MDH Lead Program.

Special populations

Medicaid Children

National studies have shown that Medicaid-enrolled children are three times more likely to have elevated blood lead levels than non-enrolled 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. The MDH Lead Program and Minnesota Department of Human Services (DHS) routinely examine children enrolled in Minnesota Health Care Programs (MHCP) to determine if they have a higher lead poisoning rate. The 9-30 month age group is used in analysis since this captures children tested around their one and two-year well-child visit as recommended in both DHS and MDH guidelines. An assessment of 1999-2003 data for lead exposure in Minnesota children enrolled in Medicaid funded programs was published in *Minnesota Medicine* (see www.minnesotamedicine.com for the May 2006, Volume 86 issue).

When combined with data from the report described above, the data for 2004 through 2009 also show a general trend toward higher rates of testing in MHCP-enrolled children in the past decade (Figure 3), along with declining rates of EBLs in both MHCP-enrolled and non-enrolled children (Figure 4).

Figure 3. Children Enrolled in MHCP Tested for Blood Lead

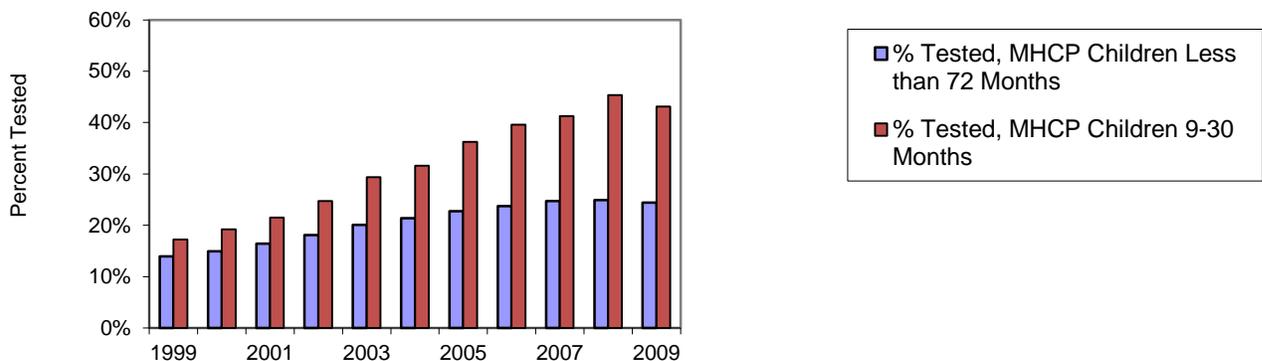
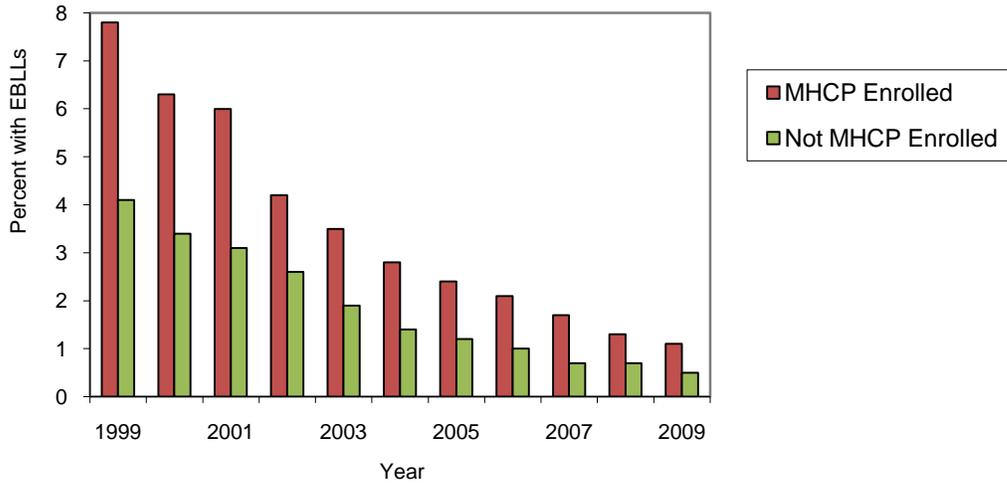


Figure 4. Percentage of Tested Children Less than 72 Months Old with EBLs

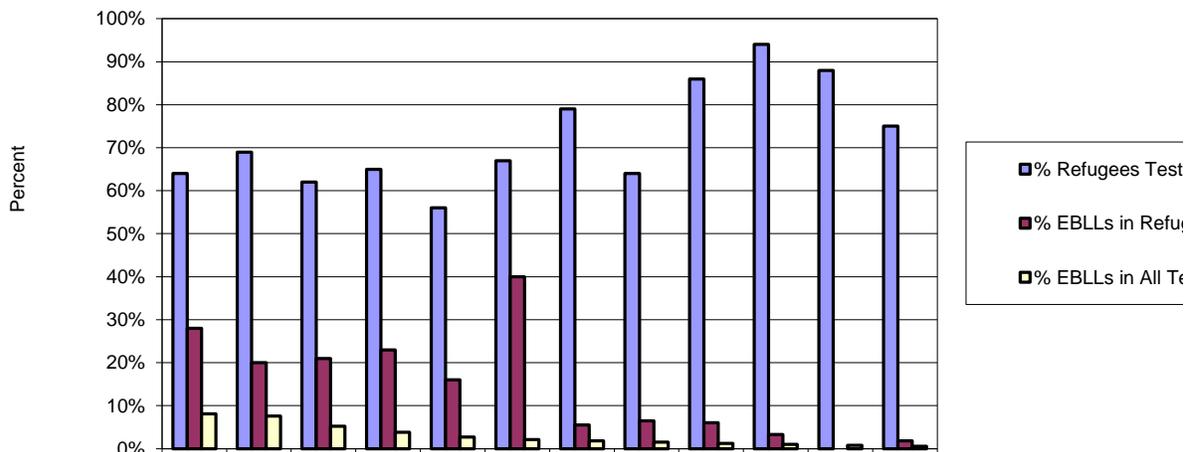


To help sustain these gains, DHS continues to include provisions in their managed care contracts which encourage blood lead testing. A \$30 incentive is provided for every child above the previous year’s level of testing. DHS also includes a blood lead screening among the performance goals that must be met for health plans to receive the 5% of their contract amount that is withheld at the beginning of each contract year.

Refugee Children

Refugees are a population at high risk for lead poisoning. Refugees may have lead exposure in their countries of origin, such as use of leaded gasoline, herbal remedies, cosmetics or spices that contain lead, cottage industries that use lead in an unsafe manner, and limited regulation of emissions from larger industries. Once they are in the U.S., refugees frequently move into older, inner city housing, with potential for exposure to lead-based paint. The Division of Infectious Disease Epidemiology, Prevention, and Control at MDH collect demographic data on all refugees entering the state who receive an initial health screening. The 2010 refugee data were linked with the blood lead test results from BLIS to describe lead testing and EBL rates in refugees (Fig. 5).

Figure 5. Lead Testing and EBLs in Refugee Children



Refugee children in Minnesota comprise a wide range of ethnic origins, as shown in Table 1.

Table 1. Number and Percent of Refugee Children Tested and with Elevated Blood Lead Levels in 2010 by Country of Origin

Country/ Region of Origin	# of Refugee Children*	# of Children Tested for Lead		Of Children Tested for Lead, # Tested Within Three Months of Arrival		Children w/Elevated Level (10 µg/dL)	
Bhutan	62	55	89%	55	89%	3	5.5%
Burma	394	298	76%	293	74%	8	2.7%
Cuba	2	2	100%	2	100%	0	0%
Former USSR	11	7	64%	7	64%	0	0%
Iraq	89	63	71%	60	67%	1	1.6%
Laos	17	16	94%	16	94%	0	0%
Other Africa	84	59	70%	59	70%	0	0%
Rwanda	2	2	100%	2	100%	0	0%
Somalia	357	264	74%	252	71%	2	0.8%
Uzbekistan	6	2	33%	2	33%	0	0%
Total	1024	768	75%	748	73%	14	1.8%

*Data obtained from MDH Infectious Disease Epidemiology, Prevention and Control Division

The rate of elevated blood lead levels for refugees has dropped in the past several years compared to rates prior to 2004. In 2010, 1.8% of refugees tested had EBLs compared to only 0.6% for all children tested across Minnesota. Therefore it appears that refugee children continue to be at higher risk for lead poisoning and should continue to be tested upon arrival in Minnesota.

Adults

CDC recommends a level of concern for adult exposure to lead of 25 µg/dL, while the Occupational Safety and Health Administration (OSHA) requires action in exposed workers at a level of 40 µg/dL. Minnesota's Adult Blood Lead Epidemiology and Surveillance (ABLES) program began identifying eligible adults on January 1, 1998. The total number of tests reported in 2010 for adults in Minnesota is presented in Table 2.

Table 2: Minnesota residents 16 years or older with a reported blood lead test in 2010

# of reports	# of individuals	Range of reported results
9,794	8,623	0.0 to 121.6 µg/dL

There were 458 adults with BLLs of 10 to 24 µg/dL, 106 adults with BLLs of 25 to 39 µg/dL, and 9 adults with reported levels of 40 µg/dL or greater.

Evaluation of BLIS

In 2010 there were 108,976 total blood lead tests reported to the MDH BLIS. The tests were received from over 70 separate laboratories; 40,265 (35%) received on paper through mail or fax and 74,306 (65%) received through electronic reporting (mailed disks, encrypted email, or secure website downloads). Approximately a quarter of the results were received from over 50 clinics using ESA LeadCare analyzers. The tests received by MDH consisted of 81,729 capillary specimens (75%), 26,103 venous specimens (24%), and 1,106 tests of unknown type (1%). The number of tests of unknown type were down dramatically in 2010 (from over 2,000 in 2009), reflecting increased attention to data completeness by reporting labs and clinics.

The number of tests reported electronically also increased significantly during 2010 due to the transition of one of the major data sources (Quest Labs) to an electronic reporting format and the ongoing development of electronic reporting capacity through the MDH Minnesota Electronic Disease Surveillance System (MEDSS).

Routine quality checks, performed on data throughout 2010, showed MDH blood lead data continued to be of very high quality. Data entry procedures and quality control remained consistent from previous years. However, due to staff changes a comprehensive annual evaluation of BLIS was not conducted in 2010. Evaluation results from previous years are presented in previous Annual Surveillance reports.

State Blood Lead Guidelines

MDH has developed a set of four guidelines for lead: Childhood Blood Lead Screening, Childhood Blood Lead Case Management, Childhood Blood Lead Clinical Treatment, and Blood Lead Screening for Pregnant Women. These guidelines were developed by collaborative workgroups and have been endorsed by a range of professional health organizations. All four guidelines may be found at the MDH website at www.health.state.mn.us/lead. In addition to the guidelines from MDH, local public health agencies may review risk factors for elevated blood lead and the available blood lead screening data to assess concerns about lead poisoning in their areas. This allows local agencies to develop interventions tailored to the risks in their areas. Factors to be considered locally are the age and condition of housing stock, the size of the population, screening practices of the area health care providers, occupational and community sources of lead, socio-economic status of the population and other unique risk factors in the community. The assessment should address the amount of screening that takes place relative to the size of the childhood population, the relative number of elevated cases that are found, and the use of other screening tools, such as questionnaires, to identify risk factors.

In response to concerns over the effects of low-level lead exposure in children, the 2009-2010 Legislature directed MDH to revise clinical and case management guidelines to include recommendations for protective health actions and follow-up services when a child's blood lead level (BLL) exceeds 5 µg/dL. Changes for both sets of guidelines included adding new guidelines for BLLs between 5 and 9.9 µg/dL, and shifting some of the guidelines previously listed for all BLLs < 10 µg/dL to a new category of all BLLs < 5 µg/dL. In addition, for the 5-9.9

µg/dL range, a recommendation was added for a confirmatory venous test within 3 months to ensure that medical management is targeted only to those cases with confirmed lead exposure above 5µg/dL.

The final format of the guidelines is the result of a compromise between concerns over low-level lead exposure and concerns over the best use of limited resources. On balance, the new guidelines reflect, to the best extent possible, the diverse recommendations of the expert panel. While recommendations for test results < 10 ug/dL are appropriate, it is critical to remember that results > 10 ug/dL are, and should remain, the highest priority for medical and public health resources.

Children participating in the Supplemental Food Program for Women, Infants, and Children (WIC) have traditionally been considered to be at risk for exposure to lead. In 2010 the Minnesota WIC population was removed from the current definition of high risk based on data from a series of pilot studies. In 2005-2006, MDH funded studies of blood lead levels in WIC recipients in Hennepin and Ramsey Counties, counties with the highest proportion of EBLLs among children less than six years old in the state. Results showed the proportion of EBLLs and the average BLL among WIC children were below corresponding figures in the general population, based on BLIS data. Additional data was collected from four counties (Blue Earth, St. Louis, Stearns, and Winona) and showed similar results. Therefore, participation in WIC in Minnesota does not appear to indicate an additional risk to lead exposure. All MDH lead guidelines have been revised to remove WIC as a specific, independent exposure risk factor.

Childhood Blood Lead Screening Guidelines

The MDH Childhood Blood Lead Screening Guidelines direct physicians to order blood lead tests for 1) children residing in specific geographic areas that have a high rate of cases of elevated blood lead; and 2) children matching specific demographic groups that have a high rate of elevated blood lead. Universal screening is recommended for children residing in Minneapolis and St. Paul and those recently arriving from other major metropolitan areas or other countries. Screening is also recommended for children receiving Medicaid. The test is 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.

Childhood Blood Lead Case Management Guidelines

The MDH Childhood Blood Lead Case Management Guidelines are intended to establish standardized, minimum levels of care for providing services to children with EBLLs. However, those counties that have greater resources available may wish to take a more rigorous approach to case management. The objective is to ensure that a qualified case manager is available to oversee the treatment and recovery of each child, and to ensure that steps are taken to prevent further exposure of the child to potential sources of lead. The Case Management Guidelines work in concert with the MDH Blood Lead Screening Guidelines for Minnesota to identify and manage lead exposure in children. Appropriate steps are presented for both capillary and venous test results. The guidelines recommend providing educational materials to the family of children with test results between 5 and 10 µg/dL.

Childhood Blood Lead Clinical Treatment Guidelines

The Childhood Blood Lead Clinical Treatment Guidelines were designed for physicians to assist them in treating a patient with an EBLL, thus ensuring that all EBLL cases in Minnesota receive a consistent level of care. When a child is diagnosed with an EBLL, making sure the child's environment is lead-safe—and remains lead-safe—is an essential part of the child's care. Providing information to understand potential lead risks and a lead-safe environment for the lead-exposed child is a joint responsibility, involving the public health nurse, the lead risk assessor assigned to the case, and the child's physician.

Blood Lead Screening Guidelines for Pregnant Women in Minnesota

In June 2004, MDH developed Blood Lead Screening Guidelines for Pregnant Women in Minnesota. They are designed for Ob/Gyn physicians, nurse practitioners, and midwives to assist them in screening and treating pregnant women for elevated blood lead levels, thus ensuring that both the women and their children receive intervention to reduce their lead exposure. Not every woman is at risk for lead exposure, so a risk screening questionnaire should be used to decide when to test a pregnant, or potentially pregnant, woman for lead.

Prenatal lead exposure is of concern because it may have an effect on intellectual development. In addition to fetal risk, lead may be a risk to the mother. For example, there are data showing that lead exposure is related to cardiovascular disease. Lead is transferred from mother to the fetus through the placenta. Therefore, it may be assumed that fetal blood contains the same concentration of lead as maternal blood.

Other information resources available from CLPPP

The Lead Program maintains a web page through the MDH website 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.

Because 2010 has been the target year for elimination of childhood lead poisoning at the national and state level, MDH sponsored public events during National Lead Week (October 3-9) in Minneapolis and St. Paul. The three goals of the events were to acknowledge the tremendous progress that has been made in reducing lead exposure, emphasize that lead remains a major public health threat in high-risk neighborhoods, and announce the transition of the lead program to a healthy homes format. Hennepin and Ramsey counties (containing Minneapolis and St. Paul, respectively) routinely have the largest number of EBLLs each year and therefore were chosen as venues to reach the largest audience possible. In Minneapolis, Mayor R.T Rybak declared Wednesday, 10/6, Lead Poisoning Prevention Day and a number of community-based partners hosted an event titled “Keeping Minneapolis’ Children Lead Free: A Celebration of a Decade of Lead Poisoning Prevention Efforts.” In St. Paul the local lead program hosted an event on 10/7 that included dinner, gift bags, the police and fire departments, and a kid-centered local band. In

addition, the Governor issued a proclamation declaring October 3-9, 2010 as Childhood Lead Poisoning Prevention Week in Minnesota.

The Lead Program posts relevant information to the Minnesota Collaborative Lead Education and Assessment Network (MCLEAN) group email list and encourages other state groups or individuals to post and respond to information. This group will continue to meet twice a year, but will be transitioning to incorporate healthy homes issues and be renamed “Healthy Homes Minnesota.”

St. Paul Prevention Project

Since 2006, the CLPPP had contracted with Saint Paul/Ramsey County Department of Public Health to provide Lead Supervisor Training for small contractors working in targeted census tracts with high risk factors for childhood lead poisoning. In 2010 the project resulted in:

- Two supervisors representing window replacement contractors being trained as EPA/MDH Lead Supervisors;
- Three additional workers being trained to complete window replacement projects using lead safe work practices;
- Contractors involved in the project actively bidding on window replacement projects with the City, thereby increasing the available contractor pool and building lead safe infrastructure;
- Work was completed on 27 projects resulting in the installation of 413 lead-safe windows. Each home was occupied by very young children and families well below the 80% median income level (most were below the 50%). Each home was owner occupied.

Minneapolis Contractor Training

In 2008 the City of Minneapolis passed an ordinance requiring rental property owners to take a Lead Safe Work Practice class when they are ordered to perform maintenance on lead paint hazards. MDH has worked with Minneapolis to facilitate lead safe work practices training for rental property owners in both English and Spanish. Lead safe work practice courses were offered at public venues throughout the City in 2010. Students trained were a mixture of rental property owners, contractors, rental property building maintenance, HUD grant recipients, Minneapolis building and housing inspectors and section 8 inspectors.

Lead in Venison

Many states have programs in which hunters may donate venison to food shelves by bringing their shot deer to meat processors, who provide the processed venison to food charities. In 2008 the Minnesota Department of Agriculture (MDA) staff obtained venison packages from Minnesota food shelves and examined them for the presence of lead. The results showed 22% of packages having measurable lead fragments. As a result of this discovery, MDA suspended venison distribution from food shelves in Minnesota for the remainder of 2008.

MDH, MDA and the Department of Natural Resources (DNR) have been working together to monitor and refine the program. These three agencies provide guidance for hunters and their

families about consumption of venison, whether it is processed at home or by a commercial processor, and provide training to processors to reduce the risk of lead remaining in venison. Several changes to the donation program were implemented for Fall 2008 hunting season and were further modified in 2009. Data from MDA, reported in 2010, has shown that only 6% of venison tested in 2009 contained lead. Additional steps (additional processor training and reimbursement, raising awareness of the program with hunters) are being implemented.

More information is available on the MDH Lead Program website at www.health.state.mn.us/lead and the DNR website at www.dnr.state.mn.us/hunting/lead.

Transition to Healthy Homes

Housing-related health and safety hazards have been identified through an in-home survey in 1189 Twin Cities area homes. These homes are similar in demographic and building characteristics to homes receiving lead hazard reduction. The top five hazards observed or reported include 1) home not tested for radon (93%), 2) chipping or peeling paint (57%), 3) no CO alarm (43%), 4) mold/moisture issues (38%), and 5) fall hazards (18%).

Minnesota data compiled by MDH show that these 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 of Minnesota residents.
- Of children tested in Minnesota, 617 children younger than six years old had an elevated blood lead level reported in 2010.
- Over 100,000 falls statewide were reported to the Minnesota Injury Data Access System in 2009; CDC estimates that about half of falls reported each year occur in the home.
- One in 15 children (about 80,000), and one in 12 adults (about 320,000), in Minnesota reported that they had asthma in 2007. Surveys show 42.9% of adults and 25.7% of children with asthma have been advised by a healthcare professional to change things in their home, school or work to improve their asthma.
- Between 2002 – 2008, 131 Minnesotans died from unintentional exposure to carbon monoxide (CO).

MDH is currently seeking funding from the federal Housing and Urban Development (HUD) for a comprehensive Minnesota Healthy Homes Production Grant (MHHPG) project. In addition, a Healthy Homes website has been established by MDH (www.health.state.mn.us/divs/eh/homes/index.html) to provide information on key focus areas to a range of internal and external partners. Specific tasks for healthy homes will help ensure that Minnesotans are in homes that are consistent with the seven principles of a healthy home: dry, clean, well ventilated, pest-free, contaminant-free, safe, and maintained.

Further Lead Information

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

Table 3: Blood Lead Testing by County in 2010 (Children Less than 6 Years of Age)

County	5 to 9.9 µg/dL		10 to 14.9 µg/dL		15 µg/dL or greater		Total Children Tested		
	Venous	Capillary	Venous	Capillary	Venous	Capillary	All test types	Population (2000)	Percent Tested
Aitkin	0	16	1	0	1	0	188	858	22%
Anoka	13	83	2	14	1	3	6,207	27,287	23%
Becker	0	15	1	1	1	1	511	2,244	23%
Beltrami	2	20	0	0	0	0	607	3,394	18%
Benton	1	17	0	1	2	0	999	2,949	34%
Big Stone	0	5	0	0	0	0	85	336	25%
Blue Earth	4	27	2	2	2	0	847	3,709	23%
Brown	1	21	1	5	0	1	379	1,752	22%
Carlton	0	20	0	4	0	0	752	2,266	33%
Carver	1	14	1	2	0	1	1,132	7,493	15%
Cass	0	8	0	1	0	0	421	1,688	25%
Chippewa	1	10	0	0	0	1	233	922	25%
Chisago	1	20	1	0	0	1	686	3,750	18%
Clay	2	11	0	1	0	1	742	3,826	19%
Clearwater	0	0	0	0	0	0	52	594	9%
Cook	0	0	0	0	0	1	46	292	16%
Cottonwood	4	1	1	0	1	0	132	862	15%
Crow Wing	2	54	1	0	0	0	994	3,999	25%
Dakota	9	150	2	7	1	3	6,817	33,353	20%
Dodge	1	7	0	0	0	0	286	1,613	18%
Douglas	1	6	0	0	1	0	625	2,216	28%
Faribault	0	9	2	1	1	0	212	1,025	21%
Fillmore	2	12	0	1	0	0	196	1,458	13%
Freeborn	2	17	5	1	2	0	457	2,209	21%
Goodhue	2	15	1	2	2	0	491	3,258	15%
Grant	0	7	1	0	1	0	116	392	30%
Hennepin	231	564	54	59	26	49	22,047	88,005	25%
Houston	1	17	1	2	0	2	235	1,389	17%
Hubbard	1	10	0	0	0	0	325	1,232	26%

County	5 to 9.9 µg/dL		10 to 14.9 µg/dL		15 µg/dL or greater		Total Children Tested		
	Venous	Capillary	Venous	Capillary	Venous	Capillary	All test types	Population (2000)	Percent Tested
Isanti	1	17	0	1	0	0	722	2,497	29%
Itasca	0	20	0	0	0	1	737	2,825	26%
Jackson	3	4	0	0	0	1	113	723	16%
Kanabec	0	6	0	0	0	0	197	1,116	18%
Kandiyohi	6	21	0	2	4	1	959	3,080	31%
Kittson	0	6	0	0	0	0	36	407	9%
Koochiching	0	8	0	0	2	0	195	958	20%
Lac Qui Parle	1	3	1	1	2	1	108	508	21%
Lake	0	4	0	2	0	0	197	670	29%
Lake of the Woods	0	2	0	0	0	0	35	244	14%
Le Sueur	1	16	0	2	0	0	370	1,923	19%
Lincoln	0	1	0	0	1	0	69	435	16%
Lyon	1	21	0	5	0	0	786	2,009	39%
McLeod	0	17	0	1	0	1	641	2,935	22%
Mahnomen	0	1	0	0	0	0	51	453	11%
Marshall	0	3	0	0	0	0	92	703	13%
Martin	1	10	0	1	2	1	308	1,449	21%
Meeker	1	9	1	0	0	0	365	1,760	21%
Mille Lacs	1	17	0	5	0	3	444	1,648	27%
Morrison	4	13	0	1	0	1	727	2,513	29%
Mower	13	11	5	0	3	2	576	2,860	20%
Murray	0	7	0	0	0	0	130	600	22%
Nicollet	2	16	2	0	1	1	488	2,143	23%
Nobles	4	22	0	4	2	0	581	1,736	33%
Norman	0	2	0	0	0	0	56	556	10%
Olmsted	13	19	1	2	2	0	1,378	10,691	13%
Otter Tail	2	15	1	2	0	0	563	3,772	15%
Pennington	0	6	0	0	0	1	147	999	15%
Pine	1	25	0	3	0	0	481	1,784	27%
Pipestone	0	8	1	0	1	0	134	678	20%
Polk	3	9	0	1	1	0	279	2,261	12%
Pope	0	3	0	1	2	0	129	660	20%
Ramsey	161	559	28	50	33	18	11,827	41,990	28%

County	5 to 9.9 µg/dL		10 to 14.9 µg/dL		15 µg/dL or greater		Total Children Tested		
	Venous	Capillary	Venous	Capillary	Venous	Capillary	All test types	Population (2000)	Percent Tested
Red Lake	0	0	0	0	0	0	30	289	10%
Redwood	0	14	0	0	0	0	278	1,252	22%
Renville	2	23	2	2	2	0	343	1,260	27%
Rice	4	35	1	4	0	1	1,159	4,206	28%
Rock	0	8	0	1	0	1	108	733	15%
Roseau	0	1	0	0	0	0	130	1,460	9%
St. Louis	7	109	10	10	4	10	3,486	12,737	27%
Scott	2	22	1	1	2	0	2,042	10,001	16%
Sherburne	0	15	0	1	0	1	1,750	6,497	17%
Sibley	3	16	0	2	0	1	287	1,227	4%
Stearns	5	47	1	6	3	0	2,909	10,311	28%
Steele	1	28	0	4	3	0	743	2,832	26%
Stevens	0	5	2	0	0	0	147	631	23%
Swift	1	9	0	0	0	0	190	775	25%
Todd	1	14	0	2	0	0	452	1,743	26%
Traverse	0	1	0	1	0	0	33	277	12%
Wabasha	0	5	1	0	1	0	224	1,540	15%
Wadena	0	3	0	0	0	1	184	1,014	18%
Waseca	0	14	1	1	0	0	331	1,554	21%
Washington	12	122	3	5	3	3	3,437	18,636	18%
Watonwan	3	10	0	3	0	0	202	1,022	20%
Wilkin	0	1	0	0	0	0	61	548	11%
Winona	6	10	1	2	2	0	509	3,385	15%
Wright	1	21	0	1	0	1	2,337	8,947	26%
Yellow Medicine	1	5	0	0	0	0	154	757	20%
Unknown	13	47	0	0	0	0	2,449	N/A	N/A
Minnesota Totals	563	2,642	140	234	118	115	94,716	397,581	24%