

STATE OF MICHIGAN

**FINAL REPORT OF THE
TASK FORCE TO ELIMINATE
CHILDHOOD LEAD POISONING**

JUNE 2004



STATE OF MICHIGAN

DEPARTMENT OF COMMUNITY HEALTH
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

JANET OLSZEWSKI
DIRECTOR

June 30, 2004

Jennifer M. Granholm
Governor of Michigan
State Capitol
PO Box 30013
Lansing, Michigan 48909

Dear Governor Granholm:

As co-chairs of the Childhood Lead Poisoning Prevention Task Force, we are pleased to present you with the *Final Report of the Task Force to Eliminate Childhood Lead Poisoning*.

This report reflects the communications of more than 170 members of the Task Force and the six subcommittees in developing more than 100 recommendations and strategies to achieve the goal of the elimination of lead poisoning among Michigan's children by 2010. The priority strategies selected by the Task Force are presented in the body of the document, but all strategies are contained in an appendix to the report, as is information from the Department of Environmental Quality regarding progress made toward addressing activities detailed in the July 2003 *Childhood Lead Poisoning Prevention: A Call to Action* report. If other than the priority strategies are to be addressed, then additional personnel and resources would be necessary to successfully complete them.

We appreciate the opportunity to develop this report to advise the budget and policy process. We look forward to your continued support and guidance as we address this highly preventable environmental disease that seriously impairs the ability of our children to be effective learners and contributing members of society. This report reflects our initial efforts to move our State forward to reduce lead poisoning in our children that will result in securing a healthier and stronger Michigan tomorrow.

Sincerely,

Kimberlydawn Wisdom, MD, MS
Michigan Surgeon General
Co-Chair, Lead Task Force

Kanta Bhambhani, MD
Associate Professor of Pediatrics
Wayne State University
Co-Chair, Lead Task Force



TABLE OF CONTENTS

Executive Summary.....	1
Lead Poisoning: A Critical Issue for Michigan.....	3
Priority Recommendations.....	4
Task Force and Subcommittee Activities.....	8
Recommendations by Focus Area.....	10

ATTACHMENTS

- Attachment A - Complete listing of all Task Force Recommendations**
- Attachment B - Michigan Department of Environmental Quality
Accomplishments and Recommendations**
- Attachment C - Tables and Figures**
- Attachment D - Compliance Subcommittee Regulatory Matrix**
- Attachment E - Federal Funding Matrix**
- Attachment F - Department of Environmental Quality - Issue Paper
Directive 13 - *Call To Action* - July 2003**
- Attachment G - List of Task Force and Subcommittee Participants**

Final Report of the Task Force to Eliminate Childhood Lead Poisoning, July 2004 EXECUTIVE SUMMARY

Lead Poisoning: A Critical Issue for Michigan

In July 2003 Governor Jennifer M. Granholm released a document titled *Childhood Lead Poisoning Prevention: A Call to Action*. The report detailed the effects of lead poisoning in young children as well as current activities focused on the identification of affected children and improving the lead-safety of housing stock.

As a result of the publication of this document, five bills were introduced concurrently in the House and Senate chambers. The proposed bills included the following issues, and the status of each bill as of July 19, 2004 is identified:

- Requiring mandatory electronic reporting of blood lead analyses by October 1, 2005. This bill has been passed by the Legislature and signed by the Governor on April 12, 2004.
- Requiring Medicaid fee-for-service and Health Plan providers to increase testing levels of children to 80% by 2007. This bill has been passed by the Legislature and signed by the Governor on April 12, 2004.
- Implementing a "lead-safe" rental-housing registry. This bill has been passed by the Senate and is in the House for concurrence. It is expected that this bill will be sent to the Governor for signature in the near future.
- Establishing penalties for individuals who cause the lead poisoning of children. This bill has been passed by the Senate and is in the House for concurrence. It is expected that the bill will be sent to the Governor for signature in the near future.
- Establishing a Commission to evaluate and coordinate lead resources and activities statewide. Substitutes for House Bill 5118 and Senate Bill 753 have been developed. The Senate Bill will create the Lead Poisoning Prevention Commission and the House Bill will define the duties of the Commission. This bill has passed the respective branch in which it was introduced and is in the other branch for concurrence. It is expected that the bills will be sent to the Governor for signature in the near future.

The issues identified in *Childhood Lead Poisoning Prevention: A Call to Action* led to the establishment of the Childhood Lead Poisoning Prevention Task Force and served as the basis of its work.

The Governor charged the Task Force with "...leading a statewide effort to successfully address the goal of the elimination of childhood lead poisoning in Michigan by 2010." The Task Force

has established seven priority recommendations essential to the successful response to the Governor's charge.

PRIORITY RECOMMENDATIONS:

The Task Force identified the following recommendations as the most effective first steps to eliminating lead poisoning in children by 2010. The total initial cost for implementing these priority recommendations is estimated at \$3,758,000.

The annual cost would be approximately \$3,300,000 if funding continues for all seven - priority recommendations.

- 1. Michigan should create the capacity to assist communities in building effective coalitions and obtaining grant/foundation funding to address lead poisoning.**
- 2. Michigan should assure the provision of service coordination/case management for children with elevated blood lead levels (EBLL) at or above 20 micrograms per deciliter of blood ($\mu\text{g}/\text{dL}$).**
- 3. Michigan should establish a public health trust to serve as a repository for a variety of potential revenues in order to provide a stable ongoing funding stream for the prevention of lead poisoning in children as well as lead remediation and control activities.**
- 4. Michigan should develop and maintain a mandatory lead-status housing registry for pre-1978 rental properties with a voluntary component for post-1978 rental properties.**
- 5. Michigan should develop and implement a major public awareness campaign to assure that parents understand the dangers of lead exposure and are encouraged to seek lead testing of their children at appropriate intervals.**
- 6. Michigan should identify or establish a commission to evaluate and coordinate lead resources and activities statewide.**
- 7. Michigan should expand the remediation and control of lead hazards in residential environments.**

Final Report of the Task Force to Eliminate Childhood Lead Poisoning June 2004

Lead Poisoning: A Critical Issue for Michigan

Lead poisoning is a serious environmental illness that has life-long effects on the individuals who become lead poisoned, and yet is entirely preventable. Lead poisoning in children may affect their health and cognitive abilities, causing permanent and irreversible damage. The lead that accumulates in a child's body and brain may cause anemia, hearing loss, hyperactivity, aggressive behavior, liver and kidney damage, developmental delay, difficulty with learning due to loss of IQ, brain damage, and in extreme cases, even coma and death. (Reith DM et al., 2003; Selevan SG et al., 2003; Lanphear BP et al., 2003; DeGennaro LD, 2002)

The serious effects of lead poisoning affect the entire community, not just the child who becomes lead poisoned. A child with diminished ability to learn will result in "years of productive life lost," and need the assistance of public and private agencies to function in society. A child who demonstrates aggressive delinquent behavior may become incarcerated, utilizing scarce state resources. (Bernard SM, 2004; Canfield RL et al., 2003; Margai F, Henry N, 2003; Needleman HL et al., 2002; Landrigan PJ et al., 2002)

In July 2003, Governor Jennifer M. Granholm released a document titled *Childhood Lead Poisoning Prevention: A Call to Action*. The report detailed the effects of lead poisoning in young children as well as current activities focused on the identification of affected children and improving the lead-safety of housing stock. The issues identified in the *Call to Action* led to the establishment of the Childhood Lead Poisoning Prevention Task Force and served as the basis of its work.

The Governor charged the Task Force with "...leading a statewide effort to successfully address the goal of the elimination of childhood lead poisoning in Michigan by 2010." While the Task Force developed more than one hundred recommendations, seven of the recommendations have been identified as priorities for the successful response to the Governor's charge.

Michigan currently ranks as the sixth highest state in terms of the estimated population of children with lead poisoning, and the percentage of children found in Michigan with elevated blood lead levels remains higher than the national average. In 2003, more than 100,000 children under the age of six years were tested for blood lead status and 3,141 children were found to be lead poisoned. Another 747 children with preliminary finding of elevated blood lead levels await confirmation of their lead status.

Lead-based paint was in common use for the interior and exterior of houses prior to 1950. Between 1950 and 1978, the percentage of lead in paint utilized in housing gradually decreased, but it was not until 1978 that lead-based paint was banned for use in

residential structures. A review of 2000 census data for Michigan indicates that the number of homes constructed prior to 1950 is in excess of one million.

Lead poisoning may affect as many as 20,000 children under the age of six in Michigan. A commitment to the recommendations addressed in this document is essential to achieve the goal of eliminating lead poisoning by 2010.

PRIORITY RECOMMENDATIONS:

The Task Force identified the following recommendations as the most effective first steps to eliminating lead poisoning in children by 2010. The total initial cost for implementing these priority recommendations is estimated at \$3,758,000.

The annual cost would be approximately \$3,300,000 if funding continued for all seven priority recommendations.

1. Michigan's state government should assist communities in building effective coalitions and obtaining grant/foundation funding to address lead poisoning.

Providing consultation to communities to assist them with coalition development and the receipt of funding by preparing successful grants for abatement and remediation is a crucial first step in addressing the environmental needs of Michigan communities. Federal dollars are the most available source of funding for communities seeking to address their environmental concerns related to lead. Some communities might also seek foundation funding focused on the area of the state addressed by a particular foundation.

An investment of **\$363,000** will provide consultation to eleven high-risk communities (Battle Creek, Benton Harbor, Flint, Hamtramck, Highland Park, Jackson, Kalamazoo, Lansing, Muskegon, Pontiac and Saginaw) from the National Center for Healthy Homes (NCHH). The NCHH has a proven track record of assisting communities to obtain funding to address lead hazards. Grand Rapids has already acquired federal funding from HUD with the assistance of consultants from NCHH.

The initial investment in each community is **\$33,000**, which includes 12-16 months of consultation from NCHH. Consultation will include a minimum of five on-site visits to identify key stakeholders in the community coalition building and maintenance process, and to work with the coalition as it seeks funding to address environmental concerns within the community. This would be a one-time cost unless the state determines that other communities would benefit from similar consultation.

2. The Department of Community Health should assure the provision of case management for children with elevated blood lead levels (EBLL) at or above 20 micrograms per deciliter of blood (µg/dL).

When children are identified with elevated blood lead levels, it is imperative that appropriate treatment plans be instituted immediately. Treatment plans must address environmental issues, health care concerns, nutritional status, behavioral problems, developmental delays, learning disabilities and the provision of information on preventing further exposure.

Costs related to this item include salaries for regional case managers who will monitor and consult in seven regions and provide statewide assurance of treatment plans for all children with elevated blood lead levels at or above 20 micrograms per deciliter of blood. The cost of statewide coverage for case management is **\$350,000**. Additionally, small grants to selected high-risk communities would support nursing and environmental home visits by local health department staff to assure that treatment plans are developed and implemented. These grants might also be utilized to increase testing of children in Medicaid and other children at risk. Many communities currently have very limited local dollars to provide home visits to families. The cost for this support in the eleven highest risk communities is **\$115,000**. The total cost related to this recommendation is **\$465,000** initially and annually.

3. The Governor should establish a public health trust to serve as a repository for a variety of potential revenues in order to provide a stable ongoing funding stream for the prevention of lead poisoning in children as well as lead remediation and control activities. It is further recommended that the trust be established by legislation or executive order.

Securing adequate funding to address lead poisoning is essential if Michigan is to achieve the goal of eliminating lead poisoning in children by 2010. A Public Health Trust could serve as the repository for a variety of revenues that would be utilized for prevention of childhood lead poisoning and addressing environmental lead hazards.

In addition to sources of federal funding found in Attachment E, other potential funding sources include: fees generated by building and remodeling permits; refinancing transaction fees; fees on paint sales; fees on licenses for building and remodeling contractors; grants from federal and state agencies; foundation grants; donations from corporations and individuals; fees from training programs for Lead Inspectors and Risk Assessors; out-of-court settlements and state General Funds.

A Public Health Trust could hold both restricted (designated by donor or funding agency) and non-restricted funds that could be utilized for a variety of activities to

prevent the exposure of children to lead hazards (primary prevention) as well as remediation and control activities designed to reduce environmental hazards. The initial cost of establishing a Public Health Trust, including legal fees and marketing the Trust to potential donors, is **\$150,000**. The annual cost of administering the Trust is estimated to be 10-15% of revenues.

4. Michigan should develop and maintain a mandatory lead-status housing registry for pre-1978 rental properties with a voluntary component for post-1978 rental properties.

It is currently very difficult for families seeking rental housing to know whether the properties they plan to rent are lead safe. The development of a lead-status housing registry would allow families to determine which rental properties have been made lead safe, and to avoid properties that do not carry a lead-safe designation.

While housing registries exist in some communities in Michigan, they typically do not contain information about the lead status of the residence. These registries could be utilized to populate the initial registry, and the costs to expand the registry to include more residences and to address lead status would require the development of appropriate software applications and additional staff for data entry. Marketing of the registry would also have related costs. A bill to establish Michigan Housing Registry is currently being considered by the Legislature. The total cost for the development of the initial registry and marketing is **\$180,000**. The annual cost of maintaining and expanding the registry is **\$100,000**.

5. Michigan should develop and implement a major public awareness campaign to assure that parents understand the dangers of lead exposure and are encouraged to seek lead testing of their children at appropriate intervals.

The risk of lead poisoning is reduced when parents are aware of the dangers of lead and how to prevent/minimize exposure. Children who are lead-poisoned may not look or feel ill, and the only method of determining the child's blood lead status is completing a blood test. Testing is essential to identify children who have experienced low-level exposure as well as those children with elevated blood lead levels. Parents need to know that tests are required at ages one and two years if their child is enrolled in Medicaid, or if their area of residence indicates a risk for lead poisoning. Parents should expect that their children will be tested at appropriate intervals and must feel empowered to demand lead testing if it is not offered by the primary care provider.

Parents and property owners should also have a thorough understanding of safe repair and renovation procedures, as well as cleaning and other temporary measures that can reduce children's exposure to lead. Most importantly, they

need to understand how exposure to lead hazards can alter their child's ability to learn and the lasting effects that may significantly decrease the child's potential.

The costs for the development and implementation of a public awareness campaign include the creation of educational materials focused on lead poisoning prevention, marketing costs, public service announcements, media buys and other related materials. Cost of the development and initial implementation of a public awareness campaign is **\$500,000**. The annual ongoing cost of the campaign is **\$250,000**.

6. Michigan should identify or establish a commission to evaluate and coordinate lead resources and activities statewide.

A joint Advisory Committee currently provides consultation and advice to the Childhood Lead Poisoning Prevention Program and the Lead Hazard Remediation Program within the Michigan Department of Community Health. While other departments have representatives on this committee, the coordination could be significantly strengthened.

There is a need to coordinate and monitor all programs across state government that have some interest and resources focused on the prevention of lead poisoning. The Commission would assure stronger collaboration across departments and an ongoing evaluation of the effectiveness of current programming and recommendations for change. These activities should increase the effective and efficient utilization of resources and the impact of lead poisoning prevention efforts. A bill to establish the commission is currently being considered by the Legislature. Costs will include meeting expenses of Commission members and one full-time position to support the activities of the Commission and focus on interagency collaboration. The cost of this recommendation is **\$100,000** annually.

7. Michigan should expand the remediation and control of lead hazards in residential environments.

Remediation and control efforts are the most effective methods of addressing lead hazards in the environment and assuring that children are protected from the effects of lead. The primary source of lead poisoning is lead paint dust resulting from the deterioration of paint in poorly maintained dwellings. As friction occurs when windows are raised and lowered, when porches become scuffed, and when external painted surfaces begin to break down, lead dust is released. Young children playing on the floor or the ground engaged in normal hand-to-mouth activities ingest lead dust and become poisoned.

The risk of lead poisoning among young children can be dramatically reduced through remediation and control of lead hazards in older housing that is poorly maintained. The average cost of remediation/control of lead hazards in a single-

family dwelling is **\$10,000**. An allocation of **\$2 million would allow for the remediation/control of 200 homes annually**.

Task Force and Subcommittee Activities

Michigan's Childhood Lead Poisoning Prevention Task Force included representatives from all relevant state agencies as well as members of state and local coalitions and partnerships, parents and other stakeholders. The Task Force established six subcommittees to focus on the development of recommendations that would:

- Enhance public and professional awareness of lead poisoning as a child health emergency;
- Increase blood lead testing rates for young children;
- Eliminate or manage the sources of lead poisoning, especially in aged housing; and,
- Increase interagency and public-private cooperation and communication regarding resolution of this complex environmental health problem.

The recommendations were to address policy and legislative needs; health program content, structure and administrative responsibilities; long range revenue and funding alternatives; recommended collaborative initiatives; accountability and the identification of needed funding for the successful completion of the recommendations of the Task Force.

The subcommittee membership was extensive and diverse, representing all stakeholders identified in the earlier *Call To Action* document. The discussion was scholarly and intense and stimulated significant work in the development of strategies. There was significant congruence among the subcommittees in the recommendations that were developed and categorized into four major "focus areas" described on page one: preventing lead exposure; identifying children at risk; assuring appropriate treatment and supports for affected children; and providing ongoing support for lead poisoning prevention activities. Each Subcommittee had a specific focus as described below.

The Education and Outreach Subcommittee focused on identifying target audiences that would need specific information, and developing strategies for education and outreach to these populations. To accomplish this, the Subcommittee formed three workgroups to address the following topics: information needed by health, education and other providers; development of materials for outreach and education; and development of a public awareness campaign to alert parents and caregivers to the need for blood lead testing; and, methods to minimize exposure to lead hazards. The workgroups gathered information from state and national sources and formulated strategies for review and priority-setting before being presented to the Task Force.

The Compliance and Enforcement Subcommittee focused on improving lead exposure prevention and remediation, procedures to achieve compliance and resources to

implement compliance procedures. The Subcommittee examined the regulated providers of lead poisoning prevention services in Michigan, including field compliance tools, communication of regulations and compliance actions to the regulated individuals and agencies, regulatory language and the impact of universal recommendations. A matrix was developed to demonstrate the breadth of individuals and agencies engaged in lead poisoning prevention activities and identify barriers and opportunities to increasing compliance and enforcement. (See Attachment D)

The Health Subcommittee focused on increasing the testing to identify children with elevated blood lead levels and assure appropriate treatment and follow-up of affected children. Information on required and recommended testing for the target population (children under the age of 6 years who are Medicaid eligible/enrolled and other children at risk) was reviewed, as was data on screening and testing rates. Barriers to testing compliance were identified and strategies formulated to alleviate and/or eliminate these barriers. One of the first steps to accomplish this was to place a prompt into the Michigan Childhood Immunization Registry (MCIR) data system. Costs of testing and treatment were discussed, as was the cost-benefit of universal testing and variations in laboratory costs between the State and commercial labs. Use of the Michigan Department of Community Health/Michigan State University website to increase testing and the availability of commercial insurance benefit coverage were also discussed.

The Housing Subcommittee established three interest groups to address activities necessary to the development of a lead-safe housing registry, current status and potential expansion of building codes and identification of high-risk areas throughout the state. The group examined existing registries, exploring differences, similarities, strengths, weaknesses; and cost estimates for both a "basic" and "comprehensive" lead-safe housing registry. They also gathered information on remediation and abatement funding, including Property Improvement Program (PIP) loans through Michigan State Housing Development Authority (MSHDA) and US Department of Housing and Urban Development (HUD) grants.

The Legislation and Policy Subcommittee examined current and pending legislation addressing lead issues and developed a list of potential legislation and policies to impact lead poisoning, including legislative initiatives that could generate funding sources to address lead hazards. Four states with high levels of testing and/or universal testing were contacted to determine strategies utilized to achieve high levels of testing, implementation and funding. A matrix was developed to display current statutes, proposed legislation, recommendations from the subcommittee, and strategies to overcome barriers to passage of proposed legislation or implementation of policy recommendations.

The Funding Subcommittee gathered information regarding funding that Michigan currently devotes to lead poisoning prevention, abatement, testing and treatment; identified additional funding needed to fully implement priority recommendations; and explored potential sources for new funds. Current and historical funding was summarized, and future funding questions were raised to determine the funding necessary

to eliminate lead poisoning in Michigan. Services and resources needed to implement an ongoing program focused on reducing lead hazards were discussed, as was the entity that should receive and manage these funds. Potential sources for new funds were identified, and consultation was sought from agencies utilizing various funding mechanisms. The subcommittee also developed a matrix of potential federal funding sources that can be found in Attachment E.

Each subcommittee developed strategies designed to eliminate lead poisoning in children based on their particular focus. More than one hundred distinct strategies were developed through the subcommittee process and recommendations returned to the Task Force for consideration and the identification of the most important first steps necessary to accomplish the goal.

As the Task Force reviewed the recommendations, it was determined that a multifaceted approach must be implemented to achieve the national and state goals of the elimination of lead poisoning by the Year 2010. Four major focus areas emerged from this discussion and all recommendations developed by the Task Force and Subcommittees were identified as relating to one of the four focus areas:

- eliminating lead hazards in housing;
- expanding testing of children to determine their blood lead status;
- assuring capacity to serve children who may need special medical and educational services; and
- identifying resources to provide a stable funding stream to address lead hazards and lead poisoning.

These four focus areas became the foundation for operationalizing strategies that will result in a lead-safe environment for the children of Michigan.

RECOMMENDATIONS BY FOCUS AREA

Task Force and Subcommittee discussion underscored the importance of implementing a comprehensive approach to eliminating lead poisoning in children that includes prevention, identification, treatment and the resources to accomplish the goal. The Task Force recommendations include the seven priority first steps. The Task Force recommendations are not listed in priority order, but grouped by focus areas. The complete list of recommendations is found in Attachment A and also at www.michigan.gov/leadsafe.

Focus Area I: Preventing Lead Exposure

Lead poisoning is entirely preventable. The risk of lead poisoning can be reduced through increased remediation and control of lead hazards in older housing and by educating the public about the dangers of lead exposure and strategies for prevention.

The following strategies are among those included in Focus Area I:

- Create a housing registry. It is difficult for families with children to know whether the housing units they rent or purchase are lead safe. The housing registry will allow families to identify lead-safe housing and avoid at-risk housing that has not been tested or abated. The housing registry will also facilitate identification of geographic pockets of dwelling units identified with lead hazards. A bill to establish the commission is currently being considered by the Legislature.
- Remediate/control lead hazards in dwelling units. The risk of lead poisoning can be reduced through remediation/control of lead hazards in older housing.
- Provide incentives for individuals addressing lead hazards in their properties. In addressing the problem of inadequate lead-safe housing, the State needs to consider a wide array of strategies to motivate the private sector to act. Income tax credits can be a strong incentive to encourage and reward owners who make their housing lead safe.
- Assure that environments outside the home where young children spend significant periods of time are lead safe (e.g., daycare and relative's home.) Many of the environments where young children spend their time are monitored for health, social and emotional well-being. Efforts should be expanded to include lead hazard identification.
- Establish and enforce requirements to use lead-safe work practices in all renovation and remodeling activities in pre-1978 housing. Lead-safe work practices are necessary to reduce the risk of exposure when lead paint is disturbed by renovation/remodeling activities. Lead-safe work practices are already required for work done on federally-owned or –assisted housing. This requirement should be expanded to include all pre-1978 housing and promoted through education and enforcement.

Focus Area II: Identifying those at risk

Blood lead testing is essential to identify children with elevated blood lead levels in order to address the risk of long-term health, behavioral and developmental problems. The blood test requires only a finger stick and is available through many laboratories, hospitals and public health departments. Testing of young children, and identification of those with lead poisoning at the earliest possible point offers the greatest opportunity to minimize the effects on the child's developing brain.

There is now a prompt in the MCIR that alerts providers to the need for a required blood lead test for children enrolled in Medicaid and other children at risk.

The following strategies are among those included in Focus Area II:

- Assure compliance with existing requirements/recommendations for lead testing. Assuring that health care professionals understand testing requirements can increase compliance. Identification and elimination of barriers to testing may also increase compliance. A bill to establish the commission is currently being considered by the Legislature.
- Increase parent and general public awareness regarding the dangers of lead exposure and the importance of testing. The Task Force recommends that education, outreach and training be provided to increase awareness of lead issues. Special outreach efforts should be directed at women of childbearing age. Educating this population and providing access to resources that can provide them a lead-safe environment are important for the safety of the fetus. To maximize effectiveness, awareness efforts should cross state departments, provide consistent messages at every opportunity and build on existing campaigns.
- Educate health care providers about the dangers of lead exposure and the importance of testing. Special outreach, education and training efforts should be directed at all health care providers, particularly those serving families in areas designated as high risk. It is critical that the message of “when in doubt, test” is spread throughout the health care provider community. Statewide education efforts should include physicians and other providers who care for prenatal patients, with particular emphasis on women of limited income. Screening and testing of pregnant women helps identify those at risk of exposing their fetus further.
- Develop a clearinghouse of current lead information and assure broad access to the clearinghouse. A Lead Clearinghouse should include local, State, and nonprofit programs that provide services related to lead poisoning and prevention. This important tool will help professionals keep abreast of best practices, updated information and services throughout the state. It is suggested that the clearinghouse be made available through the Internet.
- Expand testing requirements/recommendations. Prevalence can be determined through universal testing. Determining prevalence can help identify geographically at-risk populations and provide information necessary to quantify resources needed to address lead issues. It can demonstrate that some children outside of identified geographic high-risk areas also have EBLLs.

Focus Area III: Assuring appropriate treatments and supports

When children are identified with elevated blood lead levels, appropriate treatment plans must be carried out immediately. Treatment plans should address health care issues, nutritional status, prevention of additional exposure, behavioral problems, developmental delays and/or learning disabilities resulting from lead exposure. Local public health departments are uniquely equipped to complete many of these assessments.

While there are medical centers in Michigan that specialize in the care of lead-poisoned children (Children's Hospital of Michigan in Detroit and Spectrum Health in Grand Rapids), many physicians are unfamiliar with the extent of lead poisoning in Michigan and treatment modalities that should be instituted when a child is found to be lead poisoned. In addition, mental health, social service and education professionals may lack information about the effects of lead poisoning on behavior, cognitive development and learning. Increasing the knowledge and skills of those providing health care and other supports for children who have been exposed to lead will improve the children's chances for a healthy, productive life.

The following strategies are among those included in Focus Area III:

- Provide comprehensive treatment and supports for children with EBLLs. When children are identified with elevated blood lead levels, appropriate treatment plans should be carried out immediately. A case management program would assure that health care and service coordination for families of children with lead poisoning are provided; it would include a flexible spending component to assist families in overcoming obstacles to obtaining lead-safe housing and access to appropriate treatment and follow-up (such as funding assistance for security deposits, application fees, moving expenses and transportation).
- Increase ability of health and medical professionals to provide appropriate treatment and supports for children who have been lead-exposed. Barriers to appropriate treatment for children who are lead exposed include lack of knowledge among health professionals about best practice, and lack of reimbursement for vital services such as home visits. Addressing these issues will improve treatment for children with EBLLs.
- Assure that all health, social service and education graduates are knowledgeable about the effects of lead on the developing brain and the implications of treating children who have been lead poisoned. Professionals working in the fields of education and mental health must be informed about how to assist these children to reach their maximum potential.
- Improve educational response to children with lead exposure. Children who have been lead exposed benefit from suitable educational programs in early education and preschool settings. In order to be appropriately responsive to possible special educational needs, childcare staff should also have information necessary to respond with appropriate assessment, intervention and referral. Guidelines for school nurses that focused on children with elevated blood lead levels would assist in determining the need for care coordination and follow-up. Educational protocols would contain guidance for providing educational supports and interventions.

the need for care coordination and follow-up. Educational protocols would contain guidance for providing educational supports and interventions.

Focus Area IV: Providing on-going support for lead poisoning prevention activities

While there are a number of ongoing activities in Michigan designed to decrease the incidence of lead exposure, increased efforts are needed in order to eliminate lead poisoning in children, which is articulated in the federal Healthy People 2010 and Healthy Michigan goals. Currently, efforts focused on lead hazards and lead poisoning cross multiple state departments, local agencies, private contractors, and business interests, advocacy and grass roots organizations.

There is a need to evaluate and coordinate lead resources and activities across the state to increase the effectiveness of existing efforts and establish a stable funding stream for continued focus on lead hazards.

There is also a crucial need for communities to coalesce around lead poisoning prevention, and the state needs to assist in the development of effective coalitions to address local needs related to lead hazards and to obtain grant and other funding to support their efforts.

The following strategies are among those included in Focus Area IV:

- Increase funding to support lead activities in Michigan. Securing adequate funding to address lead poisoning is essential to eliminate lead poisoning in children in Michigan. The Public Health Trust will serve as a repository for a variety of revenues to be used for childhood lead poisoning prevention as well as other health issues
- Create infrastructure needed to support implementation of recommendations. The ability of the State to promote and support lead activities can be enhanced by creation of an infrastructure to support the implementation of the recommendations listed in this report. Key to these efforts is an entity/commission to evaluate and coordinate lead resources and activities across state agencies. This will increase the effective and efficient use of resources and the impact of lead poisoning prevention efforts.

Conclusion

The Childhood Lead Poisoning Prevention Task Force and Subcommittees explored Michigan's lead poisoning prevention efforts, examined data related to lead issues and identified best practices. To realize Michigan's goal of eliminating lead poisoning in children by 2010, the Task Force recommends several improvements to build on existing efforts and develop new programs. These recommendations range from policy and statutory changes to expanded outreach and services coordination. The Task Force recognizes that while some recommendations in this report can be implemented with nominal cost, other recommendations will require increased resources, both staff and funds. Increased collaboration among those working on lead issues in Michigan will be essential, as will coordination and resource availability.

The priority recommendations and the strategies identified under the focus areas must be implemented if Michigan is to succeed in meeting its goal.

There must be a force of public will that no longer accepts that children suffer the ravages of lead poisoning and lose potential for learning and productive work.

REFERENCES

Bernard SM. Should the Centers for Disease Control and Prevention's childhood lead poisoning intervention level be lowered? American Journal of Public Health. 2003, August; 93 (8): 1253-60.

Canfield RL, Henderson CR Jr., Cory-Slechta DA, Cox C, Jusko TA, Lanphear BP. Intellectual impairment in children with blood lead concentrations below 10 micrograms per deciliter. New England Journal of Medicine. 2003 April 17; 348 (16): 1717-26.

DeGennaro LD. Lead and the developing nervous system. Growth, Development and Aging. 2002 Summer; 66 (1): 43-50.

Landrigan PJ, Schechter CB, Lipton JM, Fahs MC, Schwartz J. Environmental pollutants and disease in American children: estimates of morbidity, mortality, and costs for lead poisoning, asthma, cancer, and developmental disabilities. Environmental Health Perspectives. 2002 July; 110 (7): 721-8.

Lanphear BP, Dietrich KN, Berger O. Prevention of lead toxicity in US children. Ambulatory Pediatrics. 2003 January-February; 3 (1): 27-36.

Margai F, Henry N. A community-based assess of learning disabilities using environmental and contextual risk factors. Social Science and Medicine. 2003 March; 56 (5): 1073-85.

Needleman HL, McFarland C, Ness RB, Fienberg SE, Tobin MJ. Neurotoxicological Teratology. 2002 November-December; 24 (6): 711-7.

Reith DM, O'Regan P, Bailey C, Acworth J. Serious lead poisoning in childhood: still a problem after a century. Journal of Paediatrics and Child Health. 2003 November; 39 (8): 623-6.

Selevan SG, Rice DC, Hogan KA, Euling SY, Pfahles-Hutchens A, Bethe J. Blood lead concentration and delayed puberty in girls. New England Journal of Medicine. 2003 April 17; 348 (16): 1527-36.

ATTACHMENT A

Complete Listing of All Task Force Recommendations

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

The pages that follow detail each recommendation developed by one or more of the six Subcommittees of the Task Force. The Task Force determined that all recommendations be compiled for the report, and that the seven priority recommendations be included in this listing, and presented in bold type to identify them for the reader.

If other of the recommendations are selected for inclusion in a comprehensive plan for the elimination of lead poisoning in children, additional staff and resources will be necessary.

Issue	Focus Area I: Preventing Lead Exposure Recommendation <i>Priority Recommendations are Bolded</i>
Create a housing registry ¹	<p>A. Develop and maintain a mandatory lead status housing registry for pre-1978 rental properties with a voluntary component for post-1978 rental properties.</p> <ol style="list-style-type: none"> 1. Require dust sampling for each dwelling built before 1978 as part of information collected for the housing registry. 2. Utilize currently existing registries in municipalities to populate a housing registry. 3. Improve property owner compliance with rental registration requirements. 4. Over time, develop a more comprehensive lead status housing registry.
Remediate/control lead hazards	<p>B. Remediate/control lead hazards in dwelling units through:</p> <ul style="list-style-type: none"> • State of Michigan Lead Hazard Remediation Program; • Current ongoing programs (Section 8 and other sources from HUD, etc.); and • Funding to support State and regional laboratory services. <p>C. Assure that lead hazards have been identified and remediated in Section 8 housing, and that children with elevated blood lead levels (EBLLs) have priority for lead-safe Section 8 housing and other federal program fund sources such as HOME.</p>
	D. Establish a state-level Residential Hazards Reductions Act, requiring lead risk be investigated and addressed before a house could be rented or sold.
	E. Establish requirements for lead to be addressed in pre-1978 rental property inspections (lending, insurance, code compliance); include incentives, both positive and negative, to promote compliance.
	F. Create new, and strengthen existing, civil or criminal penalties for rental property owners who rent properties with known lead hazards and contractors who fail to use lead-safe work practices.
	G. Require rental property owners and their agents assure lead safety at turnover and annually.
	H. Assure that rental property owners recognize advantages of addressing lead hazards in their properties and respond accordingly.
Provide incentives ²	<p>I. Explore the possibility of providing tax incentives or grants combined with low-interest loans for individuals and contractors addressing lead hazards in their properties. Consider:</p> <ol style="list-style-type: none"> 1. Tax credits for individuals remediating lead hazards in their properties/negotiate with HUD to create fund for tax credits for individuals remediating lead hazards in their properties.

¹ A bill to establish a housing registry is currently pending in the legislature.

² A bill to provide tax incentives for individuals remediating lead hazards in their properties is currently pending in the legislature.

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

Issue	Focus Area I: Preventing Lead Exposure Recommendation <i>Priority Recommendations are Bolded</i>
	<p>2. Tax credits for owners making homes lead-safe.</p> <p>3. Low interest/no interest loans for individuals and contractors clearing lead hazards from their properties.</p>
Provide incentives (continued)	<p>4. Modify MSHDA PIP Loan Program.</p> <p>5. Develop limited liability programs for landlords who have addressed lead hazards in their properties.</p>
Assure environments where young children spend most of their time are lead safe	<p>J. Establish requirements for lead hazards testing for day care centers, schools, group homes, preschools or other similar agencies. Testing should include playground equipment and water fountains prior to licensure, renovation, lease or purchase.</p> <p>K. Require mandatory risk assessment of foster homes and any other settings prior to placement of young children.</p> <p>L. Require that the Family Independence Agency (FIA) and other child-placing agencies utilize the housing registry when vouchering rent payments for clients.</p> <p>M. Advocate to have “potential lead poisoning hazard” included in child custody guidelines to protect the health of young children.</p> <p>N. Identify available temporary safe housing so children with EBLL don’t return to an unsafe environment.</p> <p>O. Adopt a statewide property maintenance code (including lead) to ensure consistency across the state; ensure code addresses soil and other environmental concerns in addition to housing.</p>
Establish and enforce requirements to use lead-safe practices	<p>P. Establish and enforce requirements to use lead-safe work practices in all renovation and remodeling activities in pre-1978 housing.</p> <p>Q. Expand current Title X provisions to include and specify lead-safe work practices on all Michigan homes.</p> <p>R. Revise building codes to require lead-safe work practices during renovation/remodeling activities.</p> <p>S. Amend Licensing Act to require maintenance and alteration contractors demonstrate knowledge of lead-safe work practices as a requirement of licensing.</p> <p>T. License all renovation and remodeling contractors and require certification for lead work (exempting contractors doing only new construction).</p> <p>U. Provide training in lead-safe work practices for building inspectors/code enforcement officers.</p> <p>V. Establish sanctions for non-compliance with required licensing and certification for all renovation and remodeling contractors.</p> <p>W. Require state enforcement of local and state codes that include lead-safe work practices.</p> <p>X. Develop and disseminate educational materials for renovation and remodeling contractors as well as do-it-yourself remodelers; assure permits are accompanied by educational material regarding lead hazards.</p> <p>Y. Establish training standards to include lead for the following individuals: building personnel, health care professionals, child care providers, insurance industry, lending institutions, and housing inspectors.</p> <p>Z. Improve knowledge about lead among local housing authorities through training, newsletters, workshops, website, etc.</p>

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

Focus Area II: Identifying Those at Risk	
Issue	Recommendation <i>Priority Recommendations are Bolded</i>
Assure compliance with existing requirements/recommendations ³	<p>A. Assure compliance with existing requirements/recommendations for lead testing.</p> <ol style="list-style-type: none"> 1. Identify barriers to testing by primary care providers; develop policies and practices to eliminate barriers to testing in provider offices. 2. Assure that providers understand that collecting specimens and/or packaging/mailling of blood lead samples can be completed without being CLIA certified. Providers should be strongly encouraged to complete specimen collection in their offices. 3. Utilize and share information regarding the availability of the Michigan Department of Community Health laboratory for commercial/public use at \$11 per analysis. 4. Provide incentives for providers to comply with testing requirements/recommendations. 5. Assure that Medicaid Health Plans test all enrolled children for lead at 1 & 2 years of age. <p>B. Provide incentives for parents to comply with testing requirements/recommendations.</p> <p>C. Strictly enforce Early and Periodic Screening, Diagnosis, Treatment (EPSDT) screening requirements.</p> <p>D. Develop and conduct a major public awareness campaign to assure that parents are aware of the dangers of lead exposure and encouraged to seek lead testing at appropriate intervals.</p> <ol style="list-style-type: none"> 1. Identify and collaborate with existing public awareness campaigns (Great Start, MetroParent Magazine, <i>Early On</i>, Project Find, Michigan Department of Education Parent Grant, DEQ Initiative, etc.) targeting families with young children. 2. Ensure that messages and content released to public and within state departments are consistent. 3. Develop theme/logo/slogan that is consistent across various media. 4. Meet with health communication/media experts to discuss effective message creation and methods of delivery. 5. Develop a community toolkit to assist in development of outreach activities and coalition development. 6. Establish a speakers bureau to publicize the awareness effort for various target audiences. 7. Distribute lead information in utility bill and Medicaid mailings. 8. Include information about other lead exposure sources in outreach activities. <p>E. Provide lead poisoning prevention/testing information in training for foster parents.</p> <p>F. Evaluate Michigan Model curriculum to determine need for additional content on lead hazards and poisoning.</p> <p>G. Develop and implement lead-specific curricula for medical professionals to assure that all graduates in the health, social services and education fields are knowledgeable about the effects of lead on the developing brain.</p> <p>H. Educate all Medicaid Health Plans and other payers about the importance of lead testing and follow-up and the lead testing as a covered benefit/service.</p> <p>I. Integrate lead testing requirements/records with immunization requirements/records.</p> <ol style="list-style-type: none"> 1. Combine Michigan’s lead testing and immunization schedule. 2. Use Michigan Childhood Immunization Registry (MCIR) for lead testing notice.
Increase awareness of parents and the general public	
Educate health care providers	

³ A bill to address testing of Medicaid enrollees is currently pending in the legislature.

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

Issue	Focus Area II: Identifying Those at Risk Recommendation <i>Priority Recommendations are Bolded</i>
Educate health care providers (continued)	<p>3. Add a web link for the MSU/MDCH lead screening tool to the MCIR.</p> <p>4. Include lead in the MCIR reports generated for medical providers, parents, schools, WIC and health departments.</p> <p>5. Provide prompts on immunization records for blood lead tests and for documentation of blood lead level results (including date/specimen type).</p> <p>6. Require immunization clinics to facilitate blood lead tests when children present for immunizations and are in need of blood lead testing.</p> <p>J. Develop a clearinghouse of current lead information, including a directory of local programs addressing lead remediation throughout the state, and assure broad access.</p> <p>K. Develop and disseminate information to primary care providers, obstetric providers, other health practitioners, and payers regarding:</p> <ul style="list-style-type: none"> • Required and recommended blood lead level testing; • Importance of testing for lead; • Myths about lead poisoning; • Information on how to test; • Insurance coverage for testing; • Algorithms for identifying recommended responses at various blood lead levels; • Sources for analysis of blood lead samples. <p>L. Establish screening for lead exposure as a standard of care for obstetric providers.</p> <ol style="list-style-type: none"> 1. Increase screening to determine risk in pregnant women and identify those in need of treatment. 2. Increase screening by obstetric care providers for previous and/or current lead poisoning status as a part of risk scoring by obstetric care providers. <ol style="list-style-type: none"> a. Investigate ACOG standard of care for addressing lead exposure in pregnant women. b. Prepare an educational packet for providers of prenatal care. 3. Develop and disseminate a desk reference card to assist with the identification of pregnant women with prior lead poisoning/at-risk for lead exposure. <p>M. Encourage changes in benefits packages to cover, and if appropriate, mandate lead testing.</p> <p>N. Implement universal testing statewide for a limited period of time (three years) OR implement universal testing in selected pilot sites (rural, small city, medium-sized city large city, metropolitan area) for a specified period of time to determine prevalence.</p> <p>O. Develop a targeted testing plan from the findings from universal testing.</p> <p>P. Develop protocols to reach vulnerable populations (foster children, immigrant/refugee children, international adoptions, residents of older housing with special emphasis on pregnant women).</p>

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

	<p align="center">Focus Area II: Identifying Those at Risk</p> <p align="center">Recommendation</p> <p align="center"><i>Priority Recommendations are Bolded</i></p> <p>Q. Improve State’s capacity to predict which children are likely to be lead poisoned to more effectively target lead testing; evaluate the efficacy of identifying children through MSU/MDCH web site.</p> <p>R. Work with WIC to identify and resolve barriers to testing of children enrolled in WIC according to Michigan Department of Community Health (MDCH) guidelines.</p> <p>S. Require day care, Early Head Start and Pre-Primary Impaired programs to assure all entering children have received/will receive a blood lead test according to MDCH guidelines.</p> <p>T. Require Head Start to show proof of at least one BLL test for each child at the beginning of Head Start services.</p> <ol style="list-style-type: none"> 1. Monitor and assure compliance with Head Start mandate for lead testing. 2. Assure availability of lead testing for Head Start participants. <p>U. Mandate that elementary schools require documentation of lead status to start kindergarten.</p> <p>V. Implement “on demand” lead testing at local health department agencies.</p> <p>W. Require FIA/TANF service providers to refer service recipients to an accessible site for blood lead testing, with follow-up at each subsequent visit to FIA.</p> <p>X. Assure every child has access to testing by MDCH laboratory if uninsured or underinsured.</p> <p>Y. Adapt school physical exam forms and Individualized Educational Plan (IEP) forms to ask for current and historical data related to the involved child’s exposure to environmental lead and document BLL (when testing is done) on both of these forms.</p> <p>Z. Identify and follow-up with children whose parents are exposed to lead in the work place.</p> <p>AA. Require MSHDA and all local housing authorities to encourage all Section 8 recipients to have their children 6 years old and under blood tested annually for exposure to environmental lead.</p>
<p>Issue</p> <p>Provide comprehensive treatment and support</p> <p>Increase ability of health professionals to provide appropriate treatment</p>	<p align="center">Focus Area III: Assuring Appropriate Treatment and Support</p> <p align="center">Recommendation</p> <p align="center"><i>Priority Recommendations are Bolded</i></p> <p>A. Provide regional case managers for children with elevated blood lead levels (EBLL) equal to or greater than 20 micrograms per deciliter to work with children and families on the following issues:</p> <ul style="list-style-type: none"> • Environmental; • Medical; • Behavioral; • Developmental delays/learning disabilities. <p>B. Develop or enhance educational materials for primary care providers to effectively treat children with EBLLs.</p> <p>C. Assure complete and accurate demographic information to ensure that children who are lead exposed receive appropriate follow-up.</p> <p>D. Develop and implement a unified approach to standardize lead protocols based on best practices.</p> <ol style="list-style-type: none"> 1. Establish standards for lead testing through statute, rules and standards of practice.

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

Focus Area II: Identifying Those at Risk	
Recommendation	
Priority Recommendations are Bolded	
Increase ability of health professionals to provide appropriate treatment (continued)	<p>2. Identify benchmarks for provider practices in order to evaluate and improve practices.</p> <p>E. Develop resources to ensure that inability to pay/being uninsured is not a barrier to lead testing and follow-up.</p> <p>F. Work with all insurance providers to develop third party reimbursement for nursing visits and environmental health visits for children with EBLL.</p> <p>G. Make sure that medical professionals know how to access the expertise of consultants who specialize in the treatment of lead poisoning.</p> <p>H. Develop and implement a plan to assure that follow-up medical care has taken place.</p> <ol style="list-style-type: none"> 1. Provide incentives for parents. 2. Define local health department role. 3. Provide transportation supports. <p>I. Work with post-secondary schools, societies and organizations of educators, and accreditation agencies to assure that all health, social service, and education graduates are knowledgeable about the effects of lead on the developing brain.</p> <p>J. Assure nutrition education is addressed for pregnant women and children with EBLL.</p> <p>K. Provide schools and licensed day care providers with the information necessary (medical history) to make appropriate referrals and provide services for children with educational, learning or health effects resulting from lead exposure.</p> <p>L. Develop policy and disseminate materials for use by educational professions (paraprofessionals, teachers, academic counselors, administrators) regarding the effects of lead poisoning on a child’s ability to learn; develop educational prescriptions to address needs.</p> <p>M. Design and complete a research project to determine correlating factors between blood lead levels among young children with MEAP (Michigan Educational Assessment Program) or other assessment scores as children begin school testing.</p>
Focus Area IV: Providing on-going support for lead activities	
Recommendation	
Priority Recommendations are Bolded	
Increase funding for lead activities in Michigan	<p>A. Create capacity to assist Michigan communities to build coalitions and write successful grants.</p> <p>B. Establish a Public Health Trust to secure adequate funding to support lead activities.</p> <ol style="list-style-type: none"> 1. Establish guidelines for expenditure of donor and flexible funds. 2. Develop capacity to receive, and apply for, donations from private foundations and individuals. 3. Develop capacity to receive funds from fines, fees and penalties that are associated with childhood lead poisoning. <p>C. Establish a stable ongoing state General Fund source to be used for childhood lead poisoning prevention activities.</p> <p>D. Seek grant funds to support lead activities.</p> <p>E. Consider fees/taxes to support lead activities including:</p> <ul style="list-style-type: none"> • Fee on all building permits statewide;

Recommendations from the Governor’s Task Force to Eliminate Childhood Lead Poisoning

Issue	Focus Area II: Identifying Those at Risk Recommendation <i>Priority Recommendations are Bolded</i>
Increase funding for lead activities in Michigan (continued)	<ul style="list-style-type: none"> • Fee on paint sales; • Refinancing fee on mortgages. <p>F. Review all prioritized strategies for suitable funding sources and make efforts to secure funding sources for specific projects.</p> <p>G. Obtain donations from private foundations and corporations for very short term or “one-time-only” expenditures for childhood lead poisoning prevention activities.</p> <p>H. Secure funds for lead remediation by assisting other cities and counties to develop infrastructure and write grants to maximize the amount of federal funding given to Michigan for lead.</p> <p>I. Consider a referendum/establish a bond issue (similar to Clean Michigan Initiative) to create a funding mechanism for remediation activities.</p>
Create infrastructure needed to support the implementation of recommendations ⁴	<p>J. Identify or establish an entity/commission to evaluate and coordinate lead resources & activities (advisory only, no direct jurisdiction), facilitate policymaking & compliance that will:</p> <ul style="list-style-type: none"> • Coordinate inter-agency communications & regulatory activities; • Define & coordinate State lead resources to maximize effectiveness; • Establish referral and reporting system between State regulatory agencies for lead activities; • Establish cross-training procedures for State regulatory agencies dealing with lead issues; • Routinely evaluate State lead resources to maximize effectiveness; • Identify annual costs of lead poisoning and its effects, and broadly disseminate findings; • Review model standards, landlord/tenant relations and other issues as identified; • Establish benchmarks and create an annual evaluation to assess effectiveness. <p>K. Incorporate lead poisoning prevention actions into existing grants issued from state departments.</p> <p>L. Direct all state departments to conduct internal review of policies that relate to childhood lead poisoning and what changes are needed to address lead poisoning prevention. <ol style="list-style-type: none"> 1. Seek funding through Special Education dollars. 2. Maintain staff and support in key enforcement areas. </p> <p>M. Fund a staff position to coordinate and facilitate collaboration of all the existing resources in Michigan that are directed toward childhood lead poisoning prevention.</p> <p>N. Establish interchange with other states’ housing registry to identify families relocating between states.</p> <p>O. Establish interface between service provider and MSU/MDCH web sites.</p>

⁴ A bill to establish a State Lead Commission is currently pending in the legislature.

ATTACHMENT B

**Michigan Department of Environmental Quality
Accomplishments and Recommendations**

Michigan Department of Environmental Quality Accomplishments and Recommendations:

This report provides a summary of the Michigan Department of Environmental Quality's (MDEQ's) accomplishments to date pursuant to Governor Jennifer M. Granholm's "Childhood Lead Poisoning Prevention - A Call to Action" initiative. This report also provides the MDEQ's recommendations for future actions necessary to assure that Michigan's children are appropriately protected from unacceptable exposure to lead from environmental sources.

ACCOMPLISHMENTS

Reassessment of Existing Lead Criteria

The Toxics Steering Group (TSG), comprised of toxicologists from the MDEQ, Michigan Department of Community Health (MDCH), and the Michigan Department of Agriculture, has undertaken a reassessment of the existing residential criteria for lead set forth in the administrative rules promulgated pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the Part 201 Administrative Rules to assure that those criteria are protective of children. This effort included an assessment of the current body of toxicological data regarding the health effects of exposure to lead contamination. The TSG report, completed on January 21, 2004 by the TSG Lead Subcommittee, concludes that the current Part 201 residential drinking water criterion (DWC) and the soil direct contact cleanup criterion (DCC) for lead may not be protective of children based on the fact that some data in the scientific literature suggest that irreversible health effects may occur in young children at blood lead levels below the current Centers for Disease Control and Prevention (CDC) intervention level of 10 micrograms per deciliter. The Lead Subcommittee recommends that they further explore the scientific literature to determine if a more appropriate blood lead level should be used in generating the generic DWC and soil DCC for lead. In conjunction with this work, the Subcommittee recommends further evaluation of exposures to lead in drinking water. Finally, the Subcommittee recommends that different soil fractions, the fine soil fraction in particular, not just total soil samples, be analyzed for lead at Michigan sites. Further details and issues for consideration are available in the report, which is included as Appendix 1 to this document.

Known Sites of Contamination - Master Metals, Detroit:



Before



After

Work at this site has been pursued by the USEPA, with assistance from the MDEQ's Remediation and Redevelopment Division (RRD). Liable parties were identified and entered into an Administrative Order of Consent with USEPA for the performance of work at the site. Those parties continue to conduct much of the work. Demolition of the on-site buildings has been performed and the remaining on-site aspects of the project are nearing completion. Residential cleanups in the surrounding neighborhoods have begun, but some may be delayed until spring due to homeowners' concerns about disruption of their property during fall and winter weather conditions. Staff of the RRD Detroit Office continues to work closely with the USEPA and City of Detroit (City) representatives to provide information to interested parties as the work continues. Since the majority of the work at this site has been performed by liable parties, their costs are not precisely known but are estimated to be substantially in excess of \$1,000,000. To date, the MDEQ and USEPA have incurred costs of \$63,000 and \$84,000, respectively.

- **Helen Avenue Site, Detroit:**

Cleanup work at this small site was initiated by the USEPA in early November. As a result of ongoing coordination between the RRD, USEPA, and the City, the USEPA has undertaken response actions on the publicly-owned portion of this site and is performing sampling in the adjacent residential areas. Concurrently, the RRD has tasked its contractors to perform response actions on the adjacent privately-owned portion of the site. The USEPA is conducting public information meetings in the affected neighborhood and staff of the RRD is participating. It is currently anticipated that work at the site will be completed in early 2004. The MDEQ's costs to date at this site have exceeded \$175,000, and are expected to reach or exceed \$1,000,000.

- **7742 Davison, Detroit:**



During Demolition



After Demolition

This site is located adjacent to the Curtis School. The site was the former location of MotorMach Castings and was used as a dumping site. The property subsequently tax-reverted to the state. Response actions, including demolition of structures and excavation of contaminated soils were completed in December 2003. During this work, ambient air monitoring was performed to assure that no unacceptable exposures would result. In addition, RRD personnel performed a great deal of focused education and outreach, providing informational presentations to students at the

Curtis School and the surrounding community. The MDEQ's costs at this site were approximately \$945,000.

Other Sites of Concern

- **Suspected Smelter Sites:** The RRD, through its contractors, is currently conducting initial soils sampling of state- or city-owned properties in the vicinity of 12 suspected lead smelter sites in the City. Field work began in early November 2003, and is continuing as access arrangements are finalized with the City. Field personnel have been provided with information sheets to distribute to concerned residents in those areas. Copies of this information sheet have also been provided to other stakeholders, including the MDCH, the Detroit Health Department, and the Detroit Department of Environmental Affairs (DEA). Once the data from this initial sampling is compiled, it will be evaluated to determine if more intensive study is necessary in any of those areas. Preparations for obtaining access to the sites themselves and to numerous private properties are currently being undertaken. If significant contamination problems are discovered, those sites will be advanced for further response actions by the RRD or USEPA as appropriate. As existing remedial funding sources continue to dwindle, the pace of response actions may be affected unless additional resources are secured.
- **Database Review and Geographical Information System (GIS) Mapping:** The MDEQ has compiled a list of 230 potential sites in the City where inputs of lead to the environment may be occurring. This list currently includes information on known or suspected lead smelter sites, as well as data from the MDEQ Michigan Air Emissions Reporting System (MAERS) database; Toxic Release Inventory (TRI) reports; the Annual Wastewater Reporting (AWR) program; the Waste Database System (WDS) report of hazardous waste generators and treatment, storage, and disposal facilities; and businesses identified in a 1954 Detroit Paint and Varnish Association membership directory. Additional information will be incorporated into this list as it is obtained. Evaluation of this information is ongoing but is dependent upon resolution of the issues that have surfaced between the MDEQ and the City regarding MDEQ use of the City's GIS data (see below).

The MDEQ efforts to develop a GIS database and map depicting the locations of the known and potential lead sites in the City has proven to be more challenging than originally anticipated. The City relies on a GIS database system that is different from that used in the MDEQ. For this and other reasons, obtaining the needed GIS data from the City has proven more difficult than anticipated. Preparation of an accurate map requires that the MDEQ have full access to GIS data for the entire City. The MDEQ RRD has requested the necessary data from the City and has discussed this matter with the Detroit DEA, who have committed to carrying the concern forward to see if an appropriate resolution can be reached. Concurrent with that process, the RRD is investigating whether sufficient GIS data sources exist to allow the RRD to develop the needed information independent of the City. Once an acceptable GIS database is developed, this tool will be used to more closely evaluate the potential risk sites may pose to sensitive receptors in the surrounding areas. This will then enable

the MDEQ to prioritize its compliance monitoring and site identification efforts to those sites most likely to pose unacceptable risks.

Funding For Response Activity and Demolition

These efforts remain ongoing. The MDEQ, working with the City, continues to assure that other environmental hazards associated with demolition projects (e.g., asbestos) are appropriately characterized and addressed. Existing funding sources for environmental cleanups continue to diminish, creating potentially significant challenges for the future. The MDEQ is actively participating in the Funding Subcommittee of the Lead Task Force. The MDEQ is currently pursuing the Michigan Department of Management and Budget's approval for additional staff to work on lead contaminated sites. The MDEQ estimates that as much as \$10 million per year in remedial project funding may be needed to address both currently known and as yet unidentified lead contaminated sites.

Incinerator and Emissions Limits

Pursuant to "A Call to Action," the MDEQ Air Quality Division (AQD) conducted a thorough review of permissible lead emission limits at incinerators. This review revealed that at all four of the existing incinerators in Michigan, the limits are as low as current regulations can legally require. In an effort to ensure that all incinerator permits require sufficient monitoring, the AQD has reviewed those requirements in the initial Renewable Operating Permits (ROPs) and, if necessary, requirements have been added to the ROPs. Three of the four ROPs have been issued. The fourth is pending, as the facility is currently shutdown and up for sale. In addition, the AQD continues to assure that all new lead sources are required to install Best Available Control Technology as applications are reviewed.

Monitoring of Ambient Lead Levels

The AQD continues to operate eight ambient lead level monitoring sites located across greater southeast Michigan. Levels decreased dramatically statewide in the 1980s and 1990s, and are now at a level which is roughly one percent of the National Ambient Air Quality Standard.

The AQD summarized and provided to the RRD all facility-reported lead emission information for 2001, from the MAERS for facilities in the City. In addition, the AQD performed comparisons between those facilities reporting to MAERS (and the lead emission values), and those reporting to the TRI. While there is some overlap between the sources which report to MAERS and the TRI, not every MAERS source which reports lead is required to report their emissions to the TRI (and vice versa). Currently, there are no facilities required to report to TRI that are not reporting to MAERS. However, some facilities report different lead values to MAERS and TRI. Where reported levels differ by 100 pounds or more, staff is investigating the cause.

Since stack testing is required on a periodic basis, only one lead test has occurred since the "A Call to Action" effort was initiated. This test showed compliance with the lead emission limits.

The AQD continues to assess potential enforcement actions related to lead emission concerns. However, there has been no such action since “A Call to Action” effort was initiated, as no non-compliance with lead emission limits has been identified.

Education and Outreach

The MDEQ has focused its outreach and education efforts in three major areas:

1. Information associated with specific sites, including Master Metals, Helen Avenue, 7742 Davison, and Detroit Lead Pilot Project.

Master Metals Site: The USEPA, with the MDEQ RRD, addressed lead abatement needs at the Master Metals lead smelter site in the City, and residents/officials from city and county public health agencies have been kept informed via various outreach efforts (e-mails/sampling notices/meetings).

Detroit Lead Site Pilot Project: The RRD developed a work plan and began sampling and assessing 12 known and suspected lead smelter sites in the City in November 2003. Area residents and officials from city and county public health agencies are being kept informed via various outreach efforts (e-mails/sampling notices/meetings). Once analysis of initial lead smelter site data is complete, the RRD will identify sites needing any further characterization and/or response actions and will identify funding needs for lead contaminated sites as they are identified and seek appropriations and/or transfers. More focused education and outreach efforts will be made on a site-by-site basis as needed.

GIS Map: Staff of the RRD are working to develop a GIS map of the City depicting known and suspected lead sites, schools, parks, and recreation centers. Once developed, this tool will serve as a valuable tool for education and outreach activities.

Detroit Lead Partnership: The RRD continues to provide stakeholders and local/state agencies with status of its efforts to identify high priority lead contaminated sites at monthly meetings of the Detroit Lead Partnership.

2. Evaluation of available information on lead, determination of methods to disseminate to target audiences, and implementation of those methods.

Education/Outreach Internal Workgroup: A meeting was held to evaluate currently available information and methods to conduct education and outreach activities. As part of the process, educational presentations and displays have been presented at relevant events/workshops that mention lead. Additional strategies will continue to be evaluated as information becomes available.

Public Meetings and Workshops: The RRD will continue to work with the Environmental Science and Services Division (ESSD), USEPA, and local agencies in conducting periodic public meetings in neighborhoods in the vicinity of confirmed lead contaminated sites in Detroit, keeping community residents informed of site progress to date.

Handling Hazardous Building Components Workshop - March 9, 2004.

- The purpose of the workshop is to provide public and private sector customers in the building ownership/operation, construction, renovation, repair, and regulatory sectors with an overview of the federal and state health, safety, and environmental compliance requirements regarding building maintenance, renovation, and demolition activities. The ESSD is working with the Wayne County Department of Environment and the Good Neighbors United Initiative to get to the target audience listed above.
- Wes Priem from the Lead Abatement Program at the Michigan Department of Community Health will be talking about residential lead issues, and Nella Davis-Ray from the Michigan Department of Labor and Economic Growth will cover commercial/industrial lead issues.

Development of the MDEQ Lead Web Site: The MDEQ is developing a lead web site focusing on MDEQ lead initiatives and compendium of MDEQ lead information. The web site will also contain pertinent links to other resourceful sites including the MDCH site. A prototype is currently in development. The site will also refer users to the existing Electronic Recycling web page, which currently contains information on lead.

Other Possibilities Identified for Lead Outreach: The MDEQ ESSD is investigating the use of existing kiosks from the Community Environmental Awareness Project (CEAP) to get information about lead (e.g., the Master Metals project or in general) to target audiences.

- The original objective of CEAP was to increase the public and stakeholders' access to information and help them understand complex environmental issues by providing information in a format and context that is understandable and meaningful.
- Three existing machines are currently located in Hamtramck, Sterling Heights, and Wixom. These machines can be moved at a low cost but they will need to be at a location with an internet connection and good security.

3. Participation in the Education/Outreach Subcommittee of the Lead Task Force.

The top five strategies (in order of importance) that were submitted from the education and outreach subcommittee are:

- Strategy 1: Develop an ongoing awareness effort throughout the year to assure that parents and the general public are aware of the dangers of lead exposure, and encouraged to seek lead testing at appropriate intervals. One task under this strategy is to explore existing information/campaigns/initiatives to collaborate with. The MDEQ representatives shared information about the Master Metals project and the Handling Hazardous Building Components Workshop as part of MDEQ's lead initiative and as possible ways to partner with the other organizations in this subcommittee to get information out to the right people (MDEQ involvement).

- Strategy 2: Combine Michigan's lead testing and immunization schedules.
- Strategy 3: Develop a clearinghouse of current relevant lead information and a strategy to assure broad access to the clearinghouse (possible MDEQ involvement).
- Strategy 4: Work with health, social services, and schools of education to assure that all graduates are knowledgeable about the effects of lead on the developing brain and the educational implications of teaching children who have lead poisoning.
- Strategy 5: Incorporate lead poisoning prevention actions into existing grants issued from state departments and generate new lead grants for local agencies (possible MDEQ involvement).

Through participation in the Education and Outreach Subcommittee meetings, the MDEQ formed partnerships to share information on lead, which led to linking the workshop flier to the MDCH web site, under their "Lead Links and Announcements" section. The MDEQ also received several contacts from the MDCH to help the MDEQ with marketing the workshop previously identified.

Insuring Public Health During Remedial Projects

Staff of the MDEQ continues to coordinate closely with the USEPA and liable parties at the Master Metals site to assure that fugitive emissions and track-out concerns are properly controlled during onsite and offsite work. The MDEQ AQD, and RRD are coordinating closely regarding the appropriate fugitive emission controls and ambient air monitoring at existing projects and are committed to doing so at future projects.

RECOMMENDATIONS

Through the course of its efforts pursuant to the *Childhood Lead Poisoning Prevention: A Call To Action* lead initiative, the MDEQ has found that the issues associated with lead contamination in urban areas are highly complex. In particular, it has become clear that the identification of, and response to, sites of lead contamination in these areas are highly resource intensive, both in human and economic terms. The following recommendations are based on those experiences:

- The MDEQ recommends that the focus of this initiative remain on the City. This additional time will allow the MDEQ to develop a more thorough and accurate understanding of the risks posed by lead contaminated sites. This will also facilitate the development of effective strategies for the identification and remediation of those sites. The MDEQ recommends that an analysis of the feasibility of expanding this effort to other urban industrial areas be prepared and submitted by October 1, 2005.
- The MDEQ recommends that focused compliance monitoring initiatives be undertaken by its AQD, Water Division, and the Waste and Hazardous Materials

Division at facilities subject to their regulatory programs in the City. The purpose of these initiatives would be to more closely assess compliance with regulatory requirements related to lead, and to determine if additional compliance assistance or enforcement activities are necessary. This information may also serve to inform subsequent site assessment efforts by the RRD. The specific geographic focus of these efforts may be refined further based on GIS data once that data is compiled and maps can be produced.

- The MDEQ recommends that additional resources, both in terms of staff and remedial project funding, be provided to allow for the timely and effective identification and remediation of lead contaminated sites. The MDEQ has identified an initial need for five additional staff in the RRD to carry forward the work in the City. If numerous or significant new lead contaminated sites are identified, substantial additional remedial project funds will be needed. As noted previously, current staff resources and remedial project funds are not sufficient to allow the MDEQ to accomplish the work anticipated to be needed to address lead contaminated sites even within the City. The eventual expansion of this effort to other industrial urban areas will not be feasible unless substantial new resources are provided.
- The MDEQ recommends that its current education and outreach efforts continue and expand. The specific nature of these efforts may change over time, in particular as a result of the implementation of further recommendations by the Lead Task Force, but would include the development and delivery of additional information regarding the MDEQ's activities as part of the National Lead Pollution Prevention Week, October 17-23, 2004. Additional funding support for these efforts will be required and will be sought.

APPENDICES

Toxics Steering Group Lead Subcommittee Report: Review of Residential Direct Contact Soil Criterion for Lead, January 21, 2004.

Prepared by: Philip L. Schrantz, Chief
Field Operations Section
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
January 26, 2004

ATTACHMENT C

Tables and Figures

Table 1. CHILDHOOD LEAD POISONING DATA FACTS -- ALL MICHIGAN COUNTIES
Children Age < Six Years - Calendar Year 2003

County	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead		Children w/confirmed elevated blood lead levels (EBLL)				Children w/unconfirmed elevated blood lead levels (EBLL)				Children w/elevated capillary tests, not confirmed by venous		
			Number of Children Tested	% Tested	Number of Children w/EBLL	% EBLL**	10-14 ug/dL	15-19 ug/dL	20+ ug/dL	Number of Children Tested	% Tested	Number of Children w/EBLL		% EBLL**	10-14 ug/dL
Alcona	21%	630	53	8%	1	1.9%	1	0	0	0	0	0	0	0	0
Alger	33%	562	88	16%	0	0.0%	0	0	0	1	0	0	0	0	0
Allegan	27%	9,272	714	8%	9	1.3%	5	2	2	4	0	0	0	0	0
Alpena	29%	2,118	216	10%	2	0.9%	2	0	0	2	0	0	0	0	0
Antrim	23%	1,625	78	5%	0	0.0%	0	0	0	1	0	0	0	0	0
Arenac	21%	1,124	139	12%	0	0.0%	0	0	0	0	0	0	0	0	0
Baraga	35%	590	140	24%	1	0.7%	0	0	1	0	0	0	0	0	0
Barry	29%	4,606	561	12%	3	0.5%	2	0	1	2	0	0	0	0	0
Bay	37%	8,126	767	9%	13	1.7%	7	2	4	3	0	0	0	0	0
Benzie	27%	1,135	40	4%	1	2.5%	1	0	0	0	0	0	0	0	0
Berrien	33%	12,820	1,870	15%	75	4.0%	44	24	7	4	0	0	0	0	0
Branch	37%	3,484	241	7%	2	0.8%	1	0	1	0	0	0	0	0	0
Calhoun	36%	10,945	1,472	13%	44	3.0%	31	8	5	3	0	0	0	0	0
Cass	30%	3,818	325	9%	6	1.9%	3	1	2	2	0	0	0	0	0
Charlevoix	26%	2,052	47	2%	0	0.0%	0	0	0	0	0	0	0	0	0
Cheboygan	22%	1,893	48	3%	0	0.0%	0	0	0	0	0	0	0	0	0
Chippewa	28%	2,500	335	13%	1	0.3%	1	0	0	2	0	0	0	0	0
Clare	13%	2,236	177	8%	0	0.0%	0	0	0	0	0	0	0	0	0
Clinton	29%	5,436	216	4%	2	0.9%	2	0	0	0	0	0	0	0	0
Crawford	20%	949	36	4%	0	0.0%	0	0	0	0	0	0	0	0	0
Delta	38%	2,530	412	16%	4	1.0%	1	1	2	3	0	0	0	0	0
Dickinson	42%	1,871	138	7%	0	0.0%	0	0	0	0	0	0	0	0	0
Eaton	23%	7,980	887	11%	0	0.0%	0	0	0	3	0	0	0	0	0
Emmet	28%	2,366	52	2%	1	1.9%	1	0	0	0	0	0	0	0	0
Genesee	23%	38,236	4,115	11%	56	1.4%	30	13	13	3	0	0	0	0	0
Gladwin	14%	1,733	107	6%	2	1.9%	2	0	0	0	0	0	0	0	0
Gogebic	54%	973	91	9%	0	0.0%	0	0	0	0	0	0	0	0	0
Grand Travi	18%	5,733	190	3%	2	1.1%	2	0	0	0	0	0	0	0	0
Griott	40%	3,012	166	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Hillsdale	39%	3,628	337	9%	3	0.9%	2	0	1	0	0	0	0	0	0
Houghton	55%	2,348	314	13%	2	0.6%	0	2	0	3	0	0	0	0	0
Huron	33%	2,447	223	9%	1	0.5%	0	1	0	1	0	0	0	0	0
Ingham	26%	21,259	2,053	10%	29	1.4%	17	9	3	16	0	0	0	0	0
Ionia	38%	5,111	453	9%	1	0.2%	1	0	0	4	0	0	0	0	0
Iosco	20%	1,577	147	9%	0	0.0%	0	0	0	1	0	0	0	0	0
Iron	44%	677	39	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Isabella	19%	3,945	226	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Jackson	36%	12,586	600	5%	21	3.5%	15	2	4	1	0	0	0	0	0
Kalamazoo	25%	18,597	1,541	8%	37	2.4%	23	7	7	3	0	0	0	0	0
Kalkaska	15%	1,306	83	6%	2	2.4%	2	0	0	0	0	0	0	0	0
Kent	27%	53,436	10,174	19%	304	3.0%	179	61	64	206	0	0	0	0	0
Keweenaw	55%	127	19	15%	0	0.0%	0	0	0	0	0	0	0	0	0
Lake	15%	718	113	16%	0	0.0%	0	0	0	0	0	0	0	0	0
Lapeer	22%	7,217	305	4%	1	0.3%	0	0	1	0	0	0	0	0	0
Leelanau	22%	1,328	33	2%	0	0.0%	0	0	0	0	0	0	0	0	0
Lenawee	39%	7,564	495	7%	18	3.6%	12	3	3	0	0	0	0	0	0
Livingston	14%	13,800	285	2%	0	0.0%	0	0	0	0	0	0	0	0	0
Luce	30%	438	76	17%	0	0.0%	0	0	0	0	0	0	0	0	0
Mackinac	28%	708	120	17%	0	0.0%	0	0	0	0	0	0	0	0	0
Macomb	11%	61,805	4,602	7%	24	0.5%	21	1	2	1	0	0	0	0	0
Manistee	36%	1,616	151	9%	1	0.7%	1	0	0	0	0	0	0	0	0
Marquette	33%	3,985	256	6%	3	1.2%	3	0	0	1	0	0	0	0	0
Mason	31%	1,902	125	7%	2	0.6%	0	0	0	0	0	0	0	0	0
Mecosta	22%	2,892	338	12%	2	0.6%	1	0	1	0	0	0	0	0	0
Menominee	38%	1,783	241	14%	0	0.0%	0	0	0	2	0	0	0	0	0
Midland	17%	6,572	251	4%	0	0.0%	0	0	0	0	0	0	0	0	0
Missaukee	21%	1,143	65	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Monroe	28%	11,757	1,208	10%	5	0.4%	5	0	0	0	0	0	0	0	0
Montcalm	28%	4,888	336	7%	0	0.0%	0	0	0	0	0	0	0	0	0
Montmorency	18%	544	37	7%	0	0.0%	0	0	0	0	0	0	0	0	0
Muskegon	30%	14,215	2,560	18%	76	3.0%	51	14	11	2	0	0	0	0	0
Newaygo	23%	4,014	478	12%	2	0.4%	2	0	0	0	0	0	0	0	0
Oakland	16%	97,281	7,128	7%	57	0.8%	41	11	5	2	0	0	0	0	0
Oceana	27%	2,092	430	21%	1	0.2%	0	0	1	5	0	0	0	0	0
Ogemaw	18%	1,384	79	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Ontonagon	43%	419	42	10%	0	0.0%	0	0	0	0	0	0	0	0	0
Osceola	24%	1,754	164	9%	0	0.0%	0	0	0	0	0	0	0	0	0
Oscoda	18%	608	37	6%	0	0.0%	0	0	0	0	0	0	0	0	0
Otsego	13%	1,759	26	1%	0	0.0%	0	0	0	0	0	0	0	0	0
Ottawa	18%	21,940	1,199	5%	14	1.2%	10	4	0	10	0	0	0	0	0
Presque Isle	28%	832	51	6%	1	2.0%	1	0	0	1	0	0	0	0	0
Roscommon	16%	1,368	57	4%	0	0.0%	0	0	0	0	0	0	0	0	0
Saginaw	29%	17,275	2,153	12%	59	2.8%	37	14	8	12	0	0	0	0	0
St Clair	30%	13,360	969	7%	10	1.0%	5	2	3	2	0	0	0	0	0
St Joseph	35%	5,389	613	11%	11	1.8%	10	0	1	1	0	0	0	0	0
Sanilac	35%	3,506	294	8%	1	0.3%	0	0	0	0	0	0	0	0	0
Schoolcraft	33%	615	105	17%	0	0.0%	0	0	0	2	0	0	0	0	0
Shiawassee	36%	5,914	541	9%	3	0.6%	2	0	1	0	0	0	0	0	0
Tuscola	33%	4,310	309	7%	1	0.3%	1	0	0	0	0	0	0	0	0
Van Buren	29%	6,243	708	11%	8	1.1%	4	2	2	5	0	0	0	0	0
Washtenaw	19%	24,173	977	4%	6	0.6%	5	0	1	0	0	0	0	0	0
Wayne ex Det	24%	92,253	9,479	10%	158	1.7%	99	31	28	29	0	0	0	0	0
Wexford	26%	2,377	117	5%	0	0.0%	0	0	0	1	0	0	0	0	0
Detroit, City of	56%	93,365	32,698	35%	2,054	6.4%	1,266	440	348	403	0	0	0	0	0
MICHIGAN	27%	814,505	100,181	12%	3,141	3.2%	1,952	656	533	747	0	0	0	0	0

* U.S. Census Bureau, Census 2000

** %EBLL is calculated as follows: Number of Children w/EBLL divided by (Number of Children Tested minus Children w/elevated capillary tests, not confirmed by venous)

Note: Counts of children tested and blood lead levels are reported from Michigan Department of Community Health, Childhood Lead Poisoning Prevention Project statewide database.

Note: Column for "Children Tested" reflects capillary and venous blood tests. Columns for "Children w/confirmed elevated blood lead levels" reflect venous tests only.

Figure 1 Blood Lead Testing in Michigan

Children under Age Six, 1994 - 2003

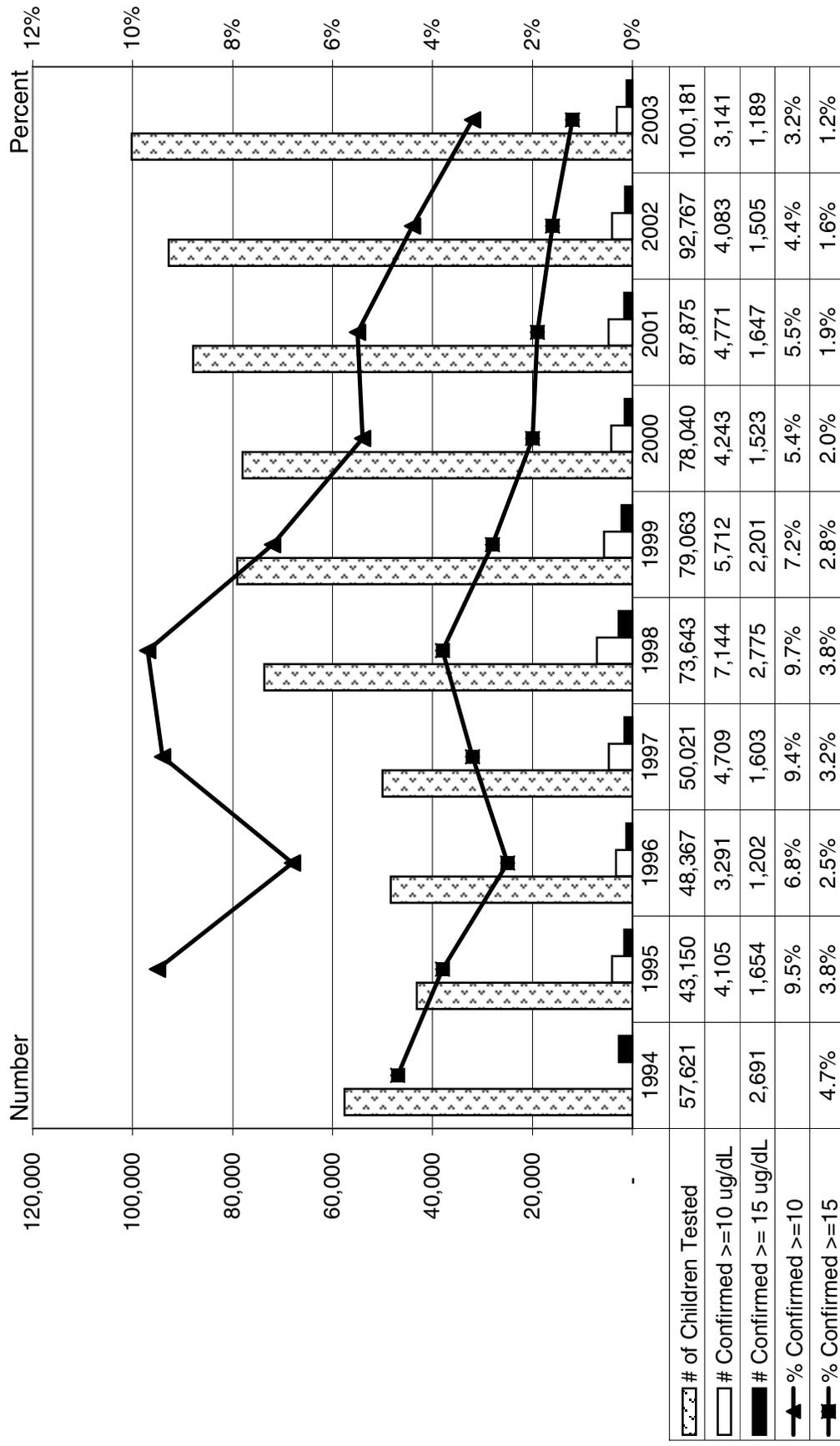
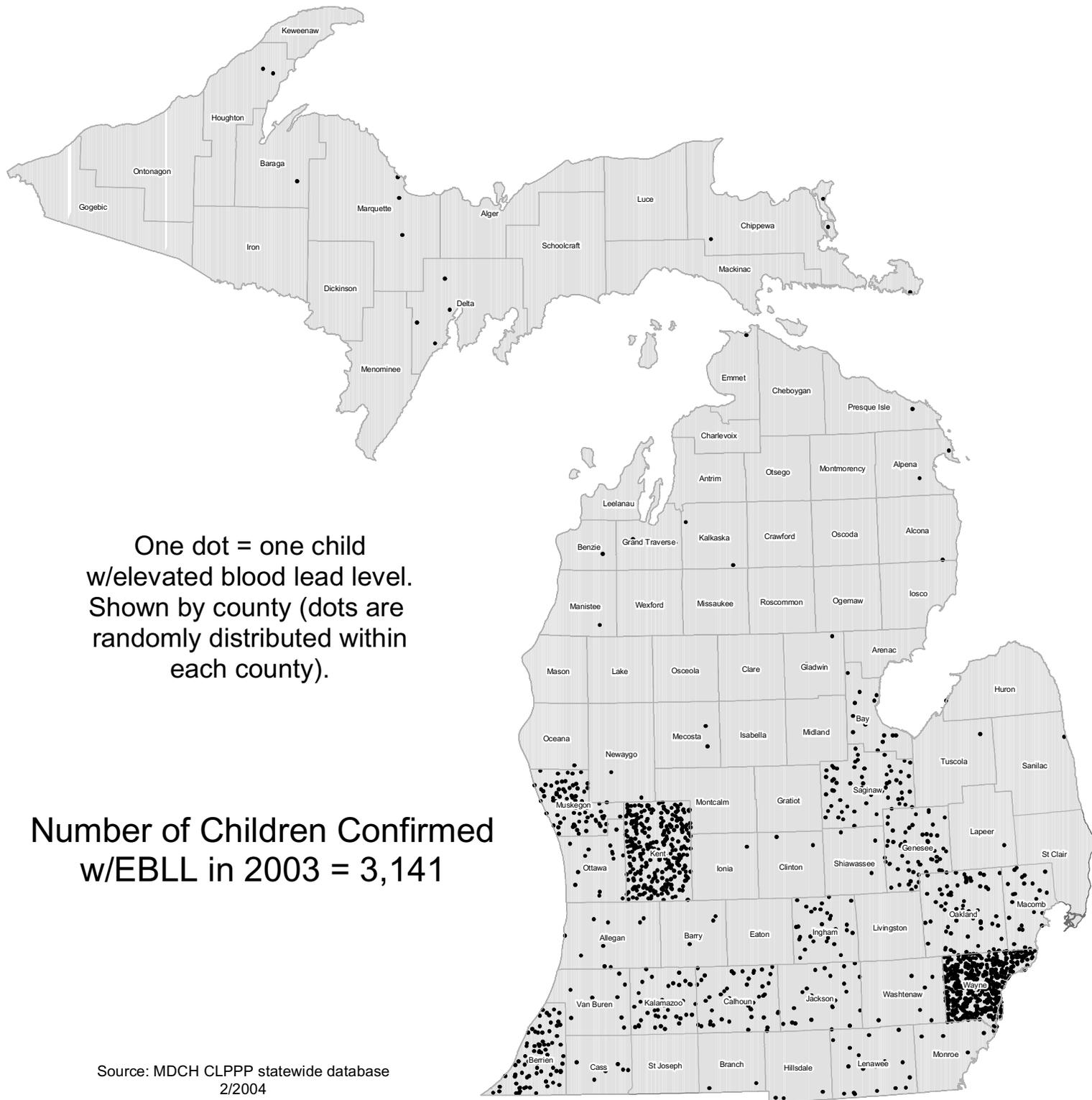


Figure 2

Michigan Children aged < six years with Elevated Blood Lead Levels (PbB \geq 10 $\mu\text{g}/\text{dL}$) - 2003



ATTACHMENT D

Compliance Subcommittee Regulatory Matrix

COMPLIANCE SUBCOMMITTEE REGULATORY MATRIX

Regulated person(s)	Activity performed	Regulator	Authority	Needs	Resources
Health care providers (Medicaid)	child blood lead testing (12 mos & 24 mos.)	MSA county Health Dept. other MDCH	<i>(Medicaid rules)</i>	increase compliance rate to 100%	
Health care providers (HeadStart)	children blood lead testing		<i>(HeadStart rules)</i>	increase compliance rate to 100%	
Employers, general	blood lead testing for employees	MIOSHA MSU (Rosenman)	Act 154 (MIOSHA) Act 368 (ABLES, Public Health Code)	increase requirement to include families of exposed workers	
Environmental health personnel	EBL investigation	county health dept. MDCH (LHRP) HUD?	Act 368 (PHC) LHRP rules 24 CFR 35(H)	authorize & require EBL investigations (HIPPA compliant)	
Housing inspectors	HQS inspection Sect. 8 inspection	housing commission MSHDA HUD	<i>(MSHDA rules)</i> (24 CFR 35)	- require lead-related issues as part of inspection	
Local code enforcement agents	local housing inspections (maintenance)	local municipalities	local ordinances (vary by community)	- require lead-related issues as part of inspection - establish state-wide authority for code enforcement officials	
Home inspectors (non-licensed)	home inspections, private	none	none	require lead-related issues as part of inspection; regulator	
Lead Inspectors & Risk Assessors	inspections risk Assessments	MIOSHA MDCH (LHRP)	Act 154 LAAct & rules	- quality assurance - effective interpretation of regulations - require submit inspections & RA to LHRP for registry & compliance	
Home construction inspectors	construction inspections	local municipalities	MDLEG construction codes	authorize & require lead-related issues as part of inspection for renovation & remodeling	
Sellers & lessors	sale or rental of property	USEPA HUD	Title X (Section 1018)	identify large property owners & those whose properties have EBL children	

COMPLIANCE SUBCOMMITTEE REGULATORY MATRIX

Regulated person(s)	Activity performed	Regulator	Authority	Needs	Resources
Specification writers	specifying Federal rehab activities	local municipalities	funding HUD	- require to be prepared by certified Project Designers - establish minimum work practice standards	
Rehab contractors (Federal \$\$ projects)	Federally funded rehab & renovation projects, incl. interim controls	USEPA grantee HUD MIOSHA local municipalities	TSCA sect. 406(b) funding HUD 24 CFR 35 Act 154 (part 603)	- establish consistent definition of abatement vs. interim controls - establish consistent clearance requirements	
Rehab contractors	rehab & renovation, privately funded	MIOSHA local municipalities USEPA	Act 154 (part 603) funding HUD TSCA sect. 406(b)	require minimum work practice standards for private R&R	
Lead abatement contractors	LBP abatement	MIOSHA MDCH(LHRP) HUD MDEQ local municipalities	Act 154 (part 603) LAAct & rules 24 CFR 35 Act 451 funding & ordinances	increase compliance & accountability	
Landlords	renovation of owned property	local government only	local government ordinances	- establish & require a state-wide standard of property care (uniform rental property code) - improved tenant rights, especially for those with EBL children	
Pb abatement Workers & Supervisors	LBP abatement	MDCH (LHRP)	LAAct & rules	increased enforcement capabilities	
Clearance professionals	project clearances, incl. interim controls	MDCH (LHRP) HUD	LAAct & rules 24 CFR 35	- more training required for Clearance Technicians - increased accountability - require no affiliation with any related party for LBP work	
MSHDA	housing rehab & renovation	HUD MDCH (LHRP)	24 CFR 35 LAAct & rules	increase accountability for LBP issues in all funded activities	
Any person	discharge to waters	MDEQ USEPA	Act 451 (part 31) Clean Water Act	education & compliance	

COMPLIANCE SUBCOMMITTEE REGULATORY MATRIX

Regulated person(s)	Activity performed	Regulator	Authority	Needs	Resources
Any person	discharge to air	MDEQ USEPA	Act 451 (part 55) Clean Air Act	education & compliance	
Any person (generator)	generate and/or dispose of LBP waste	MDEQ USEPA	Act 451 (part 111) RCRA	education & compliance	
Any person (generator)	generate and/or dispose solid Pb waste	MDEQ	Act 451 (part 115)	education & compliance	
Any person	cleanup hazardous waste	MDEQ USEPA	Act 451 (part 201) CRCLA	education & compliance	
Storage tank operator	leaking underground storage tank	MDEQ USEPA	Act 451 (part 213) RCRA	education & compliance	
Municipal water providers	supply drinking water	MDEQ USEPA	<i>(drinking water rules)</i> Safe Drinking Water Act	education & compliance	
Plumbers	residential plumbing	Consumer Product Safety Commission (CPSC)	<i>(CPSC regs)</i>	education & compliance	
Laboratories	lead analyses	USEPA MDCH AIHA	40 CFR 745 LAAct & rules National Lead Laboratory Accreditation Program	none	
Inspectors & Risk Assessors	use of XRF analyzer	MDCH MDLEG, Rad Health local health dept. Nuclear Regulatory Commission	LAAct & rules <i>(Rad Health rules)</i> local ordinances Atomic Energy Act	none	
Painters	residential painting	CPSC MIOSHA	<i>(CPSC rules)</i> Act 154	education & compliance	
Food & cosmetics manufacturers	manufacturing of food & cosmetics	USFDA MIOSHA	<i>(FDA rules)</i> Act 154	education & compliance	
Consumer products manufacturers (non- food)	manufacturing of general non-food consumer products	CPSC MIOSHA	<i>(CPSC rules)</i> Act 154	education & compliance	
Operators of child-occupied facilities	child care or activity provision	USEPA MDCH FIA	40 CFR 745 LAAct & rules <i>(FIA licensing regs)</i>	require inspection and/or Risk Assessor for licensing/approval	

COMPLIANCE SUBCOMMITTEE REGULATORY MATRIX

Regulated person(s)	Activity performed	Regulator	Authority	Needs	Resources
Training providers	teaching LBP related courses	MDCH (LHRP)	LAAct & rules	none	
Property owners	property ownership	MDLEG (Construction Codes Div.)	International Maintenance Code MI legislation	education & compliance	

Abbreviations

EBL..... Elevated Blood Lead level, usually referring to a child with levels in excess of 10 ug/dl.
 LBP..... Lead-Based Paint, by definition 1.0 mg/cm² surface coating or 0.5% by weight.
 R&R..... Renovation & Remodeling
 LHRP..... Lead Hazard Remediation Program, MI Dept. of Community Health
 CLPPP..... Childhood Lead Poisoning Prevention Program, MI Dept. of Community Health
 EPA (or USEPA)..... U.S. Environmental Protection Agency
 HUD..... U.S. Dept. of Housing & Urban Development
 MIOSHA..... MI Occupational Health & Safety Act, MI Dept. of Labor & Economic Growth (MDLEG)
 MDEQ..... MI Dept. of Environmental Quality
 LAAct..... MI Lead Abatement Act, Acts 219&220 of 1998 & Act 644 of 2002
 PHC..... MI Public Health Code, Act 368 of 1978, as amended
 TSCA..... Toxic Substances Control Act (EPA)
 RCRA..... Resource Conservation & Recovery Act (EPA)
 Title X..... portion of the Community Development Act of 1992 dealing with lead-based paint issues
 CRCLA..... EPA Superfund Act

ATTACHMENT E

Federal Funding Matrix

**FEDERAL FUNDING MATRIX
POTENTIAL SOURCES OF FEDERAL FUNDING
FOR LEAD PROGRAMS**

Funding Agency	Length of Grant	Grant Title	Award Amount	Number of Awards	Full Proposal Due	Eligible Agencies	Synopsis
HUD	12 Months	Lead Hazard Control Program	\$103,000,000 Grant range: \$1,000,000 to \$2,500,000	25-40 (80% to current or prior grantees)	June of each year	States, Indian tribes, and local governments	Identify and control lead-based paint hazards in eligible privately-owned housing units (rental and owner-occupied).
HUD	24 Months	Operation Lead Elimination Action Program (LEAP)	\$9,935,000	6-10	June of each year	Non-profit and for-profit	The purpose of the project is to leverage private sector resources to eliminate lead poisoning as a major public health threat to young children. The goal is to assist in lead hazard control to eliminate lead-based paint in houses.
HUD	12 Months	Lead Outreach Grant Program	\$2,200,000 Grant range: \$200,000 to \$500,000		June of each year	States, tribes, units of general local government	The purpose of the grant is to perform lead reduction in low income, privately owned pre-1978 housing. Objectives include: 1) increasing enrollment via the HUD Lead Hazard Control program or other lead hazard treatment programs; 2) developing and distributing materials to increase awareness of childhood lead positioning, its prevention, and hazard identification/control methods; and 3) encouraging occupants to identify potential lead-based paint hazards and report them to property owners/managers and housing officials.

**FEDERAL FUNDING MATRIX
POTENTIAL SOURCES OF FEDERAL FUNDING
FOR LEAD PROGRAMS**

Funding Agency	Length of Grant	Grant Title	Award Amount	Number of Awards	Full Proposal Due	Eligible Agencies	Synopsis
HUD	12 Months	Lead Hazard Reduction Demonstration Grant	\$49,675,000		July of each year	Cities, counties, local government	The purpose of the grant is to assist programs for abatement, inspections, risk assessments, temporary relocations, and interim control of lead-based paint hazards in eligible, single-family housing units, and multiple-family buildings occupied by low-income families.
HUD	12 Months	Healthy Homes Demonstration Program	\$5,000,000 Grant range: \$250,000 to \$1,000,000	6-8 grants	July of each year	Academic and non-profit institutions, state and local government	Develop, demonstrate, and promote cost effective, preventative measures to correct multiple safety and health hazards that produce disease and injuries to children. The goal of the program is to reduce health threats, especially to children, in a cost effective manner. The program is part of HUD's Healthy Homes Initiative (HHI) which addresses multiple hazards (i.e. lead, asbestosis, and radon) and multiple health effects (children's illnesses such as asthma and carbon monoxide poisoning)

**FEDERAL FUNDING MATRIX
POTENTIAL SOURCES OF FEDERAL FUNDING
FOR LEAD PROGRAMS**

Funding Agency	Length of Grant	Grant Title	Award Amount	Number of Awards	Full Proposal Due	Eligible Agencies	Synopsis
HUD	12 Months	Healthy Homes/Lead Technical Studies	\$2,000,000/ \$3,000,000 Healthy Homes Grant range: \$200,000 to \$1,000,000 Lead Technical Studies Grant range: \$250,000 to \$1,000,000	Healthy Homes: 3-6 Lead Technical Studies: 1-4	June of each year	Academic and non-profit institutions, state and local governments, federally recognized Indian tribes	The purpose of Healthy Homes is to improve knowledge of housing-related health hazards, and to improve or develop new hazard control methods. The purpose of Lead Technical Studies is to improve methods for detecting and controlling lead-based paint hazards.
HUD	Project duration: 42 months; 36 months for performance-based renewal grants	Lead-Based Paint Hazard Grant	\$96,000,000 Maximum award: \$3,000,000	30-40 grants Maximum 35% of funds are given to applicants eligible for a performance-based renewal	June of each year	States, Indian tribes, or local governments	Comprehensive programs to identify and control lead-based paint hazards in eligible privately-held housing for rental or owner-occupants in partnership with community-based organizations. Activities may include: blood testing, lead testing, housing rehabilitation, and community awareness. Note: This grant has a mandatory 10% match with local funds.

Note: Many of the grants require a transmittal letter stating intent to apply. These grants are given annually; the next due date (if funded by the Federal government) will be one year from the date in the full proposal due column.

**FEDERAL FUNDING MATRIX
CURRENT SOURCES OF FEDERAL FUNDING
LEAD PROGRAMS**

Funding Agency	Performance Period	Agency	Amount	Objectives
EPA	10/1/03 - 9/30/04	MDCH Lead Hazard Remediation Program	\$372,164	Administer training, certification and enforcement of lead professionals.
HUD	10/1/03 - 9/30/06	MDCH Lead Hazard Remediation Program	\$ 3,000,000	Reducing lead hazard in residential homes in Muskegon, Flint and Lansing.
Maternal Child Block Grant	9/1/03- 9/30/04	MDCH Lead Hazard Remediation Program	\$600,000	Carry-over funding for lead hazard control project.
CDC	7/1/03- 6/30/04	MDCH Childhood Lead Poisoning Prevention Program	\$669,400	Education/outreach, blood lead testing, case management, primary prevention, and data management.
Maternal Child Block Grant ¹	10/1/03- 9/30/04	MDCH Childhood Lead Poisoning Prevention Program	\$491,800 ²	City of Detroit and Wayne County: education/outreach, blood lead testing, case management, primary prevention, and data management.
HUD	3/03- 2/05 ³	Clear Corps Detroit/Greater Detroit Area Health Council/Detroit Lead Partnership	\$999,896	Seed money to leverage an additional \$2.1 million for lead abatement in 138 homes, and establish lead safe housing registry.
HUD	10/02- 9/05	City of Detroit Housing Commission	\$2,100,000	Reducing lead hazards in residential homes.
HUD - CDBG	10/1/03- 9/30/04	City of Detroit Housing Commission	\$11,644,000 (Estimate)	Loans to residential properties for home improvements that include lead hazard reduction.
HUD - CDBG	10/1/03- 9/30/04	Michigan State Housing Development Authority		Loans to residential properties for home improvements that include lead hazard reduction.
HUD - CDBG	10/1/03- 9/30/04	Other Local Housing Authorities State-Wide		Loans to residential properties for home improvements that include lead hazard reduction.
HUD	10/1/03- 9/30/06	City of Grand Rapids	\$3,000,000	Reducing lead hazards in residential homes.

¹ Note: also funded by \$85,000 of state general funds

² Block grant funding only

³ Dates to be confirmed

**FEDERAL FUNDING MATRIX
CURRENT SOURCES OF FEDERAL FUNDING
LEAD PROGRAMS**

Funding Agency	Performance Period	Agency	Amount	Objectives
CDC	2003	City of Detroit	\$699,819	Screening/testing, surveillance, case management, public and professional education, primary prevention, writing an elimination plan for 2010, community coalition building, and evaluation of program impact.
HUD	10/1/03-9/30/06	City of Grand Rapids Lead Hazard Control Grant Program	\$2,996,651	Identify and control lead-based paint hazards in eligible privately-owned housing units (rental and owner-occupied).
HUD	10/1/03-9/30/06	City of Grand Rapids Lead Hazard Reduction Demonstration Program	\$2,000,000	Assistance for abatement, inspections, risk assessments, temporary relocations, and interim control of lead-based paint hazards in eligible, single-family housing units, and multiple-family buildings occupied by low-income families.

CDC: Centers for Disease Control and Prevention

EPA: Environmental Protection Agency

HUD - CDBG: HUD Community Development Block Grant

HUD: United States Department of Housing and Urban Development

MDCH: Michigan Department of Community Health

MPHI: Michigan Public Health Institute

ATTACHMENT F

Department of Environmental Quality

Issue Paper – Directive 13 – *Call to Action* – July, 2003

ISSUE PAPER

RESPONSE TO DIRECTIVE 13 OF THE STATE OF MICHIGAN'S CHILDHOOD LEAD POISONING PREVENTION: A CALL TO ACTION

Issue

Lead is neurotoxic and was used for many years in products found in and around our homes. If not detected early, lead exposure may cause a variety of health effects ranging from behavioral problems and learning disabilities, to seizures and death. Children 6 years old and under are most at risk for lead exposure (Centers for Disease Control and Prevention, 1991). Lead poisoning may affect as many as 20,000 children under the age of 6 in Michigan (State of Michigan, 2003). To address lead contamination in Michigan, various governmental agencies were called upon to take action and ensure that steps were being taken to reduce lead poisoning. One charge (Directive 13) to the Michigan Department of Environmental Quality's (MDEQ) Remediation and Redevelopment Division (RRD) was to *"Review the most recent toxicological and other pertinent data to determine if the current Part 201 residential cleanup criterion is protective and to determine the most appropriate method of soil sampling."* A subcommittee within the Toxics Steering Group (TSG), the Lead Subcommittee (Subcommittee), was formed to address this charge.

Background

The current Part 201 generic residential soil Direct Contact Cleanup (DCC) criterion for lead is 400 milligrams per kilogram (mg/kg) and the Drinking Water Criterion (DWC) is 4 micrograms per liter ($\mu\text{g/L}$). The DCC represents a soil concentration that is protective against adverse health effects due to long-term ingestion of and dermal contact with contaminated soil. The DWC represents a concentration of a hazardous substance in drinking water that is considered safe for long-term, daily consumption. Exposures to lead-based paint are not accounted for under Part 201. Intervention actions for exposures to lead-based paint are addressed by the Michigan Department of Community Health (MDCH).

The generic Part 201 algorithms used to quantify risk for development of the generic DCC and the DWC were not used to calculate the criteria for lead because an oral reference dose or an oral cancer slope factor is not available for lead. The residential lead criteria were generated using the United States Environmental Protection Agency's (U.S. EPAs) Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children. The IEUBK Model is used to predict the risk of elevated blood lead levels in children under the age of 7 that are exposed to environmental lead from many sources. The IEUBK Model addresses: 1) the multimedia nature of exposures to lead, 2) lead pharmacokinetics, and 3) the significant variability in exposure and risk through estimation of probability distributions of blood lead levels for children exposed to similar environmental concentrations.

The IEUBK Model requires the use of default media (air, food, water, and soil) concentrations or the selection of site-specific media concentrations. Use of a drinking water concentration of 4 µg/L simultaneously with a soil concentration of 400 milligrams per kilograms (mg/kg) results in 5 percent or less of children exceeding the CDC blood lead intervention level of 10 micrograms per deciliter (µg/dL, CDC, 1991). Five percent represents the estimated risk level of children expected to exceed the 10µg/dL blood lead intervention level used by the U.S. Environmental Protection Agency (EPA) and the MDEQ. A concentration of 4µg/L lead in the groundwater is the default value for the IEUBK Model and represents a nation-wide average of lead in drinking water. In 1993, when the Part 201 residential lead criteria were developed, it was believed that 4 µg/L was a reasonable statewide average for lead in drinking water. Under certain circumstances, groundwater lead concentrations up to 15 µg/L may be allowed under Part 201 as long as soil lead concentrations are appropriately less than 400 mg/kg. These acceptable combinations of higher drinking water concentrations and lower soil concentrations may be allowed as a site-specific remedy.

Blood Lead Intervention Level: The MDEQ administers environmental protection programs that are focused on preventing exposures that have the potential to cause adverse human health effects. One of the objectives of these programs is to prevent adverse health effects from exposure to environmental contaminants. This means that acceptable concentration standards are set at levels below which adverse health effects are expected to occur.

Unlike the MDEQ prevention programs, there are programs in other agencies in which the primary focus is on public health monitoring and intervention. These programs identify where unacceptable exposures or health impacts have occurred or are likely to occur and take action to limit or halt those exposures. Examples of agencies with programs that take such actions are MDCH, the CDC, and the Agency for Toxic Substances and Disease Registry (ATSDR). Intervention levels, unlike prevention standards, may be set at concentrations at which adverse health effects are known to occur.

Currently most environmental agencies have used the CDC blood intervention level of 10 µg/dL to develop media standards for their public health prevention programs. Some studies suggest that there are adverse health effects in children at blood lead levels less than the current 10 µg/dL blood lead intervention level identified by the CDC (Canfield et al., 2003; Selevan, et al., 2003; Schwartz, 1994; CDC, 1991). The Subcommittee reviewed the literature to determine if the evidence was compelling enough to warrant development of a public health prevention blood lead level different than the current intervention level for the Part 201 DCC. The literature review was limited to articles published from 1990 to the present. The search initially identified seventy-seven articles of potential relevance. After reviewing the abstracts, twenty-nine articles were selected as relevant for review. Although some of these studies produced compelling evidence that cognitive deficits may be occurring at blood levels less than 10 µg/dL, the data did not provide sufficient information to determine an alternate blood lead level at which adverse effects do not occur. Several federal agencies were also contacted to determine if there were any plans to lower the blood lead intervention level or to develop an alternate primary prevention level for lead. All contacts indicated that no such plans were in place at the present time. The

current 10 µg/dL blood lead intervention level was set by the CDC in 1991. The CDC does not plan at this time to change this intervention level (Brown, 2003).

The identification of an appropriate acceptable blood lead primary prevention level would be preferred for use in the IEUBK Model. However, since there is not adequate data at this time to develop a prevention level, the current CDC intervention blood lead level has been employed to quantify risk using the IEUBK Model. The U.S. EPA and the MDEQ have established an acceptable risk level based on a percentage of children predicted to exceed the CDC's blood lead intervention level. For example, the IEUBK Model requires the use of model default media concentrations (air, food, water, and soil) or the selection of site-specific media concentrations. The IEUBK Model predicts 5 percent or less of children will exceed the CDC blood lead intervention level of 10 µg/dL when using a drinking water concentration of 4 µg/L simultaneously with a soil concentration of 400 mg/kg as inputs to the model. Five percent represents the percentage of children expected to exceed the 10 µg/dL blood lead intervention level and is identified as the estimated risk level accepted by the U.S. EPA and the MDEQ.

Michigan-Specific Drinking Water Data: The model default drinking water concentration of 4 µg/L represents a nationwide average. This default was considered a reasonable statewide average back in 1993 when the criteria were first generated. To confirm that 4 µg/L remains a reasonable statewide average, public water supply monitoring data from the MDEQ's Water Division were obtained and evaluated. The data consisted of 6,329 records from public water supplies in Michigan for the time period 1992-2003. Each record consisted of the county, the name of the water supply, the date the samples were taken, the number of samples, the 90th percentile and average of those samples, and the maximum value. Individual sample results were not available.

Table 1 presents the statewide averages calculated by averaging the averages identified for a record. These averages are not weighted in any way to reflect the numbers of people using a particular water supply. Some records are for very large municipal water supplies (such as Detroit) while others are for small populations such as a training school or a condominium complex. In addition, these data are only for public water supplies and do not include drinking water from private wells.

The Subcommittee also considered those water supplies that had elevated concentrations of lead, yet were still in compliance with the state action level of 15 µg/L. (The state drinking water action level is different from the traditional federal MCL (maximum contaminant level) or state drinking water standard in that it is actually a treatment technology-based action level. If the ninetieth percentile lead level is greater than 15 µg/L in tap water samples collected during a monitoring period, the water supplier is required to implement the water treatment requirements specified in the MI Safe Drinking Water Rules.) There were 1,964 records for 2000-2003; of these, 118 had 90th percentile values between 10 and 15.4 µg/L; the total average for their related averages is 6.94 µg/L. Of the 736 records from 2002-2003, 47 had 90th percentiles between 10 and 15.4 µg/L; the average of the averages for these 47 records is 5.94 µg/L. The top ten of the water supplies having the highest average lead concentrations still in compliance with the action level of 15 µg/L (as a 90th percentile) are presented in Table 2.

It appears that a statewide average concentration for lead is approximately 2 µg/L (not weighted). The issue of using an average value to represent drinking water exposures should be discussed further in light of the fact that the drinking water data is not weighted to represent the number of people using a particular water supply and concerns about people being exposed to concentrations higher than the average value. Further clarification on the state drinking water action level/standard is also warranted.

The evaluation of lead drinking water concentrations discussed above only included public water supply systems. Private water systems may also have lead solder or lead pipe sources in their distribution systems resulting in lead drinking water concentrations above the current Part 201 DWC. The frequency of detection of groundwater lead concentrations between 4 µg/L and 15 µg/L should be evaluated and consideration given to controlling drinking water exposures between 4 µg/L and 15 µg/L. This may include evaluating whether the 15 µg/L lead action level is a drinking water standard subject to section 324.20120a(5) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended.

Table 1. Statewide average lead (Pb) drinking water concentrations.

Year Data Collected	Pb concentration (µg/L)
1992-2003	2.84
2000-2003	2.12
2002-2003	2.08

Table 2. Ten highest average¹ lead concentrations of public water supply systems meeting the federal action level of 15 µg/L (as the 90th percentile) in Michigan from 2002-2003.

County	System Name	Year Data Collected	Average Pb Concentration (µg/L)
Lenawee	Riga Township	2003	11.3
Muskegon	Blue Lake Cooperative	2002	10
Pentwater	Oceana	2003	9
Oakland	Oak Park	2002	8.7
Kent	Cumberland Manor	2002	8
Berrien	Lakeland Medical Center-Berrien Center	2002	8
Ingham	VFW National Home	2002	7.8
Lenawee	Riga Township	2002	7.6
Emmet	Crooked River Apartments	2003	7.6
Lenawee	Riga Township	2002	7.6

¹Average values represent the average of the measured levels for the system and the specified year. Listed are the 10 highest average levels for systems which were meeting the federal action level.

United States (U.S.) and Canadian Lead Standards: The Subcommittee surveyed residential soil lead standards from several states and Canada. These results are presented in Table 3. Analysis of the basis of U.S. and Canadian-specific standards is considered beyond the scope of the Subcommittee’s directive; however, further evaluation of state-specific soil lead standards is recommended.

Table 3. Residential soil lead standards for various states and Canada.

State/Country	Soil Residential Lead Standard/Screening Level (mg/kg)	Basis for Lead Standard
U.S. EPA	400	The IEUBK Model was used to generate this screening level.
California	Varies	Site-specific calculation.
Illinois	400	This standard has been set for lead based on <i>Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities</i> , OSWER Directive #9355.4-12.
Indiana	400	The 1994 IEUBK Model was used to derive this standard.
Massachusetts	300	Not available.
Minnesota	400	U.S. EPA lead residential soil screening level.
New Jersey	400	Standard based on the IEUBK Model; model defaults were used.
Ohio	245	The IEUBK Model was used to generate this standard. The subcommittee was unable to determine which version of the model was used. A drinking water lead concentration of 5 µg/L was also used.
Wisconsin	50	This standard was derived by applying a 20% multiple source safety factor to the 250 mg/kg soil lead standard using the IEUBK model and 15 ug/L as the drinking water lead concentration.
Canada	140	The IEUBK Model was not used to derive this standard. This standard is based on a provisional tolerable daily intake from the World Health Organization.

IEUBK Model: The Subcommittee found that the version of the IEUBK Model (version 0.5) used to generate the current Part 201 criteria for lead is now out-of-date. The IEUBK Model has been updated several times since the development of the current lead criteria. It was decided that the most current version of the IEUBK Model should be used to regenerate the lead criteria. A discussion of the IEUBK Model and the model runs conducted by the Subcommittee are presented below.

The latest version of the IEUBK Model (win v.1.0 build 255) is used to predict the blood lead concentrations for children between 6 months and 7 years of age who have been exposed to lead through various media (air, water, soil, dust, and diet). The model incorporates information on exposure, uptake, and biokinetics to predict blood lead concentrations as a probability distribution.

The model provides default values for all media. Site-specific data may be used for a site-specific analysis. It should be noted that the model default values do not account for exposures to lead based interior paint.

The default values for dietary intake in the IEUBK Model represent intakes for a typical child in a typical setting after 1990 (U.S. EPA, 1994). The U.S. EPA's Technical Review Workgroup for Lead (TRW) recently conducted an analysis to determine if the default intake values should be updated using more recent data on the concentration of lead found in food. The results of the analysis showed that the updated estimates for the dietary lead concentration were significantly lower than the IEUBK default values. The effect of the decrease in dietary lead intake on the geometric mean blood lead concentration may be sufficient to affect risk management decisions at a site. The new dietary intake values have not yet been incorporated into the IEUBK Model as default values. The Subcommittee contacted members of the TRW and their consultant and was told that it would be appropriate to incorporate the new dietary intake values into our model runs (Van Leeuwen, 2003; Follansbee, 2003).

The Subcommittee ran the IEUBK Model utilizing the scenarios below:

1. Regenerate the Part 201 criterion using the most recent version of the IEUBK Model (win v.1.0 build 255); and 1) all model defaults, or 2) using model defaults and the updated dietary intake values. This would estimate the amount of lead in soil that results in 5 percent or less of children exceeding the 10 $\mu\text{g}/\text{dl}$ blood lead intervention level. Refer to Table 4.
2. Use the most recent version of the IEUBK Model (win v.1.0 build 255) along with updated dietary intake levels to determine what soil lead levels would be associated with a 5 percent risk level if the drinking water lead level varied from 1 $\mu\text{g}/\text{L}$ to 15 $\mu\text{g}/\text{L}$ (this represents the federal action level for lead in drinking water). Michigan-specific data were used for the air lead concentration. This would estimate the maximum level of lead in soil that would ensure that the percentage of children with blood lead levels higher than the 10 $\mu\text{g}/\text{L}$ blood lead intervention level is 5 percent or less. Refer to Table 5.

- Use the most recent version of the IEUBK Model (win v.1.0 build 255) along with updated dietary intake levels to determine what risk levels would be associated with a soil lead level of 400 mg/kg if drinking water lead levels varied from 2 µg/L to 11 µg/L (11 µg/L represents the highest average lead concentration measured in a Michigan public water supply system from 2002-2003 that complied with the federal action level; see Table 2). This would estimate the percentage of children exceeding the blood lead level of 10 µg/dL when drinking water lead concentrations are indicative of levels found in public water supply systems in Michigan. Refer to Table 6.

Table 4. IEUBK Model (win v.1.0 build 255) runs¹ comparing model default dietary lead intake levels with the updated dietary exposure levels².

Amount of lead in the soil (mg/kg)	Dietary lead intake	Percent of children exceeding the blood lead intervention level of 10 µg/dL (5% is the acceptable risk level)	Explanation
341	Model default values	5.0	341 mg/kg of lead in the soil would result in 5% of children exceeding the blood lead intervention level of 10 µg/dL when the model default dietary lead intake values are used.
400	Model default values	7.6	If the soil criterion were to remain at 400 mg/kg, approximately 8% of children would exceed the blood lead intervention level of 10 µg/dL when model default dietary lead intake levels are used.
400	Updated values	5.0	400 mg/kg of lead in the soil would result in 5% of children exceeding the blood lead intervention level of 10 µg/dL when the new dietary intake levels are used.

¹Model defaults were used for all parameters except for dietary lead intake where noted.

²The U.S. EPA TRW lead website (<http://www.epa.gov/superfund/programs/lead/ieubkfaq.htm#fda>) indicates that updated dietary lead exposure levels may be used in place of the current model defaults. The appropriateness of doing so in the present initiative was confirmed by personal communications (Van Leeuwen, 2003; Follansbee, 2003). The updated data are based on more recent food residue studies. It should also be noted that there are uncertainties associated with the updated data, as with the older data. Uncertainties with the updated data include analytical issues (some data were less than the detection limits), the data sources had to be merged even though they did not have identical food groupings, and they had to be matched to the IEUBK food categories for consumption rates. The above updated dietary exposures were derived by substituting ½ the quantitation limit for data which were below quantitation limits, and “trace” data were not adjusted (U.S. EPA FAQs, 2003).

Table 5. IEUBK Model¹ runs showing various drinking water concentrations and soil lead levels associated with 5% of children exceeding the blood lead intervention level of 10 µg/dL.

Amount of lead in the soil (mg/kg)	Amount of lead in the drinking water (µg/L) (model default = 4 µg/L)	Percent of children exceeding the blood lead intervention level of 10 µg/dL (5% is the acceptable risk level)
316	15	5.0
324	14	5.0
333	13	5.0
341	12	5.0
350	11	5.0
358	10	5.0
366	9	5.0
375	8	5.0
383	7	5.0
391	6	5.0
400	5	5.0
409	4	5.0
417	3	5.0
426	2	5.0
434	1	5.0

¹Updated dietary intake levels were used. Michigan-specific value of µg/m³ was used for ambient air lead concentration (MDEQ, 2002). The ambient air value of 0.01 µg/m³ is fairly representative for most of Michigan, with the exception of the Detroit area which is closer to 0.02 µg/m³. Since the model results are very insensitive to the difference between 0.01 µg/m³ and 0.02 µg/m³, it was decided to use the statewide value of 0.01 µg/m³.

Table 6. IEUBK Model¹ run showing the percent of children exceeding the blood lead intervention level of 10 µg/dL when the drinking water lead concentration is different from the model default value of 4 µg/L.

Amount of lead in the soil (mg/kg)	Amount of lead in the drinking water (µg/L) (model default = 4 µg/L)	Percent of children exceeding the blood lead intervention level of 10 µg/dL (5% is the acceptable risk level)
400	11	7.2
400	10	6.8
400	9	6.4
400	8	6.0
400	7	5.7
400	6	5.3
400	5	5.0
400	4	4.7
400	3	4.4
400	2	4.1

¹Updated dietary intake levels were used. Michigan-specific value of 0.01 µg/m³ was used for ambient air lead concentration (MDEQ, 2002). The ambient air value of 0.01 µg/m³ is fairly representative for most of Michigan, with the exception of the Detroit area which is closer to 0.02 µg/m³. Since the model results are very insensitive to the difference between 0.01 µg/m³ and 0.02 µg/m³, it was decided to use the value of 0.01 µg/m³.

Soil Analyses and Sampling: Soil sampling for lead within the MDEQ has been conducted almost exclusively using total soil sample analysis. Recent evidence indicates, however, that the lead concentration contained in the fine soil particle fraction of the total soil sample is most relevant for risk assessment purposes and more appropriate for comparison to the Part 201 soil DCC. A recent U.S. EPA guidance document (U.S. EPA, 2000) recommended sampling the fine fraction for risk assessment purposes. The Subcommittee was charged with evaluating and determining the most appropriate method of soil sampling based on these recent developments.

The TRW is an interoffice work group convened by the U.S. EPA Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response (OSWER/OERR). Its goal is to support and promote consistent application of the best science in the field of lead (Pb) risk assessment at contaminated sites nationwide. The Subcommittee supports the TRW's "Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites" (U.S. EPA, 2000). The TRW's recommendation is to sample the fine soil fraction (<250 µm or microns) because this is considered the most relevant portion of the soil for assessing the current risk from exposure by incidental soil ingestion, which is considered the major pathway of exposure to lead in soil and dust. This statement is based upon the assumption that ingested soil and dust lead is best represented by the lead concentration in the particle size fraction that sticks to hands or that is most likely to accumulate in the indoor environment as a result of deposition of wind-blown soil and transport of soil on clothes, shoes, pets, toys, and other objects. The TRW cites several studies indicating that the particle size fraction of soil and dust that sticks to hands or is most likely to accumulate in the indoor environment is the fine fraction, and that a reasonable upper bound for this size fraction is 250 µm.

The fine soil fraction is also the preferred concentration input value for the IEUBK Model which is used to generate the residential soil DCC for lead. In addition, lead data from the fine soil fraction were used to calibrate the IEUBK Model (Hogan et. al, 1998) and in characterizing the bioavailability of lead from soil.

Influence of Particle Size: Facility-specific data of soil lead concentrations from both total soil samples and the fine fraction samples are limited. Several studies have, however, documented the potential enrichment of lead in soil and urban street dust as particle size decreases (Biggins and Harrison, 1980; Fergusson *et al.*, 1980; Hopke *et al.*, 1980; Linton et al., 1980; Spittler and Feder, 1980; Franz and Hadley, 1981; Rodriquez-Flores and Rodriquez-Castellon, 1982; Fergusson and Ryan, 1984; Rundel, 1984; and Kitsa *et al.*, 1992). Results of these studies show a trend of increasing lead concentration as particle size decreases, regardless of site-specific differences in absolute lead concentration. Further, ongoing studies at the University of Cincinnati (Roda, unpublished data) found that variability in sample results increased when samples were sieved at 500 microns or greater, such that replicate analysis of sample aliquots produced lead results exceeding a 25 percent relative difference. These data suggest that fine fraction analysis (<250 micron) may be more appropriate due to the high variability and imprecision of results when analyzing larger fractions. This finding may have implications on the interpretation and application of historic lead data obtained via total soil sampling analysis. It is the recommendation of the Subcommittee that these implications are further evaluated and addressed.

Soil sampling results from a former small arms firing range in Oscoda, Michigan (Montgomery Watson, 2001) are shown in Table 7.

Table 7: Total versus fine fraction soil data for lead at a Michigan small arms firing range.

Soil Sample	Lead Concentration in the Fine Fraction (mg/kg)	Lead Concentration in the Total Soil (mg/kg)	Total/Fine Ratio
1	1400	684	0.49
2	3890	5520	1.34
3	1020¹	392	0.38
4	6180	9650	1.56
5	791	227	0.29
6	114	72.7	0.64
7	1260	583	0.46
8	1620	994	0.61
9	1260	1250	0.99
10	527	195	0.37
11 (confirmation sample)	1130	3.4	0.003
12 (confirmation sample)	457	46.9	0.10

¹Bolded numbering indicates sample concentrations that exceed the current MDEQ residential DCC for lead of 400 mg/kg in the fine fraction but do not exceed in the total soil.

A general trend of increased concentration in the fine fraction is demonstrated in these small arms firing range soil data. Of particular concern, are the samples in which fine fraction results exceed the current residential DCC for lead but total results do not (see bolded values). Remedial action requirements, therefore, would differ depending on the fraction of soil analyzed (total versus fine fraction) and may not be stringent enough for protection of human health if based specifically on total sample results. These data also demonstrate the variability of the results and the difficulty in establishing trends in total versus fine fraction data. Caution must be exercised in interpreting such data, particularly if attempting to estimate fine fraction concentrations from total concentration data. Staff should refer to the TRW recommendations (U.S. EPA, 2000) for appropriate methods of extrapolation.

The IEUBK Model (win v.1.0 build 255) was utilized to demonstrate the degree of change in blood lead levels resulting from incremental changes in soil lead concentration. These model runs are presented in Table 8.

Table 8: IEUBK Model¹ run showing the percent of children exceeding the blood lead intervention level of 10 µg/dL as soil lead concentration changes.

Amount of Lead in the Soil (mg/kg)	Percent of children exceeding the blood lead intervention level of 10 µg/dL (5% is the maximum acceptable risk level)
390	4.3
400	4.7
410	5.1
420	5.5
430	5.9
440	6.3

¹Updated dietary intake levels were used. Michigan-specific value of 0.01 µg/m³ was used for ambient air lead concentration (MDEQ, 2002). The ambient air value of 0.01 µg/m³ is fairly representative for most of Michigan, with the exception of the Detroit area which is closer to 0.02 µg/m³. Since the model results are very insensitive to the difference between 0.01 µg/m³ and 0.02 µg/m³, it was decided to use the value of 0.01 µg/m³. The drinking water lead level was set at 4 ug/L for all model runs.

Table 8 demonstrates that the model is fairly sensitive to 10 mg/kg incremental changes in soil lead concentration when all other input parameters (default and non-default) remain fixed. Changes within 20 mg/kg may cause the estimated percentage of children exceeding the blood lead intervention level of 10 ug/dL to increase above the acceptable risk level of 5 percent. This finding is significant considering the magnitude of difference between the fine fraction and total soil sample results presented in Table 7.

Summary of Findings

Blood Lead Intervention Level: The Subcommittee contacted the CDC to determine if there were any plans to lower the 10 µg/dL blood lead intervention level for lead which was set by the CDC in 1991. The CDC does not plan to change this intervention level in the near future (Brown, 2003).

IEUBK Model: The most recent version of the IEUBK Model (win v.1.0 build 255) was used to regenerate the Part 201 drinking water and soil direct contact criteria. The IEUBK Model was run using the model default dietary intake values as well as the new dietary intake values. When using the updated dietary intake values and a drinking water concentration of 4 µg/L, a soil lead concentration of 400 mg/kg protects approximately 95 percent of the exposed population, i.e., 5 percent of the exposed children have blood lead levels exceeding 10 µg/dL. These IEUBK model runs assumed no exposures associated with lead-based paint.

Michigan-Specific Drinking Water Data: Public water supply data from the MDEQ Water Division were evaluated. While lead levels in Michigan drinking water have decreased from 1992, there are some Michigan public water supply systems that have levels of lead in the drinking water that are higher than the nationwide average of 4 µg/L. Further consideration of drinking water exposures is warranted. See previous discussion.

Soil Sampling and Analyses: Results for lead soil concentrations in both the total and fine soil fractions are needed to assess direct contact exposures to lead and plan for cleanup activities. Lead data from the fine soil fraction are preferred since the fine fraction is considered to be the primary source of ingested soil and dust. In order to understand the relationship between the lead concentrations in the total soil sample and the fine fraction, data from both or from the fine and coarse fraction are needed. This information will then allow us to interpret historical soil data where only total soil concentrations are available.

Recommendations

The CDC intervention level of 10 µg/dL is used to derive the Part 201 DWC and soil DCC. Some scientific data suggest that irreversible health effects occur in young children at blood lead levels below the CDC level. As a result, the subcommittee has determined that the current Part 201 DWC and soil DCC for lead may not be protective. At this time, the Subcommittee is not able to make a recommendation for a preventative blood lead level for use in the MDEQ's cleanup program because data are insufficient to develop a blood lead level at which adverse health effects are not expected to occur. The subcommittee recommends that they further explore the recent and any new scientific literature related to blood lead levels and health impacts in children to determine if a more appropriate preventative blood level can be derived. If the data are insufficient to do so, the subcommittee will explore and consider other options to revise the criteria such that they will be adequately protective.

The issue of lead in drinking water also needs to be explored further to address exposures occurring at concentrations greater than average concentrations in drinking water. The frequency at which groundwater lead concentrations fall within the range of 4 µg/L and 15 µg/L should be evaluated. In addition, the Subcommittee recommends that appropriate DEQ personnel determine whether the 15 µg/L lead action level is a State Drinking Water Standard that should be adopted as the DWC for lead under section 324.20120a(5) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended.

Soil Sampling and Analyses: The Subcommittee supports the TRW's recommendation to assess lead exposures based on concentrations in the fine soil fraction (<250 microns) since this is the most relevant and appropriate portion of the soil for analysis of the incidental soil ingestion exposure pathway.

The Subcommittee recommends that the MDEQ establish a database with information regarding lead levels in soils at Michigan sites with emphasis on the lead levels in specific fractions of the soils. Initially, both the total and fine fractions of soils collected for lead analyses should be analyzed to populate the database with relevant information. Further guidance should be developed by the MDEQ detailing how soils should be sampled for comparison to the soil DCC.

*Prepared by: Toxics Steering Group Lead Subcommittee
Michigan Department of Environmental Quality
January 21, 2004*

REFERENCES

- Biggins, P.D.E., and R.M. Harrison. 1980. Chemical speciation of lead compounds in street dust. *Environ. Sci. Technol.*, **14**: 336-39. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.
- Brown, M.J. 2003. Personal Communications with Dr. Mary Jean Brown, Chief of the Lead Poisoning Protection Branch of the CDC National Center for Environmental Health.
- Canfield, R.L., C. R. Henderson, Jr., D.A. Cory-Slechta, C. Cox, T. A. Jusko, and B. P. Lanphear. 2003. Intellectual impairment in children with blood lead concentrations below 10 ug per deciliter. *N Engl J Med*, **348** (16): 1517-1526.
- Centers for Disease Control and Prevention. 1991. Preventing lead poisoning in young children: A statement by the Centers for Disease Control and Prevention. U.S. Department of Health and Human Services. October 1991.
- Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.
- Fergusson, J.E., R.W. Hayes, T.S. Yong, and S.H. Thiew. 1980. Heavy metal pollution by traffic in Christchurch New Zealand: Lead and cadmium content of dust, soil, and plant samples. *New Zealand Journal of Science*, **23**: 293-310. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.
- Fergusson, J.E., and D.E. Ryan. 1984. The elemental composition of street dust from large and small urban areas related to city type, source, and particle size. *Sci. Total Environ.*, **34**: 101-116.
- Follensbee, M. 2003. Personal communications with Dr. Mark Follansbee, Toxicologist, Syracuse Research Corporation, support contractor for the U.S. EPA on IEUBK modeling and TRW activities. Including verbal contacts and written correspondence dated 12/16/03 and 11/14/03.
- Franz, D.A., and W.M. Hadley. 1981. Lead in Albuquerque street dirt and the effect of kerb paint. *Bull. Environ. Contam. Toxicol.*, **27**: 353-358. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.
- Hogan, K., Marcus, A., Smith, R. and White, P. 1998. Integrated exposure uptake biokinetic model for lead in children: empirical comparisons with epidemiologic data. *Environ. Health Perspect.*, **106 Suppl. 6**: 1557-67.

Hopke, P.K., R.E. Lamb, and D.F.S. Natusch. 1980. Multi-elemental characterization of urban motorway dust. *Environ. Sci. Technol.*, **14**: 164-72. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.

Kitsa, V., P.J. Liroy, J.C. Chow, J.G. Watson, S. Shupack, T. Howell, and P. Sanders. 1992. Particulate size distribution of chromium: Total and hexavalent chromium in inspirable, thoracic, and respirable soil particles from contaminated sites in New Jersey. *J. Aerosol Sci. Tech.* **17**, 213-229.

Linton, R.W., D.F.S. Natusch, R.I. Solomon, and C.A. Evans. 1980. Physiochemical characterization of lead in urban dusts. *Environ. Sci. Technol.*, **14**: 159-164. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.

MDEQ. 2002. 2002 Annual Air Quality Report. MDEQ Air Quality Division.

Montgomery Watson, Inc. 2001. Final Remedial Action Completion Report for Small Arms Firing Range Remedial Action: Wurtsmith Air Force Base, Oscoda Michigan. October 2001. On file with the Michigan Department of Environmental Quality, Waste and Hazardous Materials Division.

Roda, S. 2003. Personal communications with Dr. Sandry Roda, University of Cincinnati, including verbal contacts and written correspondence dated 1/7/04.

Rodriquez-Flores, M., and E. Rodriquez-Castellon. 1982. Lead and cadmium levels in soil and plants near highways and their correlation with traffic density. *Environ. Pollut. (Ser B)*, **4**: 281-290. As cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.

Rundle, S.A. 1984. The variation of the concentration of lead in dust with particle size. Scientific Services Branch, Greater London Council, London, U.K., Report DG/SSB/ESD/R159, as cited in: Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.

Schwartz, J. 1994. Low-level lead exposure and children's IQ: A meta-analysis and search for a threshold. *Env Res* **65**:42-55.

Selevan, S. D. Rice, K. Hogan, S. Euling, A. Pfahles-Hutchens, and J. Bethel. 2003. Blood lead concentration and delayed puberty in girls. *N Engl J Med* **348**:1527-1536.

- Spittler T.M., and W.A. Feder. 1980. A study of soil contamination and plant lead uptake in Boston urban gardens. *Commun. Soil Sci. Plant. Anal.*, **10**: 1195-1210. As cited in:
Duggan, M.J., and M.J. Inskip. 1985. Childhood exposure to lead in surface dust and soil: A community health problem. *Sci. Total. Environ.*, **44**: 65-79.
- State of Michigan. 2003. Childhood Lead Poisoning Prevention: A Call to Action. July 2003.
- U.S. EPA. FAQs. 2003. Technical Review Workgroup (TRW) for Lead. Frequently Asked Questions (FAQs). <http://www.epa.gov/superfund/programs/lead/products.htm>
- U.S. EPA. 2000. Short Sheet: TRW Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites. EPA #540-F-00-010. OSWER #9285.7-38. April 2000.
- U.S. EPA. 1994. Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children. EPA/540/R-93/081 PB93-963510, (February 1994).
- Van Leeuwen, P. 2003. Personal communications with Patricia Van Leeuwen, U.S. EPA Region 5, member of the TRW for lead, including verbal contacts and written correspondence dated 12/09/03.

ATTACHMENT G

List of Task Force and Subcommittee Participants

CHILDHOOD LEAD POISONING TASK FORCE AND SUBCOMMITTEE MEMBERSHIP

Kimberlydawn Wisdom, Surgeon General of Michigan - Task Force Co-chair

Kanta Bhambhani, Associate Professor of Pediatrics, Wayne State University - Task Force Co-chair

Jennifer Acevedo	Michigan Department of Environmental Quality
David Allen	Lighthouse Communities
Judy Ansuini	Family Independence Agency
James Applegate	Michigan Academy of Family Practice
Tina Barnikow	Priority Health
Charles Barone	Henry Ford Health System
Ann Batdorf-Barnes	Parent
Jean Becker	American MENSA
Lester Berman	US Department of Housing and Urban Development
Mark Bertler	Michigan Association for Local Public Health
Jamie Blumke	Field Neurosciences Institute
Kimberly Bowman	Legislative Director
Angie Bradshaw	Professional Services Industries, Inc.
Kimberly Brosky	Office of the Governor
Glenn Brown	Michigan Lead-Safe Partnership
Alex Burke	Advanced Home Investments
Bryan Burke	American Academy of Pediatrics
Amy Butler	Michigan Department of Environmental Quality
Brindley Byrd	Qx2, Inc.
Michael Byrne	Senate Democratic Caucus
Deborah Canja	Bridges 4Kids
Roselyn Chaffin	Michigan 4C Association
Sue Charette	Healthy Homes = Healthy Kids
Karen Chou	Michigan State University, Department of Animal Science
Elaine Clapp	Michigan Occupational Safety and Health Administration
John Clay	Dearborn Public Schools
The Honorable Hansen Clarke	Michigan State Senate
Rosene Cobbs	Michigan State University, Extension Services
Kathy Cole	Delta-Menominee District Health Department
Stephanie Cole	Kalamazoo County Human Services
John Connell	US Environmental Protection Agency
Scott Cooper	US Environmental Protection Agency
Jan Coye	Michigan Nurses Association
Vince Daniel	Washtenaw County Environmental Health
Deborah Darling	Michigan State University, Institute for Health Care Studies
David Dempsey	Michigan Environmental Council
Jean Doss	Capital Services, Inc
Joan Dyer	Kent County Health Department
Antoinette Dzedzic	Michigan Public Health Association
Ihuoma Eneli	Michigan State University
Monty Fakhouri	Arab-American and Chaldean Council
Douglas Farquhar	National Conference of State Legislators
David Finkbiner	Michigan Health and Hospital Association
Richard Fleece	Washtenaw County Health Department

Vanessa Fluker	Attorney
Gwendolyn Franklin	City of Detroit Health Department
Wilhelmina Giblin	Wayne County Health Department
Nancy Gill	Oakland County Health Department
Robert Goodman	Blue Care Network
Stanley Gorzinski	Field Neurosciences Institute
Katricia Gray	City of Detroit Health Department
Julie Griffith	Michigan Osteopathic Association
Paul Haan	Get the Lead Out! Coalition
Deborah Hall-Turner	Physicians Health Plan
Elizabeth Haller	Michigan Department of Education
Adnan Hammad	ACCESS
Gary Heidel	Michigan State Housing Development Authority
James Helmstetter	Genesee County Health Department
Lynn Hermann	Ingham County Health Department
Morris James	Oakland County Health Division
Eric Johnson	Detroit Mayor's Task Force
Spencer Johnson	Michigan Health and Hospital Association
Kathleen Johnston-Calati	Senate Democratic Staff
Stanley Kaplowitz	Michigan State University
Kimberly Kelley-Sutter	Saginaw County Health Department
Mary Ann Keough	Get the Lead Out! Coalition
The Honorable Jerry Kooiman	Michigan House of Representatives
Kim Kovalchick	Michigan Department of Education
Donald Kuchnicki	MICHIGAN WORKS! Association
Michael Kyle	Oakland County Community and Home Improvement Division
Gordon Lambert	Oakland County Community and Home Improvement Division
Patricia Lawton	Department of Environmental Quality
Patrick McCoy	S.L.I.P., Saginaw Coalition
Kristen McDonald-Stone	Head Start
Kurt Metzger	Center for Urban Studies
Dorthea Milbrandt	Michigan Nurses Association
Dana Moon	Detroit Mayor's Task Force
Joseph Moore	Spectrum Health/Healthier Communities
Richard Murdock	Michigan Association of Health Plans
Martha Neilson	Michigan Department of Education
Chris Nelson	Ingham County Health Department
Kathy Newman	Children's Hospital of Michigan, Lead Clinic
Jane Nickert	Wayne County Health Department
Alvin Nunn	City of Ann Arbor
Jacob Nysson	Senate Democratic Caucus
David O'Leary, Jr.	O'Leary Paint Manufacturing
Lisa Oliver-King	Unlimited Outcomes
William Parker	Michigan State Housing Development Authority
Sharon Parks	Michigan League for Human Services
E. Sue Parrish	North American Indian Association
Nancy Pattison	Prism Pediatrics
Pamela Paul-Shaheen	Office of the Governor
Richard Pennings	Michigan State Housing Development Authority
Harry Perlstadt	Michigan State University

Sharon Peters	Michigan's Children
Heather Picotte	Michigan Osteopathic Association
Penny Pierce	Barry-Eaton District Health Department
Clay Powell	Rental Property Owner's Association
Deborah Pratt	S.L.I.P. Saginaw Coalition
Pamela Pugh	Saginaw County Health Department
Conrad Reno	City of Detroit
Evelyn Reinke	Oakland County Health Division
William Ridella	City of Detroit Health Department
Darrell Rodgers	Detroit Public Schools
Nina Rodriguez	Southwest Housing Corporation
Burt Russell	PSI, Inc.
Margaret Sauser	United Parents Against Lead of Michigan
Mary Sue Schottenfels	ClearCorps of Detroit
Jane Schneider	District Health Department #10
Phillip Schrantz	Michigan Department of Environmental Quality
Kate Segal	House Democratic Policy Staff
Paul Shaheen	Michigan Council for Maternal and Child Health
Christine Shearer	Michigan Association of Health Plans
M. Gail Shebuski	Western Upper Peninsula District Health Department
Karen Shirer	Michigan State University Extension Services
Tawyna Simon	Saginaw County Health Department
Kenneth Slater	Clinton-Eaton-Ingham Community Mental Health
Barbara Smith	QUAT, Inc.
Paulette Smith	Michigan State Housing Development Authority
Sherita Smith	Detroiters Working for Environmental Justice
Toni Stevenson	Michigan Nurses Association
Kathleen Straus	State Board of Education
Christopher Stuchell	Lansing Housing Authority
Maryann Suero	US Environmental Protection Agency
J. Mark Sullivan	Michigan 4C Association
Marlene Swift	City of Detroit Health Department
Sharon Swindell	Ypsilanti Pediatrics
James Sygo	Michigan Department of Environmental Quality
Jeffrey Taylor	Michigan Public Health Institute
Kerstin Thayer	United Parents Against Lead of Michigan
Lyke Thompson	Wayne State University
Mary Thompson	Michigan Public Health Institute
Elizabeth Toomer	Detroiters Working for Environmental Justice
David Turpin	US Environmental Protection Agency
Ron VanZee	Ferris Development
Felicia Venable	Environmental Health and Safety
Jannie Warren	City of Detroit Planning and Development
Suzanne White	Children's Hospital of Michigan
The Honorable Carl Williams	Michigan House of Representatives
Douglas Woodard	Michigan State University Extension Services
Hashim Yar	Blue Care Network
Amani Younis	Arab American and Chaldean Council
Jane Zehnder-Merrill	Michigan League for Human Services

Michigan Department of Community Health Staff

Yasmina Bouraoui

Michele Borgialli

Alethia Carr

Kevin Cavanagh

Jean Chabut

Orlene Christie

Ellen Crombie

Frances Pouch Downes

Jeffrey Dupler

Harry Dryer

Linda Dykema

Sue Eby

Renee Ferguson

Brenda Fink

Curtis Hertel, Jr.

Carol Hinkle

Sharon Hudson

Therese Hoyle

Daniel Lince

Amy Miller

Susan Moran

Patricia Morgan

Douglas Paterson

Wesley Priem

Jackie Prokop

Carin Reck

Denise Reinhart

Mary Scoblic

Robert Scott

Martha Stanbury

Mary VandenBosch



*Michigan Department
of Community Health*



Jennifer M. Granholm, Governor
Janet Olszewski, Director

MDCH is an equal opportunity employer,
services and programs provider.

1,000 printed at \$2.15 each with a total cost of \$2,148.11.