Report to
The Vermont Legislature

Lead Poisoning Prevention: Report on 2019 Program Outcomes and Activities

In Accordance with 18 V.S.A. § 1756

Submitted to: **Vermont General Assembly**

Submitted by: **Mark Levine MD, Commissioner of Health**

Prepared by: **Division of Environmental Health**

Report Date: **April 15, 2020**

VERMONT
AGENCY OF HUMAN SERVICES
Department of Health

108 Cherry Street, PO Box 70
Burlington, VT 05402
802.863.7280
healthvermont.gov

Lead Poisoning Prevention:
Report on 2019 Program Outcomes and Activities

Executive Summary

This annual report on the status of childhood lead poisoning prevention is submitted pursuant to 18 V.S.A. § 1756.

The mission of the Vermont Department of Health's Healthy Homes Lead Poisoning Prevention Program (Program) is to improve the health and safety of all Vermont home environments through surveillance, collaboration, education, and implementation of comprehensive policies and coordinated programmatic activities. The Program conducts a variety of lead education and outreach activities that are intended for multiple audiences and designed to prevent lead poisoning, encourage lead screening of 1- and 2-year olds, and support case management for children with elevated blood lead levels.

Vermont has made steady progress in reducing the number of children with blood lead levels at or above 5 micrograms per deciliter (µg/dL). From 2006 through 2019, the percentage of 1- and 2-year olds with blood lead levels greater than or equal to 5 µg/dL declined (1-year olds from 19.4% to 4.2%, and 2-year olds from 22.5% to 3.9%). There were 355 children ages 1 and 2 who had a blood lead level greater than or equal to 5 µg/dL, similar to 362 in 2018. In total, 427 children under the age of 6 had a blood lead level greater than or equal to 5 µg/dL in 2019, similar to 420 in 2018.

Progress increasing the percentage of children tested each year has been mixed. After holding steady at approximately 80% for many years, the percentage of 1-year olds tested each year declined steadily from 82% in 2014 to 75% in 2019. While the percentage of 2-year olds tested increased by almost 30% from 2006 to 2014, there was a sharp decline in 2015. Since then, the percentage of 2-year olds tested has been slowly increasing from 68% in 2015 to 72% in 2019.

For the dollar amount spent by public agencies in Vermont in 2019 to reduce lead hazards and prevent lead poisoning ($2,528,442), the State of Vermont could see a return on investment (ROI) of between $42,983,509 to $558,785,611. This estimate takes into account the national costs of lead hazard control, reduced health care costs, lifetime earnings, tax revenue, special education costs, behavioral disorders, and reduced crime.

In 2020, the Program will continue working with the U.S. Department of Housing and Urban Development (HUD)-funded partners to reduce lead hazards in the homes of lower-income families, increasing Vermont lead law compliance among rental property owners, reaching out to health care professionals to improve screening rates of 1- and 2-year olds, and conducting educational outreach to parents of young children, emphasizing the importance of lead screening. In addition, Vermont will update the Blood Lead Testing, Reporting and Response Rule and lower its definition of an elevated blood lead result from 5 µg/dL to ***any*** reported level. Research highlights that there is no safe level of lead and levels at and below 5 µg/dL still impair development. Therefore, any level of lead in the blood is considered elevated.

Table of Contents

Introduction 4
Measuring Progress 4
Barriers to Universal Screening 7
2019 Education and Outreach Activities 8
Future of Vermont's Healthy Homes Lead Poisoning Prevention Program and Recommendations 9
Estimates of Public and Private Costs 11
Appendix: Statute 12

Lead Poisoning Prevention:
Report on 2019 Program Outcomes and Activities

Introduction

The Vermont Department of Health submits this report on the status of childhood lead poisoning prevention efforts in 2019 pursuant to 18 VSA § 1756. This annual report documents the Department's efforts over the past year to prevent lead poisoning in young children. It presents the latest data on the number and percentage of Vermont children younger than 6 years old who have been tested for lead, with a special focus on 1- and 2-year olds. Historical data on screening rates are also presented. In addition, the report describes 2019 outreach and educational activities intended to improve screening rates and provide estimates of the annual public and private costs incurred in 2019 to prevent lead poisoning.

In 2019, the Healthy Homes Lead Poisoning Prevention Program continued the cooperative agreement with the Centers for Disease Control and Prevention (CDC) for lead poisoning prevention. This funding supports the Program's efforts to improve the health and safety of all Vermont home environments through surveillance, collaboration, education, and implementation of comprehensive policies and coordinated programmatic activities. In addition, the Program finished up the work on three CDC pre-approved projects: developing practice report cards, creating a simplified reporting system for Lead Care II (in-office blood lead testing machines) users, and developing a social marketing campaign for parents of 1- and 2-year olds to encourage blood lead testing.

Measuring Progress

Testing young children for lead in blood is a critical step in the process of reducing the incidence of elevated blood lead levels. A child's exposure to lead can be identified through testing and appropriate interventions, such as lead safe cleaning and repair, can be initiated to prevent further exposure to this harmful toxicant. In addition, testing helps inform the development of lead poisoning prevention policies by giving the Department the opportunity to track statewide trends in childhood exposure to lead.

The Program works toward achieving the goal of universal testing of 1- and 2-year olds in Vermont as currently required (see 2019 Education and Outreach Activities below). Vermont's action level (level at which the Health Department will contact the family to help find lead hazards) is 5 micrograms per deciliter (µg/dL), which is aligned with the current CDC level.

Table 1 presents 2019 data on the number of young children who were tested for lead and the results of those screenings.

Table 1

Blood Lead Tests and Results for Vermont Children ages 0 - <6 years, 2019*

Age	Population	# of Tests	% Tested	# < 5 µg/dL	% < 5 µg/dL	# 5-9 µg/dL	% 5-9 µg/dL	# ≥10 µg/dL	% ≥10 µg/dL
Under 1	5839	152	2.6%	143	94.1%	*	*	*	*
1	5931	4466	75.3%	4279	95.8%	148	3.3%	39	0.9%
2	6047	4359	72.1%	4191	96.1%	136	3.1%	32	0.7%
3	6104	362	5.9%	322	89.0%	29	8.0%	11	3.0%
4	6198	196	3.2%	182	92.9%	11	5.6%	*	*
5	6139	96	1.6%	87	90.6%	*	*	*	*
Total	36258	9631	26.6%	9204	95.6%	336	3.5%	91	0.9%

Notes:

* Indicates fewer than ten cases in a category that year. When counts and percentages are based on only a few cases, it is impossible to distinguish random fluctuation from true changes in data.
Ages: < 1 year: <11 months, 1 year: 11-22.99 months, 2 years: 23-34.99 months, 3 years: 35-46.99 months, 4 years: 47-58.99 months, 5 years: 59-70.99 months.
Population is the average of census estimates or counts from the three previous years (2016, 2017, 2018).
Data include one blood lead test per child by age: the highest venous test result or if there is no venous test, then the capillary test result. This may result in a child having two tests per calendar year. For example, a child may be born in December 2018, have their 1-year old test in January 2019, and then have their 2-year old test in December 2019.

Figure 1

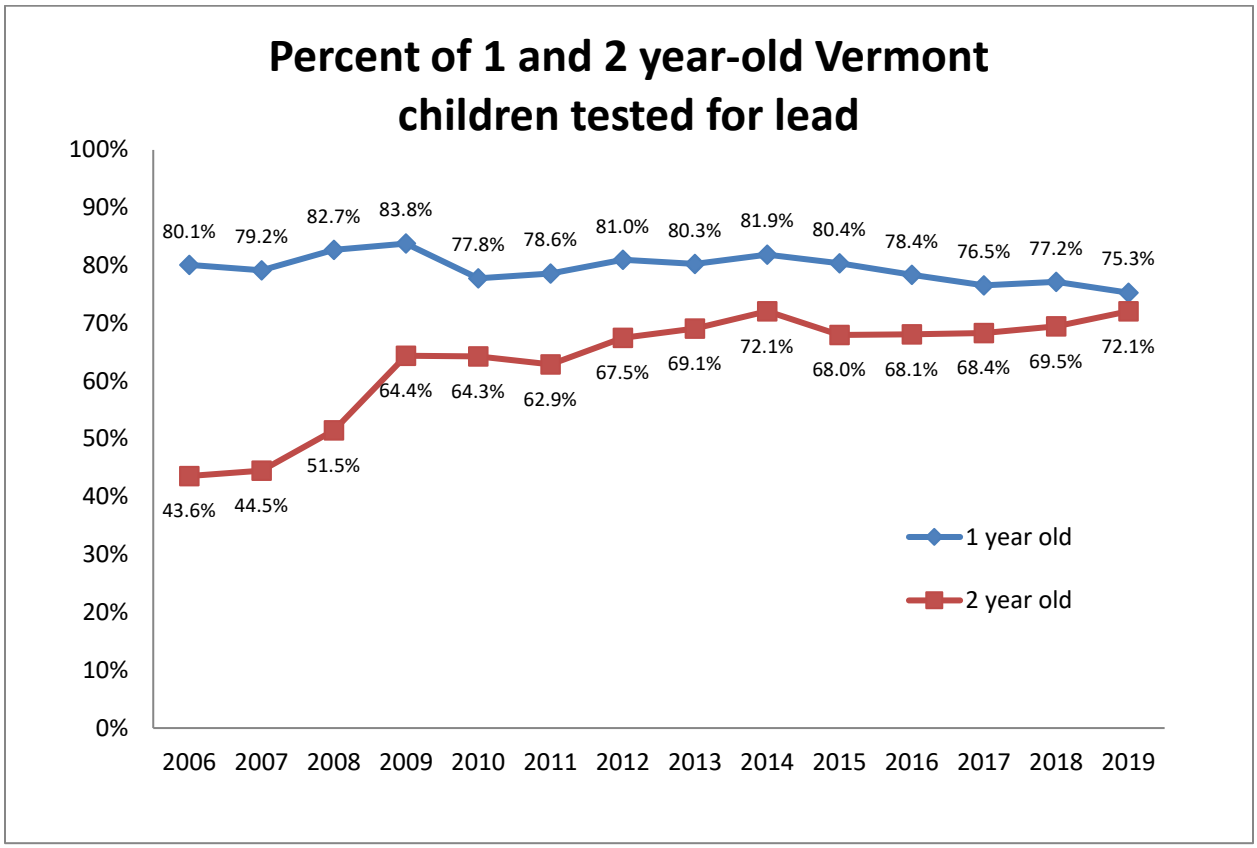

Figure 1 shows the percentage of 1-year olds and the percentage of 2-year olds tested each year from 2006 through 2019. For 1-year olds, about 80% have been tested each year across the time period. However, a steady decrease is observed from 2014 (82%) to 2019 (75%). Statistical analysis indicates that this decrease is statistically significant. For 2-year olds, the percentage tested increased more than 20% between 2006 and 2009. This increase continued until 2014. The percentage of 2-year olds tested has been slowly increasing from 2015 (68%) to 2019 (72%). Statistical analysis indicates that this increase is statistically significant.

Figure 2

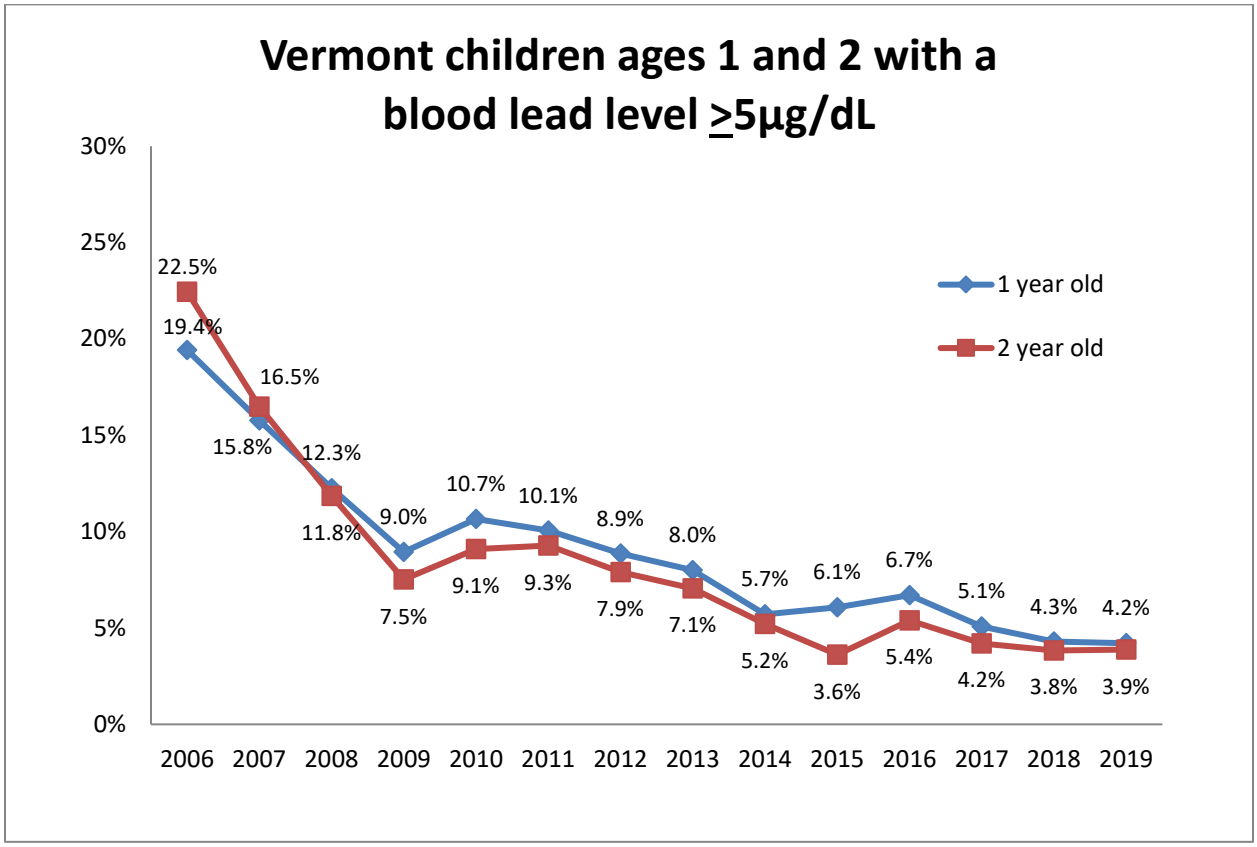

Figure 2 shows the percentage of Vermont 1- and 2-year olds tested who had blood lead levels greater than or equal to 5 µg/dL during the period from 2006 through 2019. This trend shows a decrease in the percentage of 1- and 2-year olds who had elevated blood lead levels.

Barriers to Universal Screening

Lead screening of 1- and 2-year olds is a nationally recognized standard of pediatric care, and Vermont's universal testing requirement is consistent with this standard. There are no immediate signs or symptoms of lead poisoning. Testing is the only way to know if a child has been exposed to lead. Preventing exposure, therefore, is the key to keeping children safe from lead. The Department's efforts to educate Vermonters about the health risks of lead are discussed in the next section.

In the past, a number of barriers to testing requirements have been identified. Health care professionals have indicated that difficulty obtaining blood samples from infants and young children poses a barrier to testing. Health care professionals have also voiced concerns about inadequate cost reimbursement for lead testing and lack of insurance coverage for the procedure. Other barriers have included parental opposition to testing and inaccurate beliefs about who is

and who is not at risk for lead poisoning, especially if the family does not live in a house built prior to 1978. Due to how ubiquitous lead is in our environment, all children are at risk for lead poisoning.

To understand these barriers, the Vermont Child Health Improvement Program (VCHIP), in partnership with the Health Department, created a survey to assess perceived barriers to testing. The survey was sent to all health care professionals in Vermont. Unfortunately, the response was poor. A pediatrician working with VCHIP has contacted several practices to interview them directly and offer individualized peer-to-peer support. These outreach efforts will continue in 2020.

2019 Education and Outreach Activities

The goal of the Program is to reduce lead exposure in children and adults. Outreach and support for health care professionals and education to the public is an integral part of the Program. The Program conducts a variety of lead education and outreach activities intended for multiple audiences and designed to prevent lead poisoning, encourage lead screening of 1- and 2-year olds, and support case management for children with elevated blood lead levels. Below is a sample of activities organized by activity type.

Programmatic Activities and Outreach

- Worked with a marketing firm to develop *How Would You Know?*, a social marketing campaign intended for parents and caregivers of children under 2 years of age to raise awareness about lead poisoning and testing for their children and to increase testing rates. This campaign was successful in getting 5,560 new users to our landing page where they were able to access information on lead poisoning prevention.
- Completed a data update on the Healthy Vermonters 2020 dashboard, which displays the percentage of children ages 1 to 5 with venous blood lead levels in the ranges of 5 to 9 µg/dL and 10 µg/dL and above.
- Conducted outreach during Lead Poisoning Prevention Week (October 20-26, 2019) using the *How Would You Know?* campaign materials and Halloween-themed poster and video. The Department's district offices used these and other materials to conduct additional outreach during the week, which included lobby displays, presentations, social media posts, letters to health care professionals, and posters.
- Worked with HUD-funded partners (Vermont Housing Conservation Board and Burlington Lead Program) to reduce lead hazards in the homes of lower-income families.
- Collaborated with the Division of Alcohol and Drug Abuse Programs (ADAP) to develop and launch a new campaign, *Healthy at Home*. *Healthy at Home* educated Vermonters on simple steps to keeping their home, and everyone in it, healthy and safe. The first phase included the following four messages:
    - Clean up lead dust in your home
    - Be aware of dangerous household chemicals
    - Secure your home against potentially harmful substances
    - Keep your drinking water safe

The video that was developed had 48,906 views, making it the fourth highest viewed Health Department video in 2019.

Targeted Education

- Provided environmental investigations, educational home visits, and follow-ups for 104 families of children with confirmed blood lead levels of 5 µg/dL or greater.
- Mailed 10,359 postcards to families with 10-month-old children and 22-month-old children who were born in Vermont reminding them to have their children tested for lead.
- Mailed 209 packets to families whose children had a blood lead level from 5 µg/dL to 9 µg/dL that include educational materials, follow-up testing recommendations, and a request form for a free dust wipe kit that enables families to test their homes for lead.
- Mailed 46 packets to families whose children had a blood lead level of 10 µg/dL or higher that include educational materials, follow-up testing recommendations, and a request form for a free dust wipe kit that enables families to test their homes for lead.

Screening Outreach

- Continued education to health care professionals via the Department's district offices regarding the need to test children for lead at both 12- and 24-month well-child visits.
- Educated parents at Women, Infants, and Children (WIC) appointments on the importance of getting their children tested for lead.
- Continued back-up lead testing of children at their 18- and/or 30-month WIC appointments who were not tested by their health care professionals at 12 and 24 months.
- Continued to work with the Vermont Chapter of American Academy of Pediatrics under a grant to provide the purchase of in-office blood lead testing machines, known as LeadCare II, for selected pediatric and family practices. The grant supports the purchase of the machines and peer-to-peer education and training with the goal of further reducing known barriers to blood lead screening.
- Continued a project in partnership with the VCHIP to survey health care professionals to determine barriers to testing and to offer peer to peer support and solutions to practices with low testing rates.
- Included information about lead screening in letters sent by the Early and Periodic Screening, Diagnosis and Treatment Program advising parents that age-appropriate screening tests are recommended and covered by Medicaid.
- Developed and disseminated annual practice report on blood lead testing for all medical practices in Vermont who have 20 or more 1- and 2-year-old patients. The goal is to encourage required testing among health care professionals by reporting practice-specific testing rates and providing education and guidance about blood lead testing.

Future of Vermont's Healthy Homes Lead Poisoning Prevention Program and Recommendations

In 2020, the Program will continue work to prevent lead poisoning by making homes safer for children and increasing blood lead testing rates for 1- and 2-year olds through educating parents, providing technical assistance to health care professionals, and enforcing the lead testing rules.

The Program will:

- Update the Blood Lead Testing, Reporting, and Response Rule and lower the State's definition of an elevated blood lead result from 5 µg/dL to ***any*** reported level. In response, the Health Department Laboratory has lowered the blood lead reporting limit to 3 µg/dL. Health care professionals will now receive results below the previous reporting level of 5 µg/dL.
- Continue to provide outreach, conduct environmental investigations, and provide case management to families with children that have confirmed elevated blood lead levels.
- Continue to send reminder postcards with lead testing information to all families whose children were born in Vermont and are ages 10 and 22 months.
- Continue to create and disseminate annual practice reports on blood lead testing for all medical practices in Vermont who have 20 or more 1- and 2-year-old patients. The goal is to encourage required testing among health care professionals by reporting practice-specific testing rates and providing education and guidance about blood lead testing.
- Identify health care professionals who have not been testing 1- and 2-year olds for lead and work with them to increase their testing rates.
- Continue working with VCHIP to initiate more specific individualized opportunities to provide outreach and train health care professionals on the importance of screening and reporting of results.
- Work with VCHIP to provide lead testing expertise to the CHAMP Network providers via the CHAMP Learning Session, dissemination of fact sheets and reports, and additional webinars.
- Compile a comprehensive data report with lead poisoning, screening, case management, and housing information that includes geographic information system (GIS) maps featuring areas of elevated blood lead levels, older housing stock, and low-income status.
- Work with Lead Care II users to improve the accuracy and timeliness of lead test reporting.
- Work with town health officers to identify lead hazards in their communities.
- Maintain and create partnerships with internal and external partners, such as:
    - Vermont Housing and Conservation Board
    - Children's Integrated Services
    - Burlington Lead Program
    - Environmental Public Health Tracking Program
    - Asthma Program
    - Asbestos and Lead Regulatory Program

Estimates of Public and Private Costs

In the public sector, the Program expended an estimated $529,895 in fiscal year 2019. The Vermont Housing and Conservation Board expended about $1,045,580 from HUD for lead poisoning prevention, and the Burlington Lead Program spent an estimated $952,967 in HUD Lead Hazard Control funds. Combined, these organizations spent an estimated $2,528,442 in federal and state funds to reduce lead poisoning in 2019.

A study completed by Dartmouth College as part of the *Get the Lead Out of Vermont* Task Force Report in 2006 estimated direct health care costs of all children with elevated blood lead levels at $51,814 per year and special education costs at $219,841 per year (considered to be an underestimate because they were calculated only for those children with blood lead levels 25 µg/dL or greater).[1] The study also estimated lost future earnings at more than $79 million per year for Vermont children (calculated in 2006 and for children with blood lead levels 5 µg/dL or greater). Screening costs incurred by families, insurers, and health care professionals are not represented in these cost estimates.

Another study on the social and economic benefits of lead hazard control (Gould, 2009[2]) estimated a return of $17 to $221 for every dollar spent on lead hazard control. This would suggest that for the $2,528,442 spent in 2018 on reducing lead hazards and preventing poisoning, the State of Vermont could see a return on investment (ROI) of between $42,983,509 to $558,785,611. This estimate takes into account the costs of lead hazard control, reduced health care costs, lifetime earnings, tax revenue, special education costs, behavioral disorders, and crime. For comparison, the estimated ROI of vaccinations is estimated at between $5.40 to $16.50 for every dollar spent (Zhou et al., 2005[3]).

The Pew Center on the States released an issue brief, *Cutting Lead Poisoning and Public Costs*[4], in 2010. Their research indicated that despite dramatic improvements over the past 30 years, lead poisoning remains a serious hazard for hundreds of thousands of young children in the United States. They concluded that returns on large-scale lead abatement efforts would yield at least $17 for each dollar invested, which translates to a net benefit of $181 to $269 billion. These benefits would be observed in reduced health care utilization, reduced IQ loss, decreased special education needs, higher earnings, and fewer behavior problems and crime.

---

[1]Carlson, C., Y. Feng, D. McClurg, and J. Trummel. "The Costs of Lead Poisoning in Vermont." Dartmouth Center for Evaluative Clinical Sciences (CECS) (2006): 1-27. https://ago.vermont.gov/wp-content/uploads/2018/03/The-Cost-of-Lead-Poisoning-in-Vermont.pdf

[2]Gould, E. (2009, July). Childhood lead poisoning: Conservative estimates of the social and economic benefits of lead hazard control. Environmental Health Perspectives, 117(7), 1162-1167. Retrieved February 21, 2017, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717145/

[3]Zhou F, Santoli J, Messonnier ML, Yusuf HR, Shefer A, Chu SY. 2005. Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. Arch Pediatr Adolesc Med 159:1136–1144

[4]The Pew Center on the States. 2010. Cutting Lead Poisoning and Public Costs. *Partnership for America's Economic Success*, Issue Brief #14. http://www.pewtrusts.org/~/media/assets/2010/02/22/063_10_paes-costs-of-lead-poisoning-brief_web.pdf

Appendix: Statute

18 V.S.A. § 1756. Annual report

(a) The Commissioner shall, at least annually, analyze and summarize all aggregate lead screening and testing information provided by physicians, health care facilities, and laboratories and provide this information to all other local and State agencies involved with case management and lead hazard reduction.

(b) The Commissioner shall also at least annually provide to the General Assembly, the health community, and the general public an analysis and summary of such data and a progress report on the Commissioner's efforts to prevent lead poisoning in young children in a format that is easily understandable to nontechnical readers. The report shall include:

(1) The number and percentage of children under the age of six who have been screened and tested for lead poisoning, and the number found to have lead poisoning at various levels.

(2) Estimates of the public and private costs incurred since July 1, 1993 to prevent, correct, or treat lead poisoning.

(3) An analysis of barriers to universal blood screening of children under the age of six years.

(4) The Commissioner's recommendations for action. (Added 1993, No. 94, § 3.)