

“Get the Lead Out of Vermont”



Report to
Vermont Attorney General
William H. Sorrell
and
Acting Commissioner of Health
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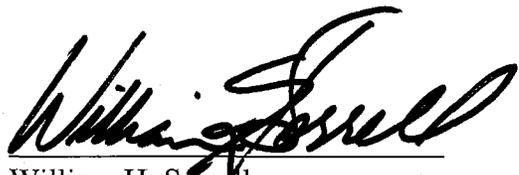
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ACKNOWLEDGEMENTS

Over the past year, dozens of Vermonters donated their time, energy and expertise to recommend a myriad of steps to "Get the Lead Out of Vermont." Some steps have been taken over the course of this initiative, others are being worked on as this report is being released, and still others will have to wait until we have the wherewithal to tackle them. The value of this report lies not only in the recommendations that are within our ability to implement in the near future, but also in the vision and choices it presents for us to consider long-term.

We gratefully acknowledge the creative and enthusiastic contributions of numerous dedicated participants in this initiative. They represented many public and private agencies and organizations, bringing their experience and concerns to the table. We asked them to commit to six months of working on this topic, but most worked far beyond that time. To each of them, our sincerest thanks and appreciation.

In particular, we wish to recognize the six members of our staffs who together led this initiative: Co-chair Wendy Morgan, Public Protection Chief of the Attorney General's Office, and Co-chair Kevin Doering, Environmental Health Program Chief, as well as Elliot Burg and Mark Sciarrotta of the Attorney General's Office, and Jenney Samuelson and Vernon Nelson of the Vermont Department of Health. We also thank Bonnie Boardman, Marcia Gustafson and Lori Cragin for their invaluable contributions and assistance in completing this project.



William H. Sorrell
Vermont Attorney General



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“GET THE LEAD OUT OF VERMONT”

OVERVIEW AND SUMMARY OF RECOMMENDATIONS

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Introduction

Lead, a highly toxic element, continues to poison children in Vermont. Despite more than a decade of active interventions, which have substantially reduced the incidence of lead poisoning, approximately 300 children in Vermont are reported each year to have blood lead levels at or above the present level of concern. Furthermore, according to the findings of this initiative, more than 2600 additional children have levels of lead in their blood that cause adverse health effects.

This major impact on children's health is matched by the financial burden of exposure to lead. At current levels of lead poisoning, for each year of children with elevated blood lead levels, the cost to Vermonters over the lifetime of those children, is conservatively estimated to be at least \$52,000 in direct health care, \$220,000 in special education, and \$80 million in lost earnings.

The primary source of exposure to lead in Vermont is lead-based paint in pre-1978 housing and soil surrounding such housing. Lead dust is released by renovations, by regular opening and closing of windows and doors, and by paint deterioration. Lead dust is then ingested by children who put their hands, toys, bottles and pacifiers in their mouths. Almost 70% of Vermont's housing units were built prior to 1978 when lead was banned in residential paint.

In addition, the lead levels in perimeter soils at pre-1950 Vermont homes commonly test at two to nearly four times EPA cleanup levels for play areas, and frequently test higher than that. Approximately 36% of Vermont's housing units were built before 1950.

Process, Participants and the Report

In December 2005, the Attorney General and the Commissioner of Health invited approximately 140 Vermonters to participate in an initiative to formulate a state action plan to eliminate Vermonters' exposure to lead. Some 70 individuals became involved in this project, as members of one or more of four committees that focused, respectively, on lead in housing, lead in consumer products and other exposures, identification and interventions, and resources.

Many of the participants were drawn from lead poisoning prevention programs, children's advocacy organizations, an apartment owners' association, contractors, the medical community, Dartmouth's Center for Evaluative Clinical Sciences, Vermont Law School, the Vermont Department of Health (VDH), and the Attorney General's Office. Three Assistant Attorneys General and three VDH program managers involved with environmental health and the VDH lead program formed the steering committee of the initiative. Appendix A to the Overview lists the participants in this initiative.

In addition to the Summary of Recommendations and Background Information, this volume contains the reports and recommendations of the four committees. The committee reports

contain an expanded discussion of the issues raised in the Overview as well as supporting citations for the findings of each committee.*

Underlying Principles

Three principles underlie the recommendations in this report.

- *There is no safe level of lead.* No amount of lead absorbed into a body is safe for the body. Lead is carried in blood, accumulates in bone and organs, and is particularly dangerous for children under six because of the permanent effects on their developing brains.
- *Vermont should take steps to prevent exposure to lead from any source, rather than react to findings of lead in blood.* When, as is largely the case now, public action is triggered by elevated blood lead levels, harm to humans must occur before steps are taken to reduce the risk of harm. Under this reactive approach, children serve, unacceptably, as the proverbial “canaries in a coal mine.” Vermont must now focus on taking steps to reduce or eliminate known sources *before* exposure occurs, including the enforcement of existing law and abatement of lead-based paint in housing.**
- *Vermont must increase resources devoted to reducing and eliminating lead poisoning.* To date, taxpayers have borne the majority of costs of lead poisoning by paying for governmentally supported programs to identify and control lead poisoning, for public health programs and private insurance to cover lead poisoning screening and interventions, and for increased school and criminal justice expenditures due to developmental and neurobehavioral deficits caused by lead exposure. Given the high societal costs of not eliminating lead poisoning, Vermont must significantly increase its commitment of resources to this effort, and when so doing, should look to those parties who have benefited from or control sources of lead in Vermont to share the costs of eliminating sources of exposure.

Summary of Recommendations

The following is a “clustered” summary of the recommendations of the four “Get the Lead Out of Vermont” committees—Housing, Consumer Products and Other Exposures (“Other Exposures”), Identification and Interventions (“I/I”), and Resources. For each recommendation, the committee recommendation number, if any, and the page in the committee report where the recommendation appears are provided. The need for these recommended changes is explained more fully in the committee reports.

* Supporting citations for assertions in the Overview are provided only in the areas of (1) health effects of lead, because of its educational importance as well as the medical and scientific necessity of citing sources in this area, and (2) the cost of lead poisoning to Vermont, because that material is not covered in a committee report.

** The definition of “abatement” in the Reports of the Housing and Identification and Interventions Committees is derived from the term’s use by other government agencies to describe work done to eliminate *or reduce* the risk of lead from lead paint in and around housing. The term may also be used, in other contexts, to mean total elimination of that risk, as that is the only way to ensure absolutely that children are not poisoned now or in the future.

The cumulative work of all committees resulted in the following recommended goals:

1. Increase prevention through expansion and enforcement of Vermont's housing laws.
2. Increase prevention by reducing sources of exposure to lead.
3. Increase prevention through increased public awareness of the dangers of lead.
4. Increase identification of and interventions for lead-poisoned Vermonters.
5. Decrease lead exposure and the effects of poisoning by increasing human and financial resources devoted to this effort.

Under these goals the committees recommend the following actions.

Increase prevention through expansion and enforcement of Vermont's housing laws.

1. *Formulate an enforcement program that utilizes resources to maximum effect.* Vermont should adopt an effective lead hazard enforcement policy that does not rely on voluntary compliance, allows for court-ordered permanent lead hazard controls, provides for automatic fines for failure to complete essential maintenance practices (EMPs) or to file the EMP affidavit, and provides for such fines to be earmarked for lead activities; in some circumstances, VDH should require that the landlord pay for dust sampling by licensed and certified inspectors. Vermont should also establish a comprehensive database which includes information such as the location of housing that has been the subject of an enforcement action, is lead safe, or has had EMPs performed, or where a person has had BLL testing. Non-private information in the database should be available to the public. (Housing recommendations 1i-1iii, at pages 14-15; I/I 4a, 4b, 4d-4g, 4i, at 16-18; Resources IID, IIE, IIIA; at 4, 5)
2. *Amend Vermont's lead poisoning law to be more effective and less burdensome.* To make the EMP law more effective, Vermont should amend its statutes to redefine terms related to lead hazard control, to include contaminated soil in the essential maintenance practices, and to promote abatement rather than EMPs in some circumstances. (Housing 5ib, 5ie, at 21-22; I/I 4k, at 18.) To make the EMP law less burdensome, Vermont should amend its statutes to eliminate the EMP notarization and annual window well/sill cleaning requirements. (Housing 5ic, 5id, at 21.)
3. *Regulate and support lead safe programs and activities in owner-occupied as well as rental housing.* Vermont should amend its statutes to ban unsafe work practices; to require licensing and training of contractors, renovators and painters; and to allow VDH to require compliance with lead abatement work plans for both owner-occupied and rental properties. VDH should create a program to allow property owners to obtain "lead safe" status. (Housing 2, at 17; I/I 3d, 3e, 4j, at 15, 18; Resources IIC, IID; at 4.)
4. *Encourage abatement of lead in housing.* Because the only way to fully and permanently eliminate lead exposure from housing is by abating lead-based paint, the State should find ways of undertaking and funding abatement. (Housing 3, at 19; I/I 4k, at 18; Resources ID, VIA, VIIA, at 3, 8, 9.)

Increase prevention by reducing sources of exposure to lead.

5. *Reduce lead and other toxins in consumer products and in the environment.* Vermont should take a variety of steps to reduce lead in consumer products and the environment, including prohibiting the marketing or sale of children's products that contain any amount of lead; testing and mapping the contamination of soil, water and air, and in schools; increasing data collection on special populations and sources; creating an "environmental testing campaign" to increase environmental sampling; and considering actions to phase out or regulate lead in the air, and in imported cosmetics and folk remedies, ceramics, wheel weights, ammunition and sinkers, salvaged building materials, car batteries, non-residential paints and primers, hair and skin products, tattoo inks and dyes, and water fixtures. Vermont should also take a proactive/precautionary approach to reduce Vermonters' exposure to persistent bioaccumulative toxins in addition to lead. (Other Exposures, at 12, 15, 18, 20, 22-26, 30, 33, 36, 47; I/I 4g, 4h, at 18.)
6. *Reduce occupational exposures of Vermont workers.* VDH should create an adult lead surveillance system; participate in the federal ABLES program, create a registry of contractors, and increase resources for state enforcement; and work with VOSHA and the Agency of Natural Resources' Environmental Assistance Program, to prevent, detect and manage elevated blood lead levels (BLLs) in the workplace. (Other Exposures, at 5, 40; I/I 1i, 1j, at 11.)
7. *Take additional steps to reduce the risk of lead from non-housing sources.* Vermont should work with distributors and retailers to encourage the sale of only lead-free products, publicize recall notices, require lead warning labels and prohibit businesses from removing them, and undertake further research on the extent and import of lead exposure through food and food vessels. Vermont should also take steps to reduce the exposure of citizens of other nations to lead, a problem which is enhanced by exporting our electronic waste. (Other Exposures, at 5, 9, 15, 29.)

Increase prevention through increased public awareness of the dangers of lead.

8. *Reduce the trigger for action by VDH from 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) to 5 $\mu\text{g}/\text{dL}$.* Lowering the threshold at which the government will act will send the message, supported by medical research, that there is no safe level of lead. (The recommendation is set at 5 $\mu\text{g}/\text{dL}$ rather than a lower figure because of a lack of confidence in testing results at levels below 5 $\mu\text{g}/\text{dL}$ given current technology.) (I/I 2a, at 12.)
9. *Expand VDH's annual lead report to the Vermont legislature.* The annual report should cover a greater variety of topics and should be readily accessible to the public. (I/I 2b, at 13.)
10. *Formulate a comprehensive public education program.* VDH should establish a permanent lead hazard education and outreach campaign, including enhancement of the VDH and DEC websites on lead; publicity on the dangers of lead in renovations, salvage components, and other consumer products; and information for workers exposed to lead on the job, parents and guardians, and special populations such as pregnant women,

parents of very young children, and members of at-risk ethnic groups. (Housing 4ii, at 20; Other Exposures, at 5, 12, 15, 20, 22-24, 26, 29, 33, 40; I/I 2c, at 13.)

11. *Publicize enforcement activities.* VDH and AGO enforcement actions should be publicized through press releases and posting on agency websites. (I/I 4a, at 16.)
12. *Provide for greater dissemination of information on specific lead exposures.* Vermont should require that housing buyers be given greater information regarding lead hazards, and that copies of EMP affidavits be given to tenants. (Housing 4i, 5ia, at 19, 21; Other Exposures, at 30, 33.)
13. *Increase collaboration with the medical community.* VDH should work with local chapters of the American Academy of Pediatrics and the American Academy of Family Physicians, as well as with the medical and nursing schools, to increase awareness of the dangers of lead and the need for early identification and confirmation of lead poisoning. (I/I 1k-1m, at 11-12.)

Increase identification of and interventions for lead-poisoned Vermonters.

14. *Improve the identification of lead-poisoned Vermonters.* Vermont should take a variety of steps to ensure that all lead-poisoned children are identified, including increasing collection of data regarding lead poisoning; requiring universal screening for very young children; promoting screening and follow-up testing for young children and special groups of adults and children; and working with the medical community, childcare providers, schools, home schoolers, and social service agencies serving special populations to educate them as to the need for universal screening. (Other Exposures, at 12, 15; I/I 1a-1l, 1n-1r, 2e, 3b, 3k, at 9-12, 14-16.)
15. *Expand clinical and environmental interventions.* VDH should evaluate the effectiveness of its intervention materials and programs, and should expand those programs, depending on the degree of elevation of BLLs, for both children and adults. The American Academy of Pediatrics should assemble a group of medical professionals to make recommendations regarding chelation; and schools should create follow-up plans for children who have had elevated BLLs. (I/I 2d, 2f, 3c, 3f, 3g, 3i, 3l, 3m, at 13-16.)

Decrease lead exposure and the effects of poisoning by increasing human and financial resources devoted to this effort.

16. *Create a Lead Poisoning Prevention Committee.* Vermont should create a committee of multiple stakeholders charged with monitoring the implementation of the recommendations contained in the reports from this initiative and providing input to VDH. (Housing 5ii, at 23; Other Exposures, at 5; I/I 4c, at 17.)
17. *Work with other states and groups to reduce lead hazards.* VDH should work with other states and groups in and out of Vermont to develop materials and ideas for action and appropriate collection of data, monitoring and dissemination of information. (Other Exposures, at 5, 12, 29, 30, 33; I/I 4l, at 18; Resources IIF, at 5.)

18. *Increase local resources statewide.* Vermont should provide sufficient resources so that VDH can provide environmental testing and educational services locally, and should make lead risk assessor and inspector training available to town health officers. (I/I 3h, 3i, at 16.)
19. *Create and fund financial incentives and resources for lead abatement projects.* Vermont should provide tax incentives and a need-based grant and loan fund to finance lead abatement projects. (Housing 3, at 19; Resources VIA, VIIA, at 8, 9.)
20. *Consider a variety of options to increase revenues available to address lead abatement in Vermont.* Vermont should consider the wide variety of options utilized in other states or presented by the Resources Committee to address lead hazards, including bonds, taxes and fees, increased civil penalties for practices that put Vermonters at risk, and grant and litigation possibilities. (Resources Sections I–IV, at 2-8.)
21. *Seek fair contribution from absent responsible parties.* The Attorney General and VDH should seek the best means of making absent responsible parties, such as the lead pigment industry and the petroleum industry, participate in the abatement of the lead hazards they helped create. (Housing 3, at 19; Resources VA, VB, at 8.)

Background Information

This section provides general background for the preceding recommendations. It describes lead exposure in Vermont and the health effects of that exposure, estimates the costs of lead poisoning in Vermont, and summarizes current efforts to address lead exposure.

Known Lead Exposure in Vermont

Sources of lead in Vermont. Lead-based paint in pre-1978 homes is by far the most common source of childhood lead poisoning in Vermont. As the Housing Committee noted, “Vermont’s housing stock is saturated with LBP [lead-based paint].” Toxic lead dust is created by the normal day-to-day use of painted friction surfaces (windows and doors), deteriorated paint, and unsafe home renovation activities. In addition, soil around the perimeter of pre-1978 housing is typically lead-contaminated from paint dust and chips. Young children get paint dust on their hands in the home or while playing in the soil, then ingest it via hand-to-mouth behavior. Almost 70% of Vermont’s housing units were built before 1978, when lead was banned in residential paint; 35% were built prior to 1950, when lead-based paint was commonly used and actively promoted. Of Vermont children identified with BLLs 20 $\mu\text{g}/\text{dL}$ and above, 40% live in owner-occupied housing, 60% in rental housing.

Lead can also be found in certain toys and other children’s products, imported cosmetics and remedies, food vessels, wheel weights, ammunition, salvaged building components, car batteries, non-residential paints (in which lead is not currently prohibited), personal care products and tattoos. Lead is present in non-residential soil (from gasoline) and in food grown in such soil, can leach into drinking water from distribution systems (typically from faucets and soldering),

and, to a lesser extent, is emitted from some facilities into the air. Exposure to lead can also result from occupational exposure (for example, construction, demolition, salvage work, painting, radiator repair, and working with batteries) and from workers who bring lead home on their bodies or clothes. Even though lead-based paint remains the major source of human exposure, these alternate sources are important because, unlike environmental exposure, a single exposure by a young child to a toy containing lead can be injurious or even fatal.

Identifying Children with Elevated Blood Lead Levels in Vermont. The number and percentages of Vermont children ages 1 through 5 who were tested in 2004 and their blood lead levels are found in the table below.

2004 Blood lead tests for children ages 0 to 5 years in Vermont

| Age | Population | Blood Lead Levels of Children Tested | | | | | | % of Population Tested |
|----------|------------|--------------------------------------|-----------|-------------|-------------|-----------|-------|------------------------|
| | | < 5 µg/dL | 5-9 µg/dL | 10-14 µg/dL | 15-19 µg/dL | 20+ µg/dL | Total | |
| < 1 year | 6317 | 338 | 101 | 12 | 2 | 0 | 453 | 7.2% |
| 1 year | 6818 | 3489 | 1332 | 119 | 39 | 28 | 5007 | 73.4% |
| 2 years | 6634 | 1430 | 828 | 75 | 15 | 14 | 2362 | 35.6% |
| 3 years | 6567 | 318 | 183 | 15 | 4 | 3 | 523 | 8.0% |
| 4 years | 7048 | 198 | 108 | 11 | 3 | 3 | 323 | 4.6% |
| 5 years | 6474 | 90 | 43 | 4 | 1 | 1 | 139 | 2.1% |
| Total | 39858 | 5863 | 2595 | 236 | 64 | 49 | 8807 | |

Data includes only one blood lead test per child: the highest venous test result or, if there is no venous test, then the capillary test result.

Ages: < 1 year : <11 months old; 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.

2004 Blood lead tests for children ages 0 to 5 years in Vermont by range of blood lead level

| | Range of Blood Lead Level | | | | |
|---------------------------------------|---------------------------|-----------|------------|------------|------------|
| | ≥ 0 | ≥ 5 µg/dL | ≥ 10 µg/dL | ≥ 15 µg/dL | ≥ 20 µg/dL |
| # Children Tested at a BLL or Greater | 8807 | 2944 | 349 | 113 | 49 |
| % of Children Tested | 100% | 33.4% | 4.0% | 1.3% | 0.6% |

While Vermont's screening and confirmation rates have improved through the years, there have continued to be challenges to universal screening. In 1997, the percent of 1-year-olds screened was 45.3%; in 2004, the figure was 73.4%. For 2-year-olds, the rate was 19.5% in 1997 and 35.6% in 2004. The percent of capillary tests of 10 µg/dL or more confirmed by a venous draw was 32.5% in 1997 and 61.6% in 2004. The goal for all these figures is 100%.

Health Effects of Lead*

Lead as a health hazard. Lead poisoning poses a serious environmental health hazard for Vermonters of all ages. Lead is deposited in bones where it maintains a half-life of up to 19

* Citation to the 30 research studies which support the description here of the Health Effects of Lead, as well as other technical information, are collected at the end of the Overview. The numbering of endnotes is not sequential because in some cases the same research supports multiple assertions.

years¹ and can cause irreversible damage that results in long-lasting or permanent consequences.² Indeed, lead is a pervasive and ubiquitous metal that serves no useful purpose in the human body, where its presence can affect every organ system.³

Children at greatest risk. Young children are at the greatest risk and considered more vulnerable than adults to the effects of lead exposure.³ Vital neurodevelopmental processes occur during fetal development and continue until a child is three years old, and children absorb up to 50% of ingested lead, compared to adults, who absorb 5 to 10%.^{3,4}

Medical studies reveal that children's exposure to lead results, among other things, in:

- Decreases in IQ and in reading and arithmetic skills,⁵⁻⁷
- Problems with attention, executive function, visual-motor integration, social behavior and motor skills,⁸
- Altered immune system function, and^{9,10}
- Delayed growth and pubertal development in girls.^{11,12}

Lead exposure has also been shown to be associated with school failure, delinquency and criminal behavior.^{13,14} High levels of lead can result in hyperirritability, ataxia, convulsions, stupor, coma and even death.³

Unfortunately, it takes very little lead to poison a child. Dust equivalent to a few grains of sugar taken over time can cause a blood lead level of 10 $\mu\text{g}/\text{dL}$ or more.¹⁵ A paint chip the size of a small fingernail can cause a spike of 20 $\mu\text{g}/\text{dL}$ if absorbed.¹⁶ If a penny were made of lead and converted into pure lead dust, then, using the definition of lead contamination for floors, the dust would contaminate 700 rooms measuring 10 feet by 10 feet.¹⁷

Other groups at risk. Lead poisoning is associated with other special groups as well. Immigrants from certain countries have been found to have elevated BLLs. Lead poses a substantial threat to pregnant and lactating women and their developing fetuses or children.³ In adults, lead exposure has been associated with decreases in the performance of the nervous system, increased blood pressure, cardiovascular disease, anemia, impaired renal function, thyroid dysfunction, cataracts and cancer, and can lead to stillbirths and miscarriages.¹⁸⁻²⁸

Trends in reducing blood lead levels. Over the past 25 years, progress has been made in the reduction of childhood BLLs, mainly as the result of the elimination of most lead from gasoline and paint.²⁹ The percentage of children under 6 in the United States with a BLL of 10 $\mu\text{g}/\text{dL}$ or higher fell from over 85% in the 1970s to less than 5% in the 1990s.³⁰

Yet there are communities, especially throughout the Northeast, where large percentages of children are lead poisoned. For example, VDH reports that from 1997 through 2005, in the top 20 Vermont towns in which at least 100 children were tested for lead, 7.7% to 15.1% of the children tested had BLLs of 10 $\mu\text{g}/\text{dL}$ and above.

Medical research. At the same time as BLLs are declining nationally, medical research has identified serious adverse health effects of lead at progressively lower levels. As the following

chart illustrates, the government, particularly the Centers for Disease Control and Prevention (CDC), has over time lowered the level at which it will intervene.

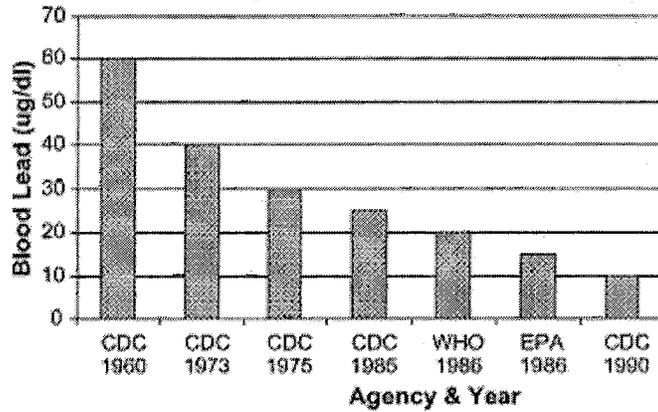


Figure 1. The decline in acceptable blood lead levels in children.³¹

Recent research indicates that adverse health effects occur at even lower levels than the current CDC level of concern, 10 $\mu\text{g}/\text{dL}$.^{6,7,32} Significantly, a threshold below which no adverse health effects are seen has not been identified.³³ Researchers report the steepest decrease in IQ over the first 5 $\mu\text{g}/\text{dL}$ of BLL, a more than 7 point drop over the first 10 $\mu\text{g}/\text{dL}$ of BLL, and a further decline of 2 to 3 points as BLLs increase by 10 $\mu\text{g}/\text{dL}$ thereafter.⁷ See Figure 2. Thus, not only are there adverse effects at low BLLs; it is now evident that the rate of decline in intellectual impairment is *greatest* at BLLs less than 10 $\mu\text{g}/\text{dL}$.^{5,7,31}

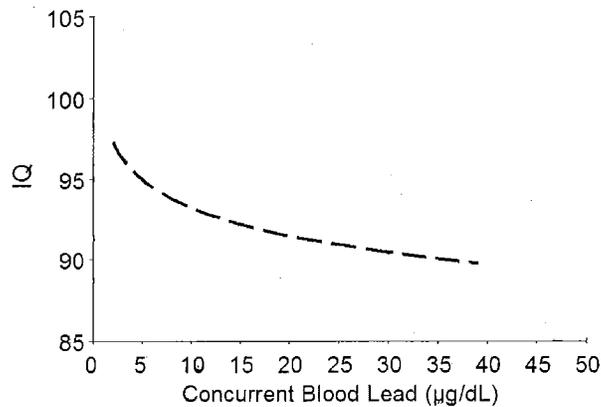


Figure 2. Blood Lead Concentration and IQ.⁵

The CDC currently uses 10 $\mu\text{g}/\text{dL}$ as the blood lead concentration of concern. While the CDC has acknowledged that the empirical evidence reveals adverse health effects at BLLs below 10 $\mu\text{g}/\text{dL}$, there is no indication that the agency intends to change the current level of concern.³⁴

Cost of Lead Poisoning in Vermont

Apart from the personal and family suffering caused by elevated BLLs, lead exposure carries with it a financial price tag to the State of Vermont and its people. Estimates of these costs are set out in a report entitled, *The Costs of Lead Poisoning in Vermont*, submitted to the Dartmouth Center for Evaluative Clinical Services on March 13, 2006 (“Dartmouth Report”).³⁵

The primary economic cost associated with lead exposure is lost future income. For children who were tested in just one year and found to have had BLLs of 5 $\mu\text{g}/\text{dL}$ and above, the loss in lifetime earnings is estimated to total over \$80 million. To reach this result, the Dartmouth Report identifies four BLL ranges, estimates the IQ point decrement in each range, multiplies that by the number of children in Vermont whose BLL results fell within that range, and then multiplies that result by an estimated \$11,502 loss in lifetime earnings. The total of all categories for one year of children is \$80 million.³⁶

Importantly, this analysis *underestimates* the loss of future income in several ways, including using the most conservative IQ decrement reflected in the medical literature, not having the data to factor in children with BLLs below 5 $\mu\text{g}/\text{dL}$ or children who were not tested for lead, and assuming a straight drop in IQ within each BLL range (rather than a slope that was steepest at the low end of the range). Adopting a less conservative but supportable IQ decrement alone would increase the estimated losses of lifetime earnings from \$80 million to \$119 million.³⁷

Vermont suffers numerous other costs as a result of lead poisoning as well. For example, for every \$10 million in lost future earnings, roughly \$450,000 is not paid to the State of Vermont in tax revenues.³⁸ The Dartmouth Report estimates that direct health care costs for children tested at or above 10 $\mu\text{g}/\text{dL}$ in a single year are approximately \$52,000 per child, and that special education costs for children tested at or above 25 $\mu\text{g}/\text{dL}$ in a single year are approximately \$220,000.³⁹

Even these added costs do not reflect the true cost of lead poisoning in Vermont because they do not include: (1) direct health care costs for adults or for children with BLLs below 10 $\mu\text{g}/\text{dL}$, (2) costs associated with educating children with BLLs below 25 $\mu\text{g}/\text{dL}$, (3) ongoing costs of state regulatory oversight and enforcement, (4) costs of EMPs and abatement in pre-1978 structures (estimated by VDH to be nearly \$133 million in 2004),⁴⁰ or (5) costs associated with non-compliance with the law.

Vermont’s Lead Laws and Their Implementation

Vermont’s lead poisoning law. In 1996, Vermont enacted “An Act to Prevent Lead Poisoning in Children in Rental Housing and Child Care Facilities.”^{*} The law was designed to “reduce, but not eliminate, the risks of lead exposure” in target *rental* housing; it did not directly address lead in owner-occupied housing, although it did regulate lead inspection and abatement professionals.

^{*} 18 V.S.A. Chapter 38. This statute and other requirements of Vermont law are discussed in greater detail in the Report of the Housing Committee.

VDH is the designated rulemaking and enforcement agency and is charged with conducting an educational campaign.

A key to Vermont's lead law is the requirement that owners of pre-1978 rental housing and child care facilities take a four-hour training course and complete annual "essential maintenance practices" (EMPs), including annual visual inspection of painted surfaces, prompt repair of deteriorated paint using safe practices, installation of window well inserts, and specialized cleaning at change of tenant. Owners of rental housing must also file an affidavit of EMP compliance with VDH and the landlord's liability insurer annually, comply with lead-safe work practices during renovations and repairs, and post notices to tenants about the importance of reporting deteriorated paint.

The law also provides that VDH must confirm a diagnosis and develop a plan to minimize exposure when a child has a BLL of 10 $\mu\text{g}/\text{dL}$ or more, whether or not the child is in a rental or owner-occupied home.*

EMP compliance. In 2005, only 1,194 landlord affidavits of EMP compliance were filed, despite a VDH mailing to more than 9,000 landlords and despite the relatively low cost of compliance.⁴¹ In the past, VDH has not primarily been an enforcement agency; rather its approach to prevention has been through education and voluntary compliance. Although under its general statutory authority, VDH can also enforce the lead poisoning law through administrative Assurances of Discontinuance (AODs), health orders, and civil or criminal action, the Housing Committee reports that non-compliant landlords have historically faced few significant consequences.

With only one lead inspector to cover the entire state and no dedicated enforcement legal staff, VDH lacks the means to enforce against *all* EMP violators, but VDH's reliance on a voluntary compliance scheme is, as the Housing Committee Report suggests, a primary reason for low EMP compliance levels. VDH has infrequently sought compliance using more formal modes of enforcement, such as Assurances of Discontinuance, or by assessing a penalty for EMP violations. There is also no indication that any landlord has been sued or any case referred by VDH to the Attorney General's Office in Montpelier. More recently, in the spring of 2006, VDH did start negotiating AODs in some cases of poisoning and complaints, and in rental housing where the landlord failed to comply with a work plan.**

* Under current law, VDH must take additional action, including arranging for inspection of the dwelling unit or child care facility and inspecting other units in the same building, only when a child is "severely lead poisoned," i.e., has a BLL of at least 20 $\mu\text{g}/\text{dL}$.

** Another initiative to garner EMP compliance, town by town, began in July 2006, when approximately 325 letters signed by the Health Protection Division director were mailed to landlords with rental properties in Bellows Falls, which has the highest lead poisoning rate in the state. Landlords were asked to submit their affidavits within 30 days or be subject to fines. About half of the rental property owners responded by coming into compliance, by asking for an extension, or by explaining why they should not have received the letter. Extensions were granted via an AOD filed in court. VDH sent landlords who did not reply a second letter demanding compliance and indicating that otherwise the matter would be referred to the Attorney General's Office. Vermont's Childhood Lead Poisoning Prevention Program (CLPPP) plans to send comparable letters to 300 rental property owners at a time, starting with properties in towns with the highest rate of lead poisoned children. CLPPP now treats landlords who are the subject of an individual complaint lodged with VDH similarly: if the landlord does not have a current EMP affidavit on file,

Liability and insurance. With some exceptions (such as fraud), the lead poisoning law provides legal immunity for owners of pre-1978 rental housing and child care facilities who have reduced lead-based paint hazards by completing risk assessment and controls, and have had a licensed inspector certify that the lead hazards on the premises have been controlled and are free of lead dust. Under a long-standing policy of the Vermont Department of Banking, Insurance, Securities and Health Care Administration (BISHCA), insurance carriers may not exclude from a landlord's general liability coverage lead paint-related claims. Carriers are free, of course, not to write a policy if they deem a property's lead-associated risks to be too high.

Many stakeholders involved in the passage of Vermont's 1996 Act assumed that lead safety would be driven forward, in part, through (1) the requirement that landlords file EMP affidavits with insurance carriers, and (2) private lead poisoning tort lawsuits against landlords for failure to perform EMPs. But at least some, if not many, carriers regularly write policies without an EMP affidavit, and despite hundreds of lead poisonings associated with rental housing, private lawsuits have never materialized in Vermont.

Other laws. Although Vermont has a statute directed at prohibiting "unsafe children's products," that law does not constitute an outright prohibition on sale of such products, relying instead primarily on the actions and standards of the Consumer Products Safety Commission or the product's manufacturer, distributor or importer.

In addition, numerous federal environmental acts affect the amount of lead in the environment. For example, the Clean Air Act, generally, and the federal ban on leaded gasoline (phased in between 1973 and 1996), in particular, greatly reduced ambient lead levels and are attributed with producing significant BLL reductions across the nation.*

Several federal laws are ignored or unknown by the public in Vermont, such as (1) the federal Residential Lead-Based Paint Hazard Reduction Act requiring disclosures of lead hazard information, (2) EPA's Pre-Renovation Notification Rule for contractors disturbing painted surfaces in pre-1978 housing, (3) EPA's Hazard Identification/Abatement Standards defining proper lead hazard control work, and (4) HUD's Lead Safe Housing Rule for federally-assisted housing.

Programmatic Activities

*Vermont Childhood Lead Poisoning Prevention Program (CLPPP).*** The Vermont CLPPP is a federally funded program, operating out of VDH. It has statewide responsibility for overseeing

CLPPP sends a letter asking for compliance within a 30-day period and describes the fines that can accrue for non-compliance; any request for an extension is granted via an AOD. As a result of these recent efforts in Bellows Falls, VDH has received more than 200 affidavits of performance of essential maintenance practices (in contrast to the 13 affidavits from Bellows Falls landlords in 2005), and has filed approximately 20 AODs and settled one case with a \$4800 civil penalty.

* See the Report of the Consumer Products and Other Exposures Committee for further information on the numerous other federal laws providing regulatory authority regarding lead to the Consumer Product Safety Commission, EPA, FDA, OSHA and HUD.

** See the Report of the Identification and Interventions Committee for an expanded description of CLPPP.

childhood lead poisoning prevention services, including providing community education, publishing guidelines for screening children, collecting and analyzing blood lead data, managing cases involving children with blood lead levels of 10 $\mu\text{g}/\text{dL}$ and above, working with the medical community to improve screening and confirmation rates, and monitoring compliance with Vermont's lead law. The total combined statewide FTEs of CLPPP are 6.8.

Lead hazard control programs. Most lead abatement work in Vermont is completed with assistance from HUD-funded programs at the Vermont Housing & Conservation Board (VHCB), which works statewide, and the City of Burlington Lead Program. Both programs provide community education and technical and financial assistance to landlords and homeowners to reduce the hazards of lead-based paint. Work is completed by certified lead abatement contractors and testing is done to insure properties are safe before residents return. Lead Safe Bellows Falls provides education and technical assistance in Bellows Falls.

Programmatic Resources

The cost of abating the lead-paint hazard in older housing in Vermont is very high. The cost of "full abatement" is estimated to be \$25,000-\$30,000 per unit, including removal of lead-based paint or, in some situations, use of semi-permanent ("20-year") covering like siding. The comparable figure to bring these units up to a "lead-safe" standard--including replacement of windows and doors and stabilization (such as repainting) of non-friction surfaces--is \$10,000 per unit; but that would require ongoing maintenance. Conservatively, taking into account only pre-1960 housing units (of which there are over 100,000), the total cost would be \$2.5 to 3 billion in the first case, \$1 billion in the second.

Even Vermont's existing programs devoted to preventing lead exposure are seriously underfunded and threatened with further reductions. As a consequence, those programs have not been able to do work that is essential to achieving the goal of preventing exposure to lead in Vermont.

The total budget for the CLPPP for the 2006-07 fiscal year comes from two sources, both federal in origin: a CDC competitive grant of \$412,606, supplemented by approximately \$42,500 through VHCB. However, these funds represent less than 73% of the amount VDH projects it needs to operate CLPPP at its 2005-06 level, and are insufficient to support effective inspection and enforcement, education and outreach, technical support, case management and surveillance. In fact, the 2006-07 budget is so tight that the program has had to eliminate all of its community support and contracts with Vermont's two regional lead programs located in Burlington and Bellows Falls. Furthermore, CDC funding is due to expire in 2010.

The total amount of federal HUD Lead Hazard Control funds available for all lead programs in the country has remained essentially level over the last six years, despite increasing demand. Each time Vermont's programs compete for grants, they compete against more jurisdictions requesting more funds.

VHCB's lead hazard control grant (\$3 million) from HUD is expected to last until approximately October 31, 2007. VHCB plans to apply for another grant in 2007. Lead Safe Bellows Falls, with one 32-hour position, is funded only through February 2007.

In 2003, the City of Burlington received a \$1.5 million HUD Lead Hazard Control grant, which funds the Burlington Lead Program through March 2007. Even though the Burlington Lead Program won a "best practices" lead eradication award from the U.S. Conference of Mayors in 2005, in September 2006 HUD denied the program's request for a \$3 million grant and just recently indicated it will deny its subsequent \$2 million application.

Areas of Concern

Blood lead levels. The primary concern with Vermont's current system of laws and enforcement is that children continue to have BLLs of 10 $\mu\text{g}/\text{dL}$ or more, at a time when research shows that any elevated BLL adversely affects the health of a child. Unless more resources and efforts are dedicated to addressing this health hazard, lead exposure will continue to be a serious health problem for Vermonters.

Identification of Vermonters with elevated BLLs. Not all children who are lead poisoned are identified and not all screening tests of 10 $\mu\text{g}/\text{dL}$ or more are confirmed.* Of particular concern is that only about 35% of 2-year-olds are tested, whereas research shows that blood lead levels peak around age 2. In addition, Vermont has very little information on lead poisoning among adults.

EMP non-compliance. Few Vermont landlords have actually complied with the EMP law, as judged from the number of mandatory affidavits filed. Although voluntary compliance efforts over the past decade have not succeeded in achieving compliance, AODs and other modes of settlement have been used infrequently.

Lack of consequences where a poisoning occurs. There is a lack of consequences even when a child has been lead poisoned. Landlords have been required to do little, if anything, beyond coming into after-the-fact compliance. Although VDH or town health officer interventions have helped ensure that few, if any, additional children are poisoned in the same home, this approach does little for the children who become poisoned the following year in different rental housing.

Owner-occupied housing. Forty percent of known children with BLLs of 20 $\mu\text{g}/\text{dL}$ or above live in owner-occupied housing, housing that is not directly regulated to control lead-based paint hazards. Unfortunately for those children, lead safety is addressed *only if and after they have been identified as lead poisoned.*

* Due to the difficulty of taking a venous draw from a young child, and the low likelihood of getting a false positive that is less than 10 $\mu\text{g}/\text{dL}$ from a capillary test, the Identification and Interventions Committee does not recommend confirmation tests for BLLs below 10 $\mu\text{g}/\text{dL}$.

Exposure from non-housing sources. Regulation of lead in products is variable, balkanized among the various agencies where it exists, and insufficient to protect children from risk of harm.

Resources. Funding for Vermont's state and local lead poisoning prevention programs is inadequate and not sustainable. Current funds are insufficient to support an effective program for identification, interventions and prevention of lead poisoning, and most funding is due to expire in 2010. Funds for Vermont's two lead hazard reduction programs, VHCB and Burlington Lead Program, are similarly limited and awarded on a competitive basis. Funding of both CLPPP and the Lead Hazard Reduction Programs, the main resources in Vermont, does not allow for support or grants to local community programs and fails, by orders of magnitude, to meet the costs associated with abating all lead hazards in Vermont.**

Conclusion

Given the pervasiveness of lead in our environment and the serious health effects to children and adults caused by exposure to lead, Vermont must intensify its efforts to reduce and eliminate lead. Laws presently on the books have played their part, but additional action is needed now, in light of both current knowledge and past experience. Among other things, Vermont should adjust the blood lead level of concern to take account of the latest medical research, must ensure that children are protected in both rental and owner-occupied housing, and must find the resources to protect our children in the future. The "Get the Lead Out of Vermont" initiative is just a beginning; it will be the task of policymakers and the people of Vermont to make these recommendations a reality.

** The Report of the Resources Committee contains a compilation of ideas from other states and from committee members of how to increase resources for addressing lead hazards in Vermont.

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36. See Dartmouth Report, Table 3, at 16. (Lanphear citation appears at endnote 2.) The \$11,502 loss of lifetime earnings per IQ point was derived by updating the figure of \$9,663 taken from HUD, *Economic Analysis of the Final Rule on lead-Based Paint: Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally-Owned Residential Property and Housing Receiving Federal Assistance* (Sept. 7, 1999), 3-45.
37. The Dartmouth report used Lanphear's finding of a 3.9 IQ point decrement for children with BLLs between 2.4 and 10 $\mu\text{g}/\text{dL}$, and calculated the IQ decrement per 1 $\mu\text{g}/\text{dL}$ in this range by solving for the equation $3.9/10 = x/7$, or 2.73; then multiplied that by the 2,089 Vermont children in the 5-9 $\mu\text{g}/\text{dL}$ range, and multiplied that product by the \$11,502 lifetime earnings loss per IQ point, for a total of \$65,595,560. Adding the comparable figures from the other BLL ranges (\$14,515,524) yielded a total of \$80,111,430. See Dartmouth Report, Table 3, at 16. Replacing the \$65,595,560 figure (which is based on Lanphear's .39 IQ decrement per $\mu\text{g}/\text{dL}$) with \$104,280,670 (the result using Lanphear's .62 IQ decrement per $\mu\text{g}/\text{dL}$), and adding \$14,515,524 (for the other BLL ranges), produces a total loss of \$118,796,194.

38. At the present time, Vermont's "blended tax rate" is approximately 4.5 cents on the dollar; i.e., for all income brackets, the total tax revenues to the State are approximately 4.5% of the total reported income. Conversation with Danforth Cardozo, III, Assistant Attorney General for the Vermont Department of Taxes on November 10, 2006.
39. Dartmouth Report at 17-20.
40. *Report to the Vermont Legislature: Progress Report on Childhood Lead Poisoning Prevention Efforts for January 1, 2004 – December 31, 2005* (sic – report covers 2004), at 9.
41. It was the Legislature's intention that most rental property owners would be able to complete EMPs themselves at minimal cost. VHCB has estimated that achieving initial compliance at a property in fair condition requires 27 hours (including training) and about \$550 in materials; maintaining compliance annually requires about 7 hours and \$200 in materials.

“Get The Lead Out of Vermont” Participants List

No assumption of endorsement of the proposals in the report can be made by the appearance of a name on this list. The following persons participated in the initiative in a variety of manners: by regularly or occasionally attending committee meetings, by participating in discussions by email, by monitoring the work of a committee by email, by providing information or expertise, or by expressing opposition to proposals.

| | |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Bach, Tracy | Vermont Law School |
| Bard, Michael | USDA Rural Development |
| Barton-Caplin, Justin | Dartmouth Medical School |
| Behrmann, Michael | Vermont Public Interest Research Group (VPIRG) |
| Bennett, Stuart | Vermont Apartment Owners Association, LLC |
| Bland, Richard | Vermont Association of Domestic Property and Casualty Insurance Companies |
| Bolt, Mary Lou | Vermont Department of Health, Rutland District Office |
| Burg, Elliot | Vermont Attorney General’s Office |
| Burgess, Beth | Children’s Forum |
| Burns, Paul | Vermont Public Interest Research Group (VPIRG) |
| Burris, Laurey | American Academy of Pediatrics - Vermont Chapter |
| Carlson, Charlotte | Dartmouth Medical School |
| Chavez, Ria | City of Burlington Lead Program |
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| Coutley, John | City of Burlington Lead Program |
| Cragin, Lori | Vermont Department of Health, Health Surveillance |
| Crosby, Kim | Vermont Agency of Natural Resources, Waste Management |
| Curley, Kathy | Vermont Housing Finance Agency |
| Davis, Wendy | University Pediatrics |
| Destakasi, Graham | City of Burlington Lead Program |
| Doering, Kevin | Vermont Department of Health, Environmental Health |
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| Feng, You-Shan | Dartmouth |
| Finn, Carlen | Children’s Forum |
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| Fleishman, Bethany | Dartmouth Toxic Metals Research Program |
| Fox, Priscilla | Vermont Law School |
| Gale, Eddie | Henderson Foundation |
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| Hobson, Todd | Clay Point |

| | |
|------------------------|-----------------------------------------------------------------------------------------------------|
| Hollar, John | Downs Rachlin Martin |
| Holub, Erica | Vermont Department of Health, Childhood Lead Poisoning Prevention Program |
| Hulse, Charles | University of Vermont, Dartmouth of Family Medicine |
| Hunter, Dr. Paul | Massachusetts Childhood Lead Poisoning Prevention Program |
| Kapusta, Nancy | Vermont Department of Health, Community Public Health |
| Kashkin Groller, Muffy | Vermont Child Care Providers Association |
| Keeney, Dorigen | Vermont Campaign to End Childhood Hunger |
| Keller, Phil | Vermont Department of Banking, Insurance, Securities and Health Care Administration |
| Lafayette, Paul | Lafayette Painting, Burlington |
| Langevin, Brenda | Louis Marineau & Sons, Inc. |
| Libby, Jim | Vermont Housing and Conservation Board |
| Lucente, Liz | Vermont Law School/Attorney General's Office |
| Lux, Harry | Painting and Decorating Contractors of America |
| Mahnke, Erhard | Vermont Affordable Housing Coalition |
| Mallory, Sharon | Vermont Department of Health, Community Public Health |
| Manna, Christina | Vermont Department of Children and Families, Child Care Licensing |
| Marineau, Brian | Louis Marineau & Sons, Inc.; Painting and Decorating Contractors of America (PDCA) |
| Marineau, Lorelle | Louis Marineau & Sons, Inc. |
| Masters, Roger | Nelson A. Rockefeller Professor of Government Emeritus and Research Professor, Dartmouth College |
| McClurg, Don | Dartmouth Medical School |
| McLeod, Robert | VOSHA |
| McNamara, Jim | Lead Safe Bellows Falls |
| Meyer, Scott | Vermont Department of Labor and Industry |
| Morgan, Wendy | Vermont Attorney General's Office |
| Nelson, Vernon | Vermont Department of Health, Lead and Asbestos Regulatory Program |
| O'Brien, Frank | Property and Casualty Insurance Companies of America |
| O'Connor, Caitlin | Vermont Public Interest Research Group (VPIRG) |
| Paul, Kim | University of Vermont, Child Health Improvement Program |
| Pierson, JT | Heritage Environmental Projects, Inc. |
| Pine, Brian | City of Burlington Community and Economic Development Office |
| Plank, Ann-Marie | Vermont Housing Finance Agency |
| Rupp, Ronald | Vermont Housing and Conservation Board |
| Samuelson, Jenney | Vermont Department of Health, Childhood Lead Poisoning Prevention Program |
| Sciarrotta, Mark | Vermont Attorney General's Office |
| Serrell, Nancy | Dartmouth Toxic Metals Research Program |
| Sharp, Emily | Dartmouth Toxic Metals Research Program |
| Simoës, Steve | Vermont ANR, Hazardous Waste Program |
| Skidmore, Kendy | Bennington Coalition for the Homeless |
| Smith, Barney | Parks Place Community Resource Center |

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| Sullivan, Michael | Vermont Department of Health, Childhood Lead Poisoning Prevention Program |
| Sumner, Meredith | Legislative Council |
| Sweeney, Kevin | Painting and Decorating Contractors of America (PDCA) |
| Tanguay, Jeff | City of Burlington Lead Program |
| Ternes, Barbara | Parks Place Community Resource Center |
| Thomas, Connie | Centers for Disease Control and Prevention |
| Trummel, John | Dartmouth Medical School |
| Weiss-Tisman, Howard | Brattleboro Reformer |
| Wells, Cheryl | Vermont Child Care Providers Association |
| Wimpey, Ted | Champlain Valley Office of Economic Opportunity |
| Wright, Lesley | Vermont Lead Safety Project |
| Zaikowski, Angela | Vermont Apartment Owners Association, LLC |
| Zatzke, Bob | Vermont Housing and Conservation Board |
| Znamierowski, Stephen | ATC Associates, Inc. |