

Why More Is Required to Address Maine's Childhood Lead-Poisoning Problem

by David Littell



Although largely hidden from the public eye, childhood lead poisoning has been identified as one of Maine's leading environmental health problems. Recent data show not only that lead-poisoning levels are unacceptably high among Maine's children, but also that screening rates across the state are lower than recommended by national health organizations and lower than in other New England states. In this article, Littell discusses why childhood lead poisoning is such a problem in Maine and what can be done to remedy the situation. He provides a thorough examination of how children are exposed to lead, and the magnitude of the problem in Maine. He reviews the state's existing programs to address the problem, and contrasts Maine's approach with that of several other states. He concludes with a series of thoughtful recommendations, and argues that the state must do much more if it intends to achieve its policy goal of ending childhood lead poisoning by 2010. 🐉

INTRODUCTION

Lead is a regulated hazardous substance considered an environmental contaminant under the federal Clean Air Act, Clean Water Act, Safe Drinking Water Act and Superfund Law as well as a host of other federal and state programs. Once inside the human body, lead can adversely impact virtually every system in the human body. It disrupts the creation of healthy blood cells and the development of the nervous system, causing delays in growth, learning disabilities, and emotional and behavioral disturbances with lifelong effects.¹ Lead is especially harmful to the developing brain of a child.² Indeed, extreme cases of lead poisoning can be fatal as in the 2000 poisoning of a two-year-old girl in Manchester, New Hampshire, the first recorded lead-poisoning death in the United States in 10 years.³

The good news is that as a result of the 1978 federal ban on lead in residential house paint, and the phase out of leaded gasoline through the late 1970s and early 1980s, average blood-lead levels among children in the United States have decreased by approximately 80%. The bad news is that elevated blood levels remain common among certain groups, particularly children living in older homes.⁴ Of particular worry to Mainers is that the 1994-99 average blood-lead level for children screened under the age of six was twice as high in Maine as in the United States as a whole. Moreover, screening rates in Maine for childhood lead poisoning remain below national standards and those achieved in other New England states. For a state that prides itself on being at the cutting edge of environmental health policy, this is a dubious distinction—one that has caused health officials in Maine to list lead poisoning as one of the state's leading childhood environmental health problems.⁵

This article assesses why childhood lead poisoning is such a problem in Maine and what can be done to improve the situation. After a look at how children are exposed to lead, the article reviews the recent data on the prevalence of childhood lead poisoning in Maine and on Maine's screening rates. It then provides an overview of current state efforts to curb the problem, which—even though well intentioned and headed in

the right direction—fall short when compared with the magnitude of the problem. In this regard, other states provide innovative examples of what more can be done. This article highlights some of these efforts and concludes with a detailed set of recommendations for Maine.

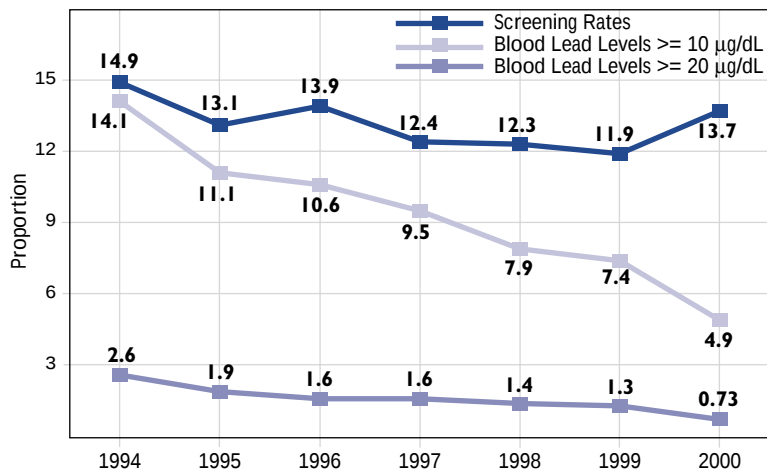
EXPOSURE TO LEAD

The U.S. Centers for Disease Control and Prevention (CDC) defines lead poisoning as a blood-lead level exceeding 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$). At this blood-lead level, adverse effects on children's development are well documented, and newer research indicates that even blood-lead levels as low as 2.5 $\mu\text{g}/\text{dL}$ are associated with harmful effects on children's learning and behavior, suggesting there may be no "safe threshold" for the ill effects of lead.⁶ The effect of lead poisoning on children's long-term cognitive ability are estimated to be one-quarter to one-half of an IQ-point decline for each 1 $\mu\text{g}/\text{dL}$ elevation of blood-lead level.⁷ Moreover, the long-term effects of moderate- or low-level lead poisoning in children may not be reversible even after medical treatment (MMAF 2000).

Exposures to lead occur because of the prevalence of lead in older, pre-1978 residential paint, from its use in piping and numerous other residential, commercial and industrial materials, and because it is still contained in many imported goods. Because of this, sources of lead are often immediately accessible to children. However, the majority of childhood lead exposures are due to poorly maintained old lead paint and secondary sources, such as lead-paint dust and lead-contaminated soils around houses, apartments, and daycare facilities. Residential paints containing lead were used until 1978, when the Consumer Product Safety Commission banned lead in residential paint.⁸ For that reason, pre-

...screening rates
in Maine for
childhood lead
poisoning remain
below national
standards and
those achieved
in other New
England states.

**Figure 1: State of Maine Childhood Lead Analysis,
Years 1994-2000**



Source: DHS Bureau of Health, Childhood Lead Poisoning and Prevention Program, "Trend Analysis Through 2000."

1978 housing is likely to contain some lead paint. Unfortunately, approximately 79% of Maine's housing stock was constructed prior to 1978.

Moreover, residential paint commonly used up until 1950 contained very high levels of lead, often 50% or more of the paint. Therefore, children in pre-1950 housing are at an even greater risk of lead poisoning. Indeed, national studies indicate that low-income children living in older housing have a 30-fold greater prevalence of lead poisoning than do middle-income children living in newer housing (MMWR 2000). Based on the age of Maine's housing stock and the state's median income level, it is fair to say that the vast majority of children in Maine will be exposed to some lead, either in their own homes, at the homes of friends or relatives, or at their daycare centers or schools.

Lead dissolved in drinking water also can be a source of lead poisoning. Typically, this occurs in houses with older lead piping, which can corrode under certain conditions, adding lead to drinking water before it reaches the tap. While lead piping can be a significant source of lead in drinking water, if precautions are taken (such as running the tap before drinking), the problem is controllable. For this reason, deteriorating lead paint, lead-paint dust, lead paint

mobilized during renovations, and lead-contaminated soils around older homes are the dominant risk factors leading to lead poisoning.

THE MAGNITUDE OF THE PROBLEM

A study conducted by the Maine Medical Assessment Foundation (MMAF 2000) found that 10.78% of children from birth to six years old, screened for lead from 1994-99, exceeded the 10 $\mu\text{g/dL}$ blood-lead poisoning level. From this finding, the foundation estimated that as many as 6,410 Maine children may have been poisoned by lead annually over the five-year period of the study. Importantly, based on these statistics, Maine's lead-poisoning prevalence for 1994-99 exceeded the national norm by a factor of approximately 100%.⁹

The last two years of data suggest improvement. Data compiled for 2000 indicate that the prevalence of blood-lead poisoning (the incidence of children with a blood-lead level of at least 10 $\mu\text{g/dL}$) among children screened between the ages of birth and six years dropped to 4.9% (see Figure 1).

Similarly, preliminary data for 2001 found that the statewide average for one-year-olds tested was 5.0%, and for two-year-olds tested was 6.7%.¹⁰ These reductions in lead-poisoning cases are good news and, today, very high blood-lead levels (i.e., above 20 $\mu\text{g/dL}$) represent less than 1% of children tested. Despite such good news, however, we still may be in the range of 1,000-3,000 childhood lead poisonings each year.

In part, this is because we do not know whether Maine's "highest-risk" children are being screened. Screening rates in Maine are quite low. Further, there is no statewide protocol for determining who is tested other than a 1997 federal mandate to test all Medicaid-recipient children, which has never been achieved in Maine. Thus, without universal screening and/or random sampling of the population, the true extent of lead poisoning among Maine children is unknown.¹¹

While screening rates in Maine may seem to be improving on the surface, this may be because fewer "highest-risk" children are being screened. As Figure 1 shows, in the most recent two years for which data are available the screening rate improved from 11.9% in

1999 to 13.7% in 2000, reversing what was a declining trend in screening rates over the previous five years. Preliminary 2001 Department of Health Services data continue this upward trend: screening rates increased to 38.4% of one-year-old children and to 15% of two-year-old children.

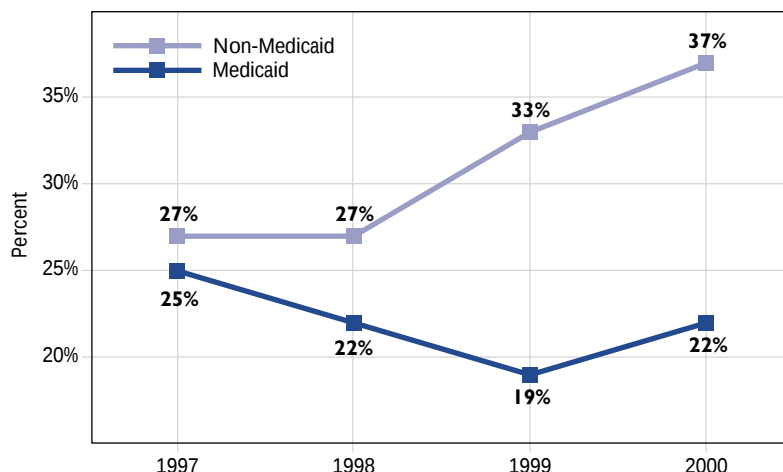
However, even while screening rates are improving overall, the rates for Medicaid-recipient children are significantly lower than for non-Medicaid-recipient children, and the gap appears to be widening. Moreover, until 2000, the screening rates for one- and two-year-old Medicaid-recipient children were trending downward (see Figure 2 and Figure 3). This is notable, in part, because Medicaid-recipient children represent the only population in Maine for whom universal screening is mandated. Further, absent any realistic means of defining high-risk children geographically, Medicaid-recipient children provide a good proxy for evaluating the state's screening practices.

Maine's screening rates also can be assessed relative to national criteria recommended by the Centers for Disease Control (CDC) and the American Academy of Pediatrics (AAP). The CDC guidelines recommend universal childhood testing for lead poisoning in zip code areas where 27% of the housing was built prior to 1950, since such houses present the highest degree of exposure risk. In Maine, 41.1% of the housing stock was built before 1950, and in every county across the state, at least 27% of the housing stock was built prior to 1950.¹² Thus, although counties are not the same geographic unit as zip codes, application of the CDC criteria would suggest that almost all—if not all—of Maine children should be screened for lead poisoning.

It should be noted that assessing the degree of exposure risk by zip code may be particularly difficult in rural states such as Maine, where zip codes often cover vast and geographically disparate areas. Because of this, Maine—like other rural states—has proposed the implementation of population-based screening criteria.

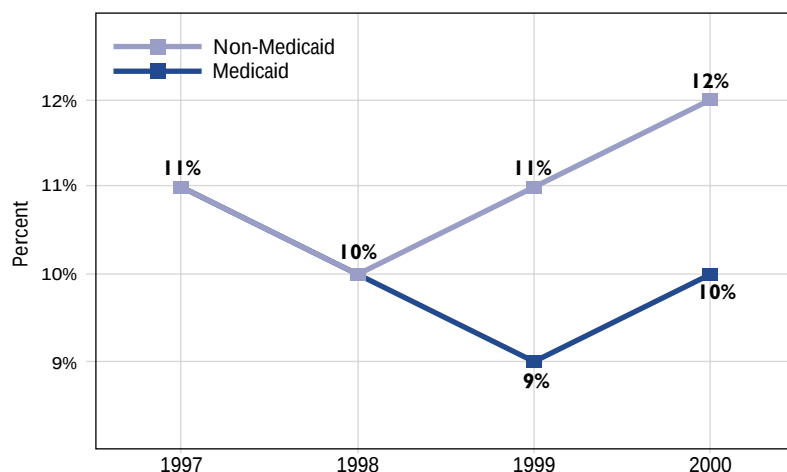
In this regard, the CDC also recommends screening individual children if they live in or regularly visit a home built before 1950 (or a home built before 1978 that is being remodeled or renovated), particularly if the child has a playmate or sibling that has been poisoned by lead, or if the child receives services from

Figure 2: Blood-Lead Screening Among One-Year-Old Children, 1997-2000



Source: DHS Bureau of Health, Childhood Lead Poisoning and Prevention Program, "Trend Analysis Through 2000."

Figure 3: Blood-Lead Screening Among Two-Year-Old Children, 1997-2000



Source: DHS Bureau of Health, Childhood Lead Poisoning and Prevention Program, "Trend Analysis Through 2000."

a public assistance program such as Medicaid or Women, Infants and Children (WIC). The American Academy of Pediatrics (AAP 1998) supports these guidelines, and further recommends that pediatricians provide anticipatory guidance to parents in an effort to prevent lead exposure (primary prevention), and increase their efforts to screen children at risk for lead exposure (secondary prevention).

However, to date, Maine has not implemented a statewide risk-assessment protocol, and current data suggest Maine has much room for improvement in its blood-lead-level screening rates. Indeed, in its report, the Maine Medical Assessment Foundation (2000) concluded that Maine's "[s]creening practices—both in terms of rates of screening and follow-up—have not been consistent with AAP and CDC recommendations."

Existing state policy treats lead poisoning and exposure risk under a number of separate programmatic areas.

STATE AND LOCAL PROGRAMS

Existing state policy treats lead poisoning and exposure risk under a number of separate programmatic areas. Medical treatment for lead poisoning and early diagnosis/childhood screening is generally addressed by the Bureau of Health's Childhood Lead Poisoning Prevention Program (often referred to as the Childhood Lead Program). Through another division, the Department of Human Services administers a daycare licensing and inspection program, which examines the lead-paint hazards at the state's more than 22,000 daycare facilities (which are required by statute to be lead safe). The Drinking Water Program run by the Department of Human Service's Division of Health Engineering addresses levels of lead in drinking water throughout the state in partnership with local water districts.

The abatement of lead hazards in qualified housing is addressed statewide through programs

administered by the Maine State Housing Authority (MSHA), and through local lead-prevention programs in Portland, Lewiston and Auburn. For example, currently MSHA is administering a \$2.75 million, three-year lead-abatement grant from the U.S. Department of Housing and Urban Development, which is intended to control lead-paint hazards in 230 homes for low-income residents and provide inspection of another 655 units.¹³ The MSHA administers its program through four regional non-profit agencies: Penquis Community Action Program in Bangor; Aroostook County Action Program in Presque Isle; Washington-Hancock Community Action in Milbridge; and Community Concepts, Inc., in South Paris.

Lead hazards from other types of environmental sources, such as old landfills or air pollution, are

addressed by the Department of Environmental Protection (DEP).¹⁴

The DEP also regulates the standards and procedures that define the "lead-safe" status of housing and daycare facilities, and the licensure of lead-abatement workers. For contractors who work with lead paint, it provides Lead Smart

Renovator courses. In addition, the DEP regulates the standards under which renovation and remodeling work can be done, and regulates the training to become qualified to undertake such work.

Last, there are a number of non-profit efforts to prevent lead poisoning throughout the state. For example, the Kids Run Better Unleaded program at the Barbara Bush Children's Hospital at Maine Medical Center is designed to encourage primary-care physicians to undertake the appropriate lead screening and assessment of pediatric patients. The Maine Lead Action Project funds community-based coalitions to implement education and outreach campaigns to address childhood lead poisoning. The project's training sessions focus on how to properly assess lead hazards and to conduct renovation work so as not to create a hazardous lead situation.

Although well intentioned and definitely headed in the right direction, such efforts can only be characterized as heroic given the size of the state and the potential magnitude of the state's childhood lead

poisoning problem. They have not yet resulted in substantial improvement in Maine's screening rates, which remain below that of other New England states and of national standards. Also, the state's lead abatement efforts reach only a small fraction of the houses in need of attention. These two issues are addressed below in greater detail.

Screening for Lead

The Bureau of Health's Childhood Lead Program implements the Maine Lead Poisoning Control Act, which was enacted by the legislature in 1992 and amended in 2002. One of the goals of the 1992 legislation was to establish an early diagnosis program to screen children between the ages of one and six years.¹⁵ However, mandated childhood screening was not included in the 1992 law. Thus, to date, screening of young children for lead has been undertaken at the discretion of primary-care physicians and parents. Moreover, the Childhood Lead Program has been funded largely with federal grants for the last eight years and has had limited resources to engage in public and health-provider educational efforts.

In 2002, the 120th Maine Legislature revised Maine's lead-screening statute to require health-care providers to "advise parents of the availability and advisability of screening their children for lead poisoning." Further, the 2002 law requires that any health-care program that receives state funds provide lead screening for children. The new law also requires the Department of Human Services to establish a statewide lead-poisoning, risk-assessment protocol and a blood-lead-level testing program.¹⁶

Clearly, the 120th Legislature was concerned about low blood-lead-level screening rates. However, it is too early to tell whether the 2002 law will succeed in identifying more of the potential thousands of undocumented lead poisoning cases each year. It is notable that the 2002 law does not explicitly mandate screening for all children unless participating in a health-care program funded by the state. Moreover, the lead-risk assessment mandated for children covered by MaineCare can be waived if the child's level of risk does not warrant a blood-lead-level test after applica-

tion of a risk assessment questionnaire. Further, testing is required only for children aged one to two years—even though the Maine Medical Assessment Foundation report (2000) found that older children (aged three to six years) had higher rates of positive lead screens than did one- and two-year-olds. Thus, the 2002 law leaves a number of gaps and is less aggressive than lead screening programs already operating in some other states.

Lead Abatement

Maine's lead-abatement programs administered by MSHA and through similar federally funded programs in Portland, Lewiston and Auburn are an important part of the state's overall lead paint control strategy, but these programs address only a small portion of the problem. The existing lead paint control issue in Maine involves 242,858 "high-risk" housing units and residences built before 1950, and another 212,939 units built between 1950 and 1978. Each of these houses or apartment buildings is likely to contain some amount of lead. All together, the MSHA, Portland, Lewiston, and Auburn lead-abatement programs will reach less than 1% of the housing units in Maine that warrant attention.

Furthermore, a major drawback of both the MSHA and local housing lead-abatement programs is their focus on remediating low-income units. Housing owned by middle-income Maine families may not qualify for such assistance. Yet for many homeowners, the costs of abatement could equal the costs of a new car. In addition to the actual abatement costs, state policy must consider the dislocation costs of finding temporary housing during most abatement. In reality, due to high cost and the practical difficulties of moving to temporary housing, most middle-income families simply will not abate lead hazards in their homes or abate only what can be reasonably done without moving. The costs of temporary relocation are also a significant issue for renters. Many homeowners and landlords may ignore the hazard because of a perceived high cost of addressing it.

A 1998 study commissioned by the legislature examined lead-paint liability and related insurance

issues. It recommended a public subsidy to control lead hazards in economically depressed areas, and called for the establishment of a loan program for multifamily properties serving households earning less than 80% of the median income or that are located in low- or moderate-income census tracts (Task Force 1998). While such a program would be a good start, it would not provide incentives to middle-income families with young children who are quite often cash-strapped and lacking financial reserves. Furthermore, to date, the recommendation has not been adopted by the legislature. The problem is further exacerbated by the fact that Maine has one of the highest rates of homeownership in the United States. The state's policy emphasis on enabling first-time homeownership (which generally is a good thing) perhaps has had the secondary effect of placing many moderate-income families in "fixer-uppers" in need of lead abatement.

In summary, the combined effort of Maine's public and private programs has not been enough. It is clear that by staying on its current course, Maine will not reach the policy goal enunciated in 1992 by the Maine Legislature to end childhood lead poisoning by 2010. The history of the last 10 years shows that new ideas, new practices and new policies will be needed to effectively deal with the problem.

LEARNING FROM OTHER STATES

A number of states offer examples from which we can learn. Several New England states, including Rhode Island, Massachusetts and, to some extent, Connecticut have been particularly aggressive and/or innovative. Still other states with childhood lead problems, such as Missouri and New Jersey, demonstrate a trend toward mandated universal screening.

Rhode Island has been aggressive and innovative in its approach to lead-poisoning prevention and screening. Rhode Island adopted universal pediatric screening in 1991.¹⁷ Accordingly, it requires universal blood-lead-level screening as a primary component of its statewide lead-poisoning prevention program.¹⁸ Rhode Island physicians must medically screen children less than six years of age at least annually, although under certain circumstances a risk-assessment question-

naire can be substituted after three years of age.¹⁹

Rhode Island has collected significant data to track its progress in achieving this goal and has blood-lead-level data on a high percentage of its children. Rhode Island officials use these data to develop targeted public health programs and to ensure that parents, caregivers, and doctors have the knowledge to eliminate ongoing lead exposure, and to prevent further lead poisoning. This strategy prevents a household that poisons one child from poisoning a second or third child.

Rhode Island coordinates all its pediatric data through a centralized database known as "KIDSNET." This database includes all children born in the state and moving into or out of the state since January 1, 1997. It is used to record lead-screening data and to identify children who have not been screened. Reports on children with no evidence of lead screening are generated monthly on an ongoing basis and sent directly to pediatric practices. Using this database, Rhode Island is able to screen 77.9% of its population of one-year-olds.

While there is variation in screening rates between municipalities (ranging from a low of 62.5% to a high of 88.5%), Rhode Island's screening statistics do not indicate any systematic variation between cities, suburbs or more rural areas, nor is there a substantial difference in screening rates by race or ethnicity. Further analysis suggests that the factors influencing lead-screening rates are not strongly related to demographics. Instead, it may be factors such as doctors' attitudes toward screening, local awareness efforts and educational activities that explain the variation in screening rates. Rhode Island's experience also suggests that the absence of a testing laboratory onsite and parents' difficulties in making a second trip to a testing laboratory away from a doctor's office explain why some children are not screened. These factors may be of particular interest to Maine's health officials.

The public and health provider education component of the Rhode Island Childhood Lead Poisoning Program is extensive. Partnerships with insurers, health centers and non-profits are utilized to publicize the need for lead-poisoning prevention and lead screening. Rhode Island Department of Health staff visits pediatric and family-care practices to distribute lead-screening guidelines, educational materials and contact

information. This practice assists in publicizing the need for lead-poisoning prevention and screening awareness. Additionally, close to 1,000 education videos on lead poisoning have been distributed to elementary schools, daycare centers and high schools.

Rhode Island has established the month of May as “Rhode Island Lead Poisoning Prevention Month” and undertakes educational and outreach activities, mailings, health fairs and workshops throughout this month each year. Parent-student neighborhood teams have conducted literally hundreds of visits in some of Rhode Island’s urban neighborhoods. Last, the Rhode Island Lead Program maintains an extensive and frequently updated Web site publicizing its lead prevention efforts and publishing data for online public and health provider access.

Rhode Island also has implemented an innovative abatement program. With federal permission, Rhode Island has become the first state to obtain approval to use Medicaid funds to replace and/or repair windows posing a lead hazard in the homes of lead-poisoned children. Although not accomplished through the Medicaid program, Connecticut also provides loans and grants to homeowners that cover up to two-thirds of the cost of lead abatement.²⁰

Massachusetts also has enacted a comprehensive Lead Poisoning Prevention and Control Program.²¹ As part of its program, Massachusetts promulgated a comprehensive liability scheme making homeowners and landlords liable for any lead-poisoning incidents if their housing is not properly abated. As a mechanism to encourage property owners to perform the lead-risk assessment of residential properties, Massachusetts requires every seller to make certain disclosures to buyers or tenants when children younger than six will live in or continue to live in the involved properties. These disclosures go beyond what is required under the 1996 federal disclosure law.

Massachusetts’ owner liability scheme is the most stringent in the country and has motivated a significant amount of lead-abatement renovation. The Massachusetts’ law requires any new owner of a home built before 1978 to fully de-lead the home, or to bring it under interim control within 90 days of taking title. In the latter case, new owners have up to

two years to fully de-lead the home. The penalty for failure to provide interim controls is strict liability for damages that result from lead poisoning—even if the homeowner does not know lead paint was in the home. Local code-enforcement activities in Boston have further encouraged property owners to comply with these de-leading requirements.²²

In addition, the Massachusetts law incorporates provisions to inform the general public of lead-poisoning issues via education and publicity programs. It also endorses an early diagnosis program intended to examine all children under the age of six years, and a system to record the results of such examinations. Health-care providers screen children at nine to 12 months and annually thereafter up to four years of age. Children at high risk for lead poisoning are screened every six months from six to 36 months and then annually from ages three to six years. As a result of such efforts, Massachusetts has achieved high screening rates. For example, a study of Boston found screening rates of 60-70% for children under the age of six, and an 82% screening rate for children from nine to 48 months.²³

Finally, Missouri recently enacted a mandatory testing requirement that applies to all children between the ages of six months and six years who live in older housing.²⁴ Missouri enacted its law after finding that only 10% of Missouri children were screened for lead poisoning in 1999 and—like Maine—about 11% (two-and-a-half times the national average) of those tested had excessive lead levels.²⁵ New Jersey also dictates that every child six years and under will be screened for lead poisoning.²⁶

A number of
states offer
examples from
which we
can learn.
Several New
England states...
have been
particularly
aggressive and/or
innovative.

The impact of the 2002 Lead Screening Law should immediately be evaluated to determine if either universal or age-extensive screening beyond ages one and two should be mandated by the legislature.

RECOMMENDATIONS

Although moving in the right direction, Maine can and needs to do much more in the areas of primary prevention, early diagnosis through screening, and lead abatement.

Increase primary prevention efforts

A strategy to prevent childhood lead poisoning begins with the recognition that most of Maine's housing stock has some amount of lead paint, not to mention the hazards presented by lead piping or lead-contaminated soil. Some—but not all—of this housing poses a serious lead hazard. These risks are not widely recognized by most Mainers. For this reason, lead-poisoning prevention must be addressed foremost through improving public awareness of lead-poisoning risks so parents and health providers know how to protect children. The AAP calls this approach “primary prevention” because it seeks to prevent lead poisoning before it first

occurs, which is unquestionably the preferred outcome.

The CDC recommends dissemination of lead-poisoning information to state and local public health agencies and to parents. Most states do undertake public education and awareness activities in their lead-prevention programs. However, in Maine, the 1998 Task Force on Lead Poisoning and Insurance Liability identified an informational gap in the state's lead-poisoning prevention programs. It recommended that more resources should be allocated for educational efforts by the Childhood Lead Program. It suggested an allocation

of \$300,000 to develop an educational program that would include a provision for grants to educational programs run by non-profit organizations, for public service announcements aimed at “do-it-yourself” home renovators, and for professional outreach. Further, the task force suggested a stakeholder conference (e.g., a Blaine House conference) to focus attention on the promotion of lead-safe renovation and remodeling practices. As one step toward building greater awareness, former Governor King signed a proclamation in 2002 declaring October as Lead Poisoning Prevention month. It is now up to the state to implement the remainder of the task force's recommendations.

There is also a role for private non-profits to enhance public awareness of lead risk and the importance of screening. For example, the Maine Lead Action Project has conducted numerous public workshops on lead hazards, and has worked to place lead-safe-work-practice brochures in hardware stores such as Aubuchon Hardware and Home Depot. However, despite these efforts, lead-hazard information is still not readily apparent for those who might purchase a belt-sander, sandpaper, or sanding belts. Mandatory distribution of the Environmental Protection Agency's lead-safe-work-practice brochures and other informational materials to purchasers of sanding equipment and supplies would further this effort. Non-profit organizations offer a cost-effective mechanism to build public awareness and to deliver services but, in some instances, may need the support of legal requirements to accomplish their mission.

In the primary prevention area, there remains much to be done to educate homeowners, parents, contractors, and property owners about lead hazards and lead-safe work practices. Still, if Maine can avoid childhood lead poisoning through such efforts, we will be in the best place we can be.

Improve screening rates

Better screening is essential to the early diagnosis of lead-poisoned children. The CDC recognizes that the most significant barrier to expanded screening may be the perception among some parents and health providers that lead exposure is simply not a problem.

However, the Maine Medical Assessment Foundation report and subsequent 2000-01 data show not only that lead-poisoning levels in Maine are higher than acceptable, but also that Maine children are screened at rates lower than recommended by national health organizations, and lower than in other New England states. While there is a strong tendency to defer to health providers' judgment regarding whether, when, and how to test and treat medical issues, the awareness problem among both parents and health providers must be addressed.

The lack of screening and prevalence information in a form easily accessible to health providers and the public also may contribute to a misperception that lead poisoning is not a problem in Maine. To correct any such misperception, lead-poisoning and screening-rate data should be published, distributed to all pediatric health providers in the state, and posted on the Childhood Lead Program's Web site to inform the public of the prevalence of lead poisoning and the importance of childhood lead screening. To its credit, the Childhood Lead Program has distributed the 2000 Maine Medical Assessment Foundation report to 400 pediatric practices.

The CDC guidelines suggest all Maine children at one and two years of age should be screened for lead poisoning. Indeed, broad screening in Maine is essential so that public health officials and health providers can accurately assess regional differences in childhood lead-poisoning rates and, accordingly, can focus limited state resources on the most problematic areas. If Rhode Island can achieve a 77.9% statewide screening rate and Massachusetts can achieve a 74% statewide screening rate, surely Maine can improve its statewide screening rate.²⁷

As noted earlier, Maine's blood-screening levels are particularly low among Medicaid-recipient children for whom 1997 federal legislation mandates universal screening. This population deserves special focus. It is not clear why children on Medicaid are screened at a lower rate than non-Medicaid children. Local variables such as proximity to health providers, proximity to a laboratory, familiarity of the provider with Medicaid services, and the proportion of Medicaid children within the community all may be factors

affecting the screening rates of the Medicaid population. Analysis of existing data and interviews with health providers should be conducted to determine which variables appear to influence screening rates, and to determine the regional variation in such influences. Implementation of a statewide database to track health data on Maine children, similar to Rhode Island's KIDSNET, also could facilitate the identification of unscreened children as well as other childhood health issues.²⁸

The impact of the 2002 Lead Screening Law should immediately be evaluated to determine if either universal or age-extensive screening beyond ages one and two should be mandated by the legislature. Ultimately, solving this problem calls for policy innovation and experimentation with new approaches. Three examples of innovative approaches to improving lead screening are population-based risk assessment, comparison of state and private data, and school registration requirements. Maine's Bureau of Health already has proposed the first of these approaches.

As mentioned before, CDC's current screening recommendations are difficult to fully implement in rural states such as Maine where individual zip codes often cover broad geographic areas with multiple towns that have varied housing stock and populations. For this reason, states such as Maine are moving toward a population-based, risk-assessment procedure, where lead-poisoning risk is assessed by a standard questionnaire administered by health-care providers. For example, criteria might include age of housing in which the child lives, whether there is any renovation or remodeling activity under way, and whether the child is on federal assistance. Currently, a physician's task force is examining Maine's risk-assessment process and is due to report to the legislature in January 2004.

Population-based risk assessment also requires a focus on particular populations. For example, urban populations, refugees and/or minority and ethnic groups may be deemed at higher risk of lead poisoning than the population as a whole. Rhode Island's experience indicates that, while urban and non-urban screening rates do not vary significantly, the prevalence of lead poisoning averages 13.2% in its five core cities and only 4.1% in the rest of the state.²⁹ In Maine,

limited existing data indicate there are clusters of relatively high lead poisoning rates in some older, industrialized, urban areas such as Biddeford and Rumford (Task Force 1998)

Likewise, refugee populations in communities such as Lewiston and Portland may be more at risk for lead poisoning. A recent study published in *Pediatrics* magazine suggests that refugee children are more likely to be poisoned by lead than are children born in the United States, particularly if from developing countries such as Somalia and Vietnam.³⁰ Based on Rhode Island's data, minority group status also may indicate a higher risk for elevated lead levels. Rhode Island attributes the racial and ethnic disparities in cases of lead poisoning to relative populations of non-whites in its core cities where lead exposure from old housing is highest. Therefore, it is unclear whether this kind of racial or ethnic disparity would be as marked in Maine where minority population distributions may not mirror those in Rhode Island.

Overall, if diligently applied, a risk-assessment questionnaire is theoretically a reliable tool for determining which children should be medically screened. However, without a penalty for failure to follow through with this type of screening protocol, it is unclear whether all health providers will change their practices to diligently administer the questionnaire. This is another potential gap in the screening approach adopted under Maine's 2002 law.

A second potential area to consider for innovation is public-private partnerships to identify unscreened children. In Rhode Island, three managed-care organizations, two state agencies and the AAP jointly formulated a data comparison plan to do just that. The Rhode Island Department of Health's lead-screening data are compared to managed-care claims data on a quarterly basis to identify unscreened children. Health provider reports are then prepared and sent to individual practices for follow-up lead screening for unscreened children identified through this process.

Last, requiring documentation of lead screening for enrollment in daycare centers and in kindergarten would enhance efforts to promote screening. Rhode Island has required documents for lead screening for school enrollment since the 1998-99 school year, and

has found higher rates of compliance for daycares than kindergartens. While kindergarten is too late to reverse early lead poisoning, such a requirement would send a clear message to parents, the education community and, most importantly, the public that lead screening should be considered a mandatory health measure for every child in the state.

Enforce, Encourage and Subsidize Lead-Safe Renovation

In the final analysis, the lead-poisoning problem must be addressed by making Maine's housing, daycare facilities and schools safer places. Through its regulatory enforcement authority, the Maine Department of Environmental Protection (DEP) and local governments can make lead-safe renovation and maintenance the norm. An initiative to rehabilitate older housing, to redevelop obsolete and uneconomical properties, and to provide safe replacement housing should become a state priority.

The age of Maine's housing stock leads some to the perception that the cost of solving the problem is too high to do anything about. With approximately 79% of Maine's housing stock likely posing some lead-hazard risk, any abatement efforts must consider the scope and expense of such programs. Nonetheless, the cost of some approaches to lead-hazard abatement is not a reason to do nothing. Rather, the benefits, costs, complexity and likelihood of success of potential new approaches all need to be weighed to determine the best mixture of public health, housing, and environmental policies and programs designed to prevent lead poisoning.

The 1998 Task Force on Lead Poisoning Liability and Insurance noted the enforcement of clear in-field guidelines for renovation as an area in need of attention. Four years later, enforcement still requires attention. In the short run, improving coordination through regular meetings among existing enforcement, lead-poisoning prevention programs, and lead-abatement programs will maximize limited resources and enhance information sharing. More state and local resources dedicated to inspections and investigations will be necessary to penetrate the significant number of illegal

renovations involving lead paint. To facilitate investigations, the DEP should have administrative information gathering authority—as they do under other environmental statutes—to investigate contractors suspected of illegally working with lead paint without reasonable safeguards. Further, the DEP should be given more explicit authority to promulgate and enforce lead-safe work practices for non-licensed contractors. To serve as a deterrent to illegal practices, the DEP and the Attorney General's Office should consider pursuing enforcement against non-licensed contractors and landlords who are engaged in unsafe work practices in lead paint, particularly if a child is poisoned as a result.

Rhode Island has taken these routes, coordinating the legal enforcement through monthly meetings between the state's lead program, its Attorney General's Office and local code enforcement officials in Providence. Its Attorney General's Office is actively engaged in enforcing the state's lead-paint rules. Moreover, when a second notice of violation is issued on a property, Rhode Island's lead program has the authority to place a mark on the property deed to prevent transfer of clear title for a property subject to unresolved lead hazards. This avoids unwitting transfers to buyers of properties that the state has identified as lead hazards.

A more ambitious approach to abatement and renovation would be the implementation of a low-interest revolving loan fund to be made available for abatement projects. Funds might be sought through the use of Medicaid funds to replace and repair lead hazards on qualified properties. The 1998 task force recommended a \$2 million revolving low-interest lead abatement loan program to be administered by the Maine State Housing Authority or by the Finance Authority of Maine. Creation of such a fund would provide an incentive for stretched landlords in areas such as Rumford and Biddeford as well as for low- and middle-income families to undertake necessary lead-abatement projects.

Enactment of a limited tax credit for lead abatement for qualified lead-safe renovations also would encourage homeowners and landlords to undertake lead abatements. Again, the 1998 task force suggested a 30% tax credit of the actual costs of assessment,

testing and abatement activities up to a maximum of \$1,000 per dwelling unit. This credit would defray some of the costs of lead abatement, and its very existence would further public awareness of the continuing need to eliminate lead hazards in Maine's housing.

This carrot (tax credits and low-interest loans) and stick (enforcement) approach holds the promise of reducing the risk factors leading to this entirely preventable childhood health risk. Lead poisoning is surely a public health, housing and environmental safety issue that will not be resolved until our housing supply itself is safe. 🐞



David Littell has practiced as an environmental attorney in Pierce Atwood's Portland office for 10 years, specializing in environmental litigation, contaminated property law, and compliance counseling. He is a graduate of Harvard Law School and Princeton University's Woodrow Wilson School of Public and International Affairs undergraduate program. He has acted as lead counsel in conducting a number of studies and cleanups under the Environmental Protection Agency's Superfund program and Maine's Uncontrolled Hazard Substance Sites program.

Please turn the page for endnotes and references.

ENDNOTES

1. Sewell, Sydney R., Ronald L. Russell and Ellen. J. Schneider. "Childhood Lead Exposure in Maine, 1994-1999, Comprehensive Analysis of the Maine Lead Poisoning Prevention Program Database." Prepared by the Maine Medical Assessment Foundation, 2000. [hereinafter: MMAF 2000]
2. While adults can be lead-poisoned, children under the age of six are most at risk, with those aged one to two years at highest risk. See also, *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*. Centers for Disease Control and Prevention. U.S. Department of Health and Human Services, Public Health Service, November 1997. [hereinafter: CDC 1997]
3. See "Fatal Pediatric Lead Poisoning—New Hampshire, 2000," in *Morbidity and Mortality Weekly Report*. 50.22 (June 8, 2001): 457-9
4. See, for example, "Blood Lead Levels in Young Children—United States and Selected States, 1996-1999," in *Morbidity and Mortality Weekly Report*. 49.5 (December 22, 2000):1133-77 [hereinafter: MMWR 2000].
5. See *Healthy Maine 2000: A Decade in Review*. August, ME: Bureau of Health, Maine Department of Human Services, 2000.
6. Schwartz, J. "Low-Level Lead Exposure and Children's IQ: A Meta-Analysis and Search for a Threshold." *Environ*. 65 (1994):42-55; Bruce Lanphear, presentation on "Potential Pitfalls in the Primary Prevention of Childhood Lead Exposure," (May 17, 2002) as reported in *Rhode Island Childhood Lead Poisoning Prevention Program Lead Update* (July 2002).
7. Rogan, Walter J, Kim N. Dietrich, James H. Ware, Douglas W. Dockery, Mikhail Salganik, Jerilynn Radcliffe, Robert L. Jones, Beth N. Ragan, Julian J. Chisolm, Jr., and George G. Rhoads. "The Effect of Chelation Therapy with Succimer on Neuropsychological Development in Children Exposed to Lead," in *New England Journal of Medicine*. 334.19 (May 10, 2001).
8. Lead continues to be found in marine and industrial paint, car batteries, fishing sinkers and weights, bullets and BB's and some water piping. Maine Childhood Lead Poisoning Prevention Program, Fact Sheet on Lead Poisoning in Maine. <http://www.state.me.us/dhs/bohdcfh/led/index2.htm>.
9. The national blood-lead level data show that 4.4% of U.S. children aged one to five had blood-lead levels above the current level of 10 µg/dL, with 5.9% of U.S. children aged one to two exceeding 10 µg/dL. See American Academy of Pediatrics, Policy Statement on "Screening for Elevated Blood Lead Levels." *Pediatrics*, 10.6 RE9815 (June 1998) [hereinafter AAP 1998]. See also MMAF 2000 (average mean level of 5.49 in Maine sample versus 2.7 mean level based on NHANES data) and MMWR 2000, Table 1.
10. Department of Human Services. "Maine Childhood Lead Poisoning Prevention Program, Preliminary Blood Lead Data Analysis Among One- and Two-Year-Old Children." Preliminary 2001 Data, 2001. [hereinafter: DHS, Preliminary 2001 Data.]
11. Nonetheless, the Maine Medical Assessment Foundation concluded in its report that the reported screening rates were not associated with the finding of abnormal blood-lead levels, which suggests that sampling bias did not occur in the populations actually tested (MMAF 2000).
12. Information here on the age of Maine's housing stock was provided to the author by the Maine State Housing Authority, based on data from the U.S. Census.
13. Maine State Housing Authority, Lead Hazard Control Program description. The cities of Portland, Lewiston and Auburn have similar lead control and abatement programs funded largely through HUD grants.
14. However, due to the state's success in reducing environmental sources of lead, the bulk of the state's existing lead-exposure risk comes from housing and residential contamination rather than industrial or commercial sources.
15. M.R.S.A. Tit. 22 §§ 1314—1326 (2001).

16. See P.L. 2002, Ch. 683, Sec. 1, amending 22 MRSA § 1317-C and Sec. 2, adding a new 22 MRSA § 1317-D.
17. Rhode Island Lead Screening Plan, Childhood Lead Poisoning Program, Rhode Island Department of Health, October 2000, § 3.
18. R.I. Gen. Laws. §§ 23-24.6-1 to 23-24.6-27 (1996); CDC 1997
19. Unless otherwise noted, the information in this article regarding Rhode Island is drawn from *Rhode Island Childhood Lead Poisoning Prevention Update*, issues July 1999-November 2001. These updates are available on the R.I. Department of Health Web site: <http://www.healthri.org/family/lead/providers.htm>.
20. Conn. Gen. Stat. Ann. § 8-219e (1989 & Supp. 1998).
21. Mass. Gen. L. Ch. 111 §§ 189A to 199B (1996 & West Supp. 1998).
22. Centers for Disease Control. "Trends in Blood Lead Levels Among Children—Boston, Massachusetts, 1994-1999." *Morbidity and Mortality Weekly Report* 50.17 (May 4, 2001): 337-9. An editorial note observes that since 1985, approximately 6,800 code enforcement activities in Boston have encouraged de-leading by property owners.
23. Centers for Disease Control. "Trends in Blood Lead Levels Among Children—Boston, Massachusetts, 1994-1999." *Morbidity and Mortality Weekly Report* 50.17 (May 4, 2001).
24. Ch. 701.322—355.
25. "Law Will Require Lead Testing of Some Children." *St. Louis Post-Dispatch* 13 July 2001.
26. N.J. Rev. Stat. Ann. §§ 26:2-130 to 137.7 (West. 1996 & Supp. 1998).
27. In evaluating screening rates, it is important to recognize that rates may not be directly comparable. For example, these screening rates cited are for one and two year olds, not all children ages six and under.

28. Implementation of a statewide database to track Maine children may make eminent sense, but would involve examination of issues beyond the lead paint problem, including feasibility and costs to set up such a network in Maine.
29. Rhode Island Department of Health. "Lead Poisoning in Rhode Island: The Numbers." Available on the R.I. Department of Health Web site: <http://www.healthri.org/family/lead/providers.htm>.
30. Some refugees may be lead-poisoned in their country of origin before immigrating to the U.S. *Rhode Island Childhood Lead Poisoning Prevention Program Lead Update* (August 2001), citing Paul L. Geltman, Mary Jean Brown and Jennifer Cochran. "Lead Poisoning Among Refugee Children Resettled in Massachusetts." *Pediatrics*. 108.1 (July 1, 2001):158-62.

REFERENCES

- American Academy of Pediatrics. "Screening for Elevated Blood Lead Levels." *Pediatrics*. 10.6 RE9815 (June 1998) [AAP 1998].
- Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Public Health Service. *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*. (November 1997). [CDC 1997].
- "Blood Lead Levels in Young Children—United States and Selected States, 1996-1999." *Morbidity and Mortality Weekly Report* 49.5 (December 22, 2000): 1133-77 [MMWR 2000].
- Sewell, Sydney R., Ronald L. Russell, Ellen J. Schneiter. "Childhood Lead Exposure in Maine, 1994-1999, Comprehensive Analysis of the Maine Lead Poisoning Prevention Program Database." Prepared by the Maine Medical Assessment Foundation. [MMAF 2000]