



Risk in Perspective

Lead Paint and Kids: Which Houses Should be Abated?

"Policy makers can develop an optimal abatement strategy only if the value placed on the benefits of lead paint abatement can be compared to the sacrifices represented by abatement costs."

In October 1992, Congress passed and President Bush signed into law legislation that was intended to change the nation's strategy for addressing the problem of lead paint in federally subsidized housing. Instead of mandating the abatement of virtually all lead paint as required by past legislation, Title X of the Housing and Community Development Act of 1992 aims to focus attention on only the most hazardous lead paint. Other recent proposals would apply the Title X strategy to address private housing.

This issue of RISK IN PERSPECTIVE examines the implications of the Title X mandate. Although Title X makes a useful distinction between hazardous and non-hazardous lead paint, it does not establish adequate criteria to determine which hazardous lead paint should be abated. Ideally, resources should target those health hazards whose social costs justify the expense of abatement.

Persistent Health Risk

An increasing body of scientific evidence suggests that lead adversely affects health, especially among children, at exposure levels previously considered safe. Reacting to this accumulation of evidence, the US Centers for Disease Control (CDC) has repeatedly lowered the "concern threshold" for blood lead concentrations. CDC lowered the 40 $\mu\text{g}/\text{dL}$ threshold of the early 1970s to 30 $\mu\text{g}/\text{dL}$ in 1975, to 25 $\mu\text{g}/\text{dL}$ in 1985, and finally to 10 $\mu\text{g}/\text{dL}$ in 1991. Roughly one in six American children have blood lead concentrations above the most recent CDC threshold.

The EPA's phaseout of leaded gasoline over the last 15 years has left lead paint as the most substantial remaining source of childhood lead exposure. Although residential application of lead paint has been banned since 1978, it remains on the interior and exterior surfaces of 57 million American homes. As it chips, peels, and otherwise deteriorates, the lead paint can contaminate soil and house dust that children often ingest as the result of normal hand-to-mouth behavior.

Despite the attention lead paint now receives, no coherent strategy has been devised to solve the problem. The price tag to abate all residential lead paint in this country exceeds \$200 billion, leaving law-makers reluctant to mandate such action. Even in Massachusetts, where legislation has mandated lead paint abatement, high costs and a perception of minimal benefits have slowed progress to a glacial pace. Despite a legal mandate, a tax credit, and the threat of legal liability for childhood lead poisoning, property owners in Massachusetts have abated only a few percent of the state's housing stock in the past five years.

The Dilemma of Over-Control and Under-Control

In its attempt to narrow the focus of federal abatement efforts, Title X makes a distinction between lead paint and "lead-based paint hazards." The legislation defines "lead-based paint hazards" to be "any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as established by the appropriate Federal agency."

Although this language appears very specific, it is subject to broad interpretation. First, any lead paint may cause lead exposure. Lead paint is often within physical reach of children (e.g., base-board molding and windows), and even intact lead paint on non-impact, non-friction surfaces may spontaneously chip. Second, any exposure may cause an adverse health effect. Many investigators believe that lead affects children at doses well below even the most recent CDC concern threshold. Indeed, there may be no "safe" level of exposure.

Title X's distinction between lead paint hazards and non-hazards is an inadequate guide to target abatement resources because the resulting regulations may be extremely stringent or extremely lax. Stringent regulations may be so cautious that virtually all lead paint is labeled a health hazard.

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Alternatively, lax regulations may fail to label all but a tiny proportion of dwellings as unsafe, leaving many substantial hazards uncorrected.

Spending Abatement Resources Efficiently

If a fixed budget were established for lead paint abatement, all houses with lead paint could be ranked by both abatement cost and the hazard they present. Resources could then be targeted at houses with the greatest hazard reduction per abatement dollar. Although this scheme does not address equity issues, it does maximize the health benefits that could be achieved with the budgeted resources. Unfortunately, this approach does not help policy makers decide how big the abatement budget should be.

One way to determine the proper budget level compares abatement efforts to other health expenditures in terms of cost and effectiveness. The abatement budget could be increased until it yielded a smaller health improvement per dollar than expending resources on other problems. But this comparative analysis also fails to establish the ideal resource allocation to expend on lead paint abatement. If expenditures on other health problems are too great (that is, resources are wasted on expensive measures yielding limited benefits), then this approach will prescribe an exorbitant lead paint abatement budget. Conversely, if efforts to combat other health problems are under-funded, this approach will prescribe an inadequate lead paint abatement budget.

Budget-setting mechanisms must take into account the value citizens place on reducing lead's health effects. Only by assigning a value to the elimination of a hazard can we decide the level of resources that should be devoted to remediation.

The value of reducing lead's health effects reflects both financial and non-financial considerations. For a few children, lead exposure causes severe symptoms, resulting in substantial medical and special education costs. For the majority of children, lead's impact is so subtle that it cannot be detected clinically. Nonetheless, many investigators believe that lead's subtle effect on intelligence manifests itself as a statistical shift in average population cognitive performance. As a result, society incurs a financial cost in the form of decreased worker productivity. Non-financial considerations reflect the value individuals place on avoiding lead's effects regardless of its impact on their wealth. For example, the monetary value parents place on maximizing their children's academic performance may exceed the extent to which this improvement increases their children's lifetime earnings.

Measuring abatement benefits in monetary terms poses several complications but is tractable. The

beneficiaries are generally very young children. There is no market in which parents explicitly buy and sell health risks imposed on their children. Nonetheless, if we are willing to accept parental action as the best available proxy for a child's preferences, then this information can be inferred from markets in which parents implicitly trade health risks imposed on their children. These markets include sales of automobile child restraint devices, smoke detectors, and bicycle helmets. This approach makes strong assumptions about parental "rationality" and may not be relevant to the types of health effects caused by lead paint.

Alternatively, the information can be inferred from responses to surveys that ask how much individuals are willing to spend to avoid hypothetical risks. While these surveys can be tailored to elicit information on the effects of lead, responses to surveys are not always a good indicator of real-world parental behavior. Used in conjunction with behavioral data, however, this type of survey evidence would be useful.

Even if these values could be measured perfectly, equity considerations pose a second complication. Strict adherence to the benefit-cost criterion might imply that wealthier children should be protected from lead paint to a greater degree than should lower income children. Wealthier families place a greater monetary value on health because they have fewer financial constraints. Moreover, because more privileged children have higher incomes when they become adults, the financial impact of cognitive impairment is larger than it is for less privileged children. The resulting unjust prescription might be corrected within the benefit-cost framework by adjusting the benefit estimates to reflect a scenario in which all children came from equally privileged backgrounds.

Conclusion

Whether the public sector or the private sector bears the cost, lead paint abatement will entail a sacrifice of scarce resources. Title X's distinction between hazardous and non-hazardous lead paint does not provide enough guidance to policy makers. Policy makers can develop an optimal abatement strategy only if the value placed on the benefits of lead paint abatement can be compared to the sacrifices represented by abatement costs.

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