

GAO

Report to the Chairman, Subcommittee
on Health and the Environment,
Committee on Energy and Commerce,
House of Representatives

May 1994

TOXIC SUBSTANCES

Status of EPA's Efforts to Develop Lead Hazard Standards



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United States
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Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-256299

May 16, 1994

The Honorable Henry A. Waxman
Chairman, Subcommittee on Health
and the Environment
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

Lead poisoning is the most common and devastating environmental disease of young children, according to the Centers for Disease Control. Millions of U.S. children from all geographic areas and socioeconomic groups have lead in their blood at levels high enough to cause adverse health effects. A major cause of lead poisoning is lead-based paint, and its presence in housing is the primary focus of concern because of the amount of time that very young children—those most susceptible to the disease—spend in their homes.

To address this problem, the Congress enacted the Residential Lead-Based Paint Hazard Reduction Act of 1992.¹ Among other things, the act required the Environmental Protection Agency (EPA) to develop, by April 28, 1994, (1) standards defining hazardous levels of lead in lead-based paint, household dust, and soil; (2) standards for performing inspection and abatement activities for lead-based paint; and (3) guidelines to avoid creating lead-based paint hazards in performing renovation and remodeling activities. Although the Department of Housing and Urban Development (HUD) has developed abatement guidelines for lead-based paint hazards for the Department's housing programs, no standards exist for general use in private housing and public buildings to facilitate identifying and removing lead hazards in a safe and effective manner.

You requested that we review EPA's efforts to develop the standards and guidelines for lead hazards. Specifically, this report discusses the status of these efforts as of April 1994 and the additional actions that EPA must complete to issue the standards and guidelines.

Results in Brief

EPA did not issue the standards defining hazardous levels of lead in paint, dust, and soil by the legislatively imposed April 1994 deadline, although

¹Enacted by the Congress on October 28, 1992, as title X of the Housing and Community Development Act of 1992 (P.L. 102-550).

the renovation and remodeling guidelines were issued on time. While EPA expects to issue the standards by late 1995, the date appears optimistic, given that the regulatory review process alone may take 2 years or more.

Although EPA has completed the technical work needed to develop a standard defining hazardous levels of lead in lead-based paint, the agency must complete a number of activities before it can develop similar standards for lead-contaminated dust and soil and issue the three interrelated standards at the same time. According to EPA officials, additional time is required to (1) complete research on lead-contaminated dust and soil, (2) develop proposed standards, and (3) complete the regulatory review process. Consequently, EPA's lead hazard standards might not be issued until September 1995—more than a year after the April 1994 date required by the Residential Lead-Based Paint Hazard Reduction Act. In the interim, EPA plans to issue, in May 1994, guidance defining hazardous levels of lead in lead-based paint, dust, and soil.

EPA's efforts to develop lead inspection and abatement standards have also been delayed, primarily because of the agency's extensive efforts to consult with state and local governments and other interested parties to ensure that the standards will meet their needs. EPA officials expect to issue these standards by November 1995, rather than by April 1994 as the act required.

The delays that EPA has experienced in issuing the lead hazard standards may have serious environmental and health consequences because lead-based paint abatement activities continue to be performed without adequate standards to protect the public. To address this problem in the interim, we believe that EPA should promote the general public use of existing guidelines established by HUD for abating lead-based paint in housing under its programs.

Background

Lead is a dangerous and pervasive poison that adversely affects virtually every system in the body. Lead poisoning occurs through exposure to lead in air, dust, soil, water, food, and products such as paint. Because young children frequently place their fingers and objects in their mouth, they can ingest lead by swallowing paint chips and lead-contaminated dust or soil. Paint, dust, soil, and drinking water are the primary media through which children are poisoned by lead. According to EPA, lead-based paint is the principal cause of the most severe cases of lead poisoning among children and is thought to be the primary source contributing to lead contamination

in household dust and soil. Although EPA has established recommended exposure limits for lead in drinking water, standards that define specific conditions under which lead-based paint and lead-contaminated dust and soil pose health hazards have not yet been established.

The Residential Lead-Based Paint Hazard Reduction Act of 1992 required EPA to develop standards for identifying and removing lead hazards. Among its provisions, the act directed EPA to promulgate regulations by April 1994 that identify hazards associated with (1) lead-based paint, (2) lead-contaminated dust, and (3) lead-contaminated soil. These regulations are to provide health-based standards for identifying the conditions under which lead-based paint poses a health hazard. Because lead in household dust and soil comes primarily from deteriorating paint, hazards associated with lead-contaminated dust and soil are included under the act's definition of lead-based paint hazards. The standards are intended to identify dangerous levels of lead in these media and will be used by contractors and others in conducting inspection and abatement activities.

The act also directed EPA to promulgate, by April 28, 1994, regulations that provide standards for performing lead-based paint activities, taking into account reliability, effectiveness, and safety. Lead-based paint activities governed by these regulations include (1) conducting risk assessments and inspecting for and abating lead hazards in and around most housing constructed before 1978 (when the sale of lead-based paint to consumers was banned) and (2) identifying and removing lead-based paint and associated materials and conducting demolition activities involving public buildings built before 1978, commercial buildings, bridges, and other similar structures. These standards, in conjunction with the lead hazard standards, are intended for inspectors and abatement contractors to use in ensuring that lead hazards are identified and eliminated in the safest and most effective manner.

The lead hazard and abatement standards proposed by EPA must undergo the federal regulatory review process which, in the past, has taken up to 2 years or more to complete. Under this process, the proposed regulation is reviewed consecutively by EPA senior management, the Office of Management and Budget (OMB), and the public. Once EPA staff make modifications to the proposed rule in response to the review comments, the proposed regulation is again reviewed within EPA and by OMB. The Administrator, EPA, then signs the regulation, which is then published in the Federal Register as a final rule.

In addition, the act required EPA to develop, by April 28, 1994, guidelines for renovation and remodeling activities that may create a risk of exposure to dangerous levels of lead. These guidelines describe measures to be taken by contractors to avoid creating lead-based paint hazards in renovating and remodeling homes.

Additional Needed Efforts Will Delay Issuance of Standards Defining Lead Hazards

Although EPA has nearly completed its work to develop a standard defining lead-based paint hazards, much additional work is needed before EPA can complete similar standards for lead-contaminated dust and soil. Additional efforts required to complete these standards include (1) evaluating and modifying an analytical model that EPA is considering for developing both a dust and soil standard, (2) completing further research on and analysis of a number of issues concerning lead-contaminated dust and soil, and (3) completing the review process for issuing the standards as a federal regulation.

In August 1993, EPA developed a strategy and schedule for completing the standards by April 1994. Although EPA has experienced numerous delays in developing the standards since the strategy was issued, the agency has not analyzed the remaining tasks and formally revised its milestones for issuing the standards. Nevertheless, EPA officials told us that these efforts are extensive and complex and could not be completed by the April 1994 date specified in the Residential Lead-Based Paint Hazard Reduction Act. Instead, although EPA has not revised its schedule, agency officials estimated that EPA may issue all three lead hazard standards by September 1995. In the interim, EPA plans to issue guidance defining hazardous lead levels in paint, dust, and soil on the basis of the scientific analysis that EPA has completed to date.

Technical Work on Lead-Based Paint Standard Is Essentially Complete

In developing its lead-based paint standard, EPA relied heavily on guidelines that HUD had previously developed to address lead-based paint hazards in public housing.² HUD's guidelines provide information on the need for and the appropriate methods of identifying and abating lead-based paint. They are a compilation of technical protocols, practices, and procedures for (1) the testing, abatement, cleanup, and disposal of lead-based paint in residential structures and (2) the protection of workers

²HUD's activities and programs relating to lead-based paint hazards in housing are discussed in a number of our reports, including Lead-Based Paint Poisoning: Children Not Fully Protected When Federal Agencies Sell Homes to the Public (GAO/RCED-93-38, Apr. 5, 1993) and Toxic Substances: Federal Programs Do Not Fully Address Some Lead Exposure Issues (GAO/RCED-92-186, May 12, 1992).

from the hazards of lead-based paint. HUD's guidelines (1) include provisions to control the generation of lead-contaminated dust during lead paint abatement activities and (2) specify maximum levels of lead-contaminated dust permissible after paint abatement. Unlike HUD's guidelines, EPA's lead paint standard will not address the permissible level of dust or soil contamination after abatement activities; such levels will be defined in the separate dust and soil hazard standards that EPA is developing.

Although EPA's paint standard is essentially completed, the agency does not plan to issue this standard until its dust and soil standards are also completed. Because of the interrelationship between hazards that arise from lead-based paint and lead-contaminated dust and soil, EPA officials believe that the hazards should be addressed in a simultaneous, coordinated manner and plan to issue the standards in a single regulation. However, delaying the issuance of a paint standard while completing the dust and soil standards may have serious environmental and health consequences because paint abatement activities performed in the interim must proceed without adequate standards to protect the public.

EPA Is Developing Data Needed for Lead-Contaminated Dust and Soil Standards

To develop a standard for lead-contaminated dust, EPA is evaluating a model for assessing the biologic response to and potential health risks from exposure to such dust in a specified area. By evaluating lead exposure from dust and considering human lead intake and body absorption, the model predicts a distribution of children's blood-lead levels that can be related to health risks.

A number of critics have questioned the reliability of the risk predictions that would be derived from EPA's model. During a June 1993 public meeting at which EPA presented its proposed technical approaches to developing the lead hazard standards, numerous participants expressed concerns that (1) the model's results had not been validated and (2) the model was not designed to use key data needed to determine lead contamination hazards.

EPA has undertaken a number of activities to address the concerns about the model. To validate the model's results, EPA compared the dust hazard levels derived from the model with levels derived independently by analyzing epidemiological studies on the correlation between lead-contaminated dust and levels of lead in blood. EPA has not completed research efforts that address the concern that the model was not designed

to use key dust measurement data. The model currently considers only "dust concentration"—the amount of lead per unit weight of dust—rather than "dust loading"—the amount of dust per household area. However, according to EPA officials, the dust-loading measurement may be the appropriate measurement to use with the model in establishing the dust standard. Therefore, EPA is determining the correlation between the dust concentration and dust-loading measurements so that necessary modifications can be made to utilize the model.

In addition, EPA officials told us that the agency did not have sufficient research data on the correlation between household dust and levels of lead in blood to use with the model. They said that such data available from previous studies are of limited use with the model because the studies did not control for the extent to which exposure to sources of lead other than dust, such as paint and soil, may have affected the levels of lead in blood. EPA is currently evaluating the results of research completed in December 1993 to determine how to utilize the information in setting the standard.

According to EPA officials, an internal EPA committee established by the Assistant Administrator for Prevention, Pesticides, and Toxic Substances found in April 1994 that additional work is needed to (1) validate the model for use in developing the standards and (2) analyze epidemiological studies relating lead-contaminated dust to blood-lead levels. This work may require an additional 6 months or more to complete.

EPA officials told us that the model being evaluated for developing the lead-contaminated dust standard may also be used for the lead-contaminated soil standard. In addition, EPA is analyzing studies to determine the effectiveness of removing lead-contaminated soil to reduce the level of lead in children's blood. The studies were performed under cooperative agreements between EPA and the cities of Baltimore, Maryland; Boston, Massachusetts; and Cincinnati, Ohio. They showed little or no reduction in the level of lead in the children's blood after lead-contaminated soil was removed from around their house.

EPA must determine how the studies should be used, given their limitations. For example, the three studies analyzed only the effect that removing soil with relatively low lead content may have on children with low levels of lead in their blood. The studies did not consider children who live in areas with high levels of lead in the soil nor the potential effects that removing lead-contaminated soil would have on children with higher

blood-lead levels. Furthermore, EPA officials believe that the studies might have shown a greater benefit associated with the removal of lead-contaminated soil if the children in the studies had been monitored after abatement for more than the 11-month period covered by the studies. Finally, the studies measured the effects of changes in the levels of lead in the soil but did not provide data on the effects of stable soil-lead levels.

Once the dust and soil standards are developed, they and the lead-based paint standard will become a proposed regulation. According to EPA officials, because of the time required to complete research, develop proposed standards, and complete the regulatory review process, the lead hazard standards might not be issued until September 1995. Although EPA has not revised this estimate in light of the EPA committee's recent finding that additional technical work is needed on the model and epidemiological studies, EPA officials said that they plan to develop a revised schedule for completing the standards.

EPA Will Issue Interim Lead Hazard Guidance

Because of delays in completing the lead hazard standards, EPA plans to issue, in May 1994, technical guidance defining the levels of lead in paint, dust, and soil that are hazardous. The guidance does not have to undergo the regulatory review process and, therefore, can be issued well before the standards are issued. The defined levels of lead hazards will be based on the scientific analysis that EPA has completed on the standards to date. EPA officials believe that the guidance will provide the public and workers with some measure of protection from lead hazards until the standards can be completed.

Lead Abatement Standards Will Be Delayed

Although EPA has made progress in developing the lead abatement standards required by the Residential Lead-Based Paint Hazard Reduction Act, they were not completed by the April 28, 1994, deadline specified in the act. EPA officials expect to issue the standards by November 1995. According to EPA officials, the standards will contain required basic work practices for abatement contractors and will refer contractors to the lead inspection and abatement guidelines developed by HUD to address lead-based paint hazards in its housing programs.

EPA is developing a consolidated rule that will include its abatement standards as well as contractor training, accreditation, and certification requirements. According to EPA officials, the agency has experienced delays primarily because of efforts to provide interested parties

opportunities for early involvement in the standards' development process in order to tailor the various components of the regulation to the parties' needs. EPA has held public meetings and consulted with representatives from labor unions, national organizations representing abatement and building contractors, training organizations, public interest groups, state and local governments, and other involved federal agencies (such as HUD and the Occupational Safety and Health Administration). In addition, the development of the lead abatement standards was delayed by the need to resolve within EPA a number of issues concerning interpretations of the act and to perform a cost-benefit analysis relating to the rule, which is required by Executive Order 12866.

EPA officials submitted a draft proposed rule to OMB in early April 1994. Because the abatement standards are part of a proposed regulation, they will be published in the Federal Register for public review and comment after OMB's review and must undergo all of the subsequent steps of the regulatory review process.

Renovation and Remodeling Guidelines Were Issued on Schedule

EPA officials issued guidelines for renovation and remodeling activities by the April 28, 1994, deadline specified in the act. As required under the act, EPA is distributing the renovation and remodeling guidelines to persons involved in home renovation and remodeling activities. The guidelines are included in a publication entitled Reducing Lead Hazards When Remodeling Your Home. The guidelines do not include procedures for conducting lead abatement activities but recommend that those conducting lead abatements consult HUD's abatement guidelines. EPA's renovation and remodeling guidelines are being sent to hardware and paint stores, employee organizations, trade organizations, and state and local agencies.

HUD's Guidelines Could Provide Protection Until EPA's Standards Are Developed

Given that delays in the development of EPA's lead inspection and abatement standards could result in continued exposure to lead hazards, we raised with EPA officials the option of promoting wider use of HUD's guidelines, which were established for HUD's housing programs and which could also be applied to other residences and buildings. EPA officials told us that adopting HUD's guidelines as EPA's standards on an interim basis would require nearly as much time as issuing EPA's final regulations. However, these officials said that interim use of HUD's inspection and abatement guidelines could be promoted through the National Lead Information Center clearinghouse, which was established to disseminate

information relating to lead hazards, and/or by referring to HUD's guidelines in EPA's home renovation and remodeling guidelines issued in April 1994. As noted earlier, EPA refers to HUD's lead abatement guidelines in the renovation and remodeling guidelines; however, EPA has not taken action to promote the use of HUD's guidelines in the clearinghouse.

Conclusions

Despite a conscientious effort, EPA did not meet its legislatively imposed April 1994 deadline for issuing the lead hazard and lead abatement standards, although the renovation and remodeling guidelines were issued on time. Delays have resulted from the need to (1) complete a number of complex research and analysis activities to obtain the information necessary for developing the hazard standards for lead-contaminated dust and soil and (2) build consensus on the lead abatement standards by involving key interested parties in the development process.

EPA has not yet analyzed the remaining tasks, resources, and time required to complete the standards and revised its milestones. Agency officials stated that they see value in revising their schedule for issuing the standards and providing this information to the Congress. In the interim, these officials tentatively estimate that the lead hazard standards could be issued by September 1995 and the abatement standards by November 1995. In our opinion, both dates may be optimistic, given that the regulatory review process alone may take 2 years or more.

Although EPA's lead-based paint standard is nearly developed and could be issued in advance of the dust and soil standards, the standard does not address the permissible level of dust or soil contamination that remains after—and may even be increased by—lead-based paint abatement activities. Consequently, although lead-based paint is considered to be the principal cause of the most severe cases of lead poisoning among children, EPA believes that the three standards should be issued together because of the interrelationship between paint, dust, and soil in creating lead hazards. In the interim, EPA plans to release in May 1994 guidance defining hazardous levels of lead in paint, dust, and soil.

We believe that EPA's decision to issue guidance defining lead hazards is reasonable. However, EPA should also promote the use of lead-based paint inspection and abatement guidelines that HUD has developed for its housing programs. While the reference to HUD's guidelines in EPA's home renovation and remodeling guidelines is an appropriate step, we believe that EPA should take measures to encourage more widespread use of HUD's

guidelines during abatement activities in public and commercial buildings, schools, and other nonresidential facilities. Vehicles for promoting the use of these guidelines include the National Lead Information Center clearinghouse and EPA's guidance defining hazardous levels of lead, which is to be issued in May 1994.

Recommendations

To guide EPA's efforts in developing the lead standards, we recommend that the Administrator, EPA, assess the additional steps, resources, and time required to complete the lead hazard and abatement standards. EPA should then revise its schedule for issuing the lead standards and identify the major tasks required and related milestones. Once completed, EPA should provide this information to the appropriate congressional committees to assist them in their oversight activities.

To ensure that the public is protected from lead-based paint hazards before the standards are issued, we recommend that the Administrator, EPA, promote the use of HUD's lead inspection and abatement guidelines among abatement contractors, state and local government agencies, and the public.

Agency Comments

We discussed the information in this report with the Deputy Director of EPA's Office of Pollution Prevention and Toxics and the Acting Director of the Office's Program Development Branch. These officials generally agreed with the facts presented, and their views have been incorporated in the report where appropriate. As requested, we did not obtain written comments on a draft of this report.

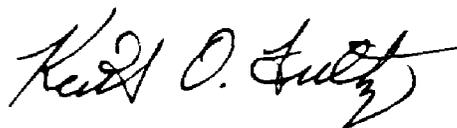
Scope and Methodology

To identify EPA's efforts to develop the standards and guidance, we interviewed the Deputy Director of EPA's Office of Pollution Prevention and Toxics, the Acting Director of the Office's Program Development Branch, and other EPA officials. We also obtained numerous internal EPA documents relating to the development of the standards and guidance and HUD's guidelines for lead-based paint abatement. In addition, we discussed technical activities undertaken to develop EPA's standards and guidance with technical experts within EPA's Office of Research. Our work was conducted between February 1993 and April 1994 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Administrator, EPA, and the Director, OMB. We will make copies available to others on request.

This work was performed under the direction of Peter F. Guerrero, Director, Environmental Protection Issues, who can be reached at (202) 512-6111 if you or your staff have any questions. Major contributors to this report are listed in appendix I.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Keith O. Fultz". The signature is written in a cursive, somewhat stylized script.

Keith O. Fultz
Assistant Comptroller General

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