EPA United States Environmental Protection Agency

Developing and Implementing a Lead Dust Outreach, Monitoring, and Education Program in Your Community

The Syracuse Lead Dust Project

Syracuse New York

EMPACT

Environmental Monitoring for Public Access & Community Tracking

Chapter 6 Errata
(when reading the pdf file, please substitute the following corrections in bold)

Section 6.2 Requirements and Qualifications

Manufacturer's Training (page 43)

In most states, operators must be trained by the manufacturer or receive equivalent training. Syracuse staff took a one-day free training course on the use of the XRF instrument offered by the manufacturer, Niton. The course met New York state requirements and covered radiation safety, XRF theory, worker exposure, as well as hands-on analysis of dust wipes**, soils and paint**.

Costs for the Instrument (page 44)

In addition to investing in trained, licensed, and certified staff, those seeking to implement an extensive lead dust monitoring program may want to buy their own field-portable XRF. Syracuse purchased a Niton Model **XL-309**, which costs about $21,000, making it the most substantial expense the project faced. **This model costs less than other Niton instruments (mainly the XL-700 series) that test for a wide range of metals, yet more than instruments that only analyze for lead-based-paint**. The same model with soil analysis capability would cost an additional $**2500**. Programs will face an additional expense to replace the instrument's radioactive source once every two years, if not more frequently. **NITON's 40mCi Cd-109** source costs $7,300.

Section 6.3 Quality Control

EPA Verifies Use of XRF for Measurement of Lead in Dust (Highlighted Box, Page 44)

In the fall of 2002, EPA's Environmental Technology Verification (ETV) program published a report verifying the use of five field-portable XRF technologies for the measurement of lead in dust. The Niton XL-300 and XL-700 series XRF instruments were among the five brands tested. ETV evaluated overall performance of the Niton **XL-300 series as " . . . having a slight negative bias (but one with an acceptable range of bias) precise, and comparable to the NLLAP [National Lead Laboratory Accreditation Program] laboratory results."**

XRF Usage and Radiation Exposure (Highlighted Box, Page 46)

State regulations concerning the use of dosimetry vary, however, it is typically recommended that an XRF operator wear a dosimetry badge, which monitors exposure to radiation. Even though no radiation dosimetry is required for some isotopes, users should wear a dosimetry badge for the following reasons:.....

Safe Operating Distance (Highlighted Box, Page 47)

XRF instruments used in accordance with manufacturer's instructions will not cause significant exposure to ionizing radiation. But the instrument's shutter should never be pointed at anyone,

even if the shutter is closed. Also, the operator's hand should not be placed on the end plate during a measurement.

The safe operating distance between an XRF instrument and an individual depends on the radiation source type, radiation intensity, quantity of radioactive material, and the density of the materials being surveyed. As the radiation source quantity and intensity increases, the required safe distance also increases. Placing **dense** materials, such as a wall, **between the user and others and a source of radiation, further help to ensure that the possible exposure to radiation is minimal.**

According to NRC rules, a radiation dose to an individual in any unrestricted area must not exceed 2 millirems per hour. One of the most intense sources currently used in XRF instruments is a 40-millicurie **^{109}Cd (Cd-109)** radiation source. Other radiation sources in current use for XRF testing of lead-based paint generally produce lower levels of radiation. Generally, an XRF operator following manufacturer's instructions would be exposed to radiation well below the regulatory level. Typically, XRF instruments with lower gamma radiation intensities can use a shorter safe distance, provided that the potential expo-sure to an individual will not exceed the regulatory limit.....

Section 6.5 Maintaining Equipment (Page 48)

Day-to-day maintenance of the XRF is generally not difficult or costly. Operators should clean the instrument's display window with cotton swabs, clean the case with a soft cloth, and charge the batteries as directed in the owner's manual. Beyond that, operators usually just need to take care not to drop the instrument, get it wet, or neglect the calibration checks recommended by the manufacturer.

Over the long term, however, XRF owners face the very significant isotopes decay at a fixed rate. The half-life of **^{109}Cd** (cadmium-109), for example, is about **15** months. After that, the XRF can still be used, but the instrument becomes progressively less efficient. Readings that once took 30 to 60 seconds take progressively longer. Eventually the wait becomes burdensome, and the isotope must be replaced. Syracuse sends its instrument back to the manufacturer, which disposes of the spent radioactive source, installs the new source, upgrades the instrument's software, and provides whatever preventive maintenance is needed. See Chapter 7, Section 7.3 for more information on managing and disposing of hazardous wastes generated in a lead dust monitoring and mitigation program.

Disclaimer

This document has been reviewed by the U.S. Environmental Protection Agency (EPA) and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation of their use.

EPA/625/R-02/014
February 2003

Developing and Implementing a Lead Dust Outreach, Monitoring, and Education Program in Your Community

The Syracuse Lead Dust Project

U.S. Environmental Protection Agency
National Risk Management Research Laboratory
Office of Research and Development
Cincinnati, OH 45268

Contents

1 INTRODUCTION

Lead poisoning in children under the age of six continues to be a serious environmental health problem in the United States. Children from all socio-economic segments are potentially at risk, whether they are members of immigrant families living in old apartment buildings in inner cities, or members of well-to-do households living in historic residences. They can be exposed to lead where they live and play, primarily from the lead dust created when lead-based paint rubs off windows and other surfaces inside their homes. The good news is that many communities are taking effective action to raise awareness of lead-based paint and reduce the hazards of lead exposure to young children.

The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Housing and Urban Development (HUD) share joint responsibilities for the environmental and health risks of lead-based paint, and the two agencies are protecting children through issuing grants to localities such as Syracuse with the goal of reducing childhood lead poisoning.

This technology transfer case study is designed to address two main goals. The first goal is to show how the Lead Dust Outreach, Monitoring, and Education Project in Syracuse, New York (Syracuse Lead Dust Project), is using a variety of effective, low-cost public information and education techniques to reduce children's exposure to elevated levels of lead dust in their homes and day care facilities. The second goal is to provide information, recommendations, suggestions, and tools to assist individuals or groups who are developing similar programs to address the problem of lead dust in their communities. The lessons learned are based on the experiences of the Syracuse Lead Dust Project and several other programs that are highlighted at various points throughout this case study.

This document is written primarily for community organizers, nonprofit groups, local government officials, tribal officials, and other decision-makers who will implement, or are considering implementing, lead dust outreach, monitoring, and mitigation programs. Much of the information will also be useful to tenants and homeowners interested in finding low-cost ways to reduce children's exposure to lead dust.

Before attempting to implement the process described in this case study, project staff, community organizers, homeowners, and tenants must be aware of the potential hazards associated with lead-based paint in housing. Everyone should carefully read those passages of the case study that describe lead hazards (Chapter 2).

1.1 About EPA's EMPACT Program

This case study was developed by EPA's EMPACT Program (www.epa.gov/empact). EPA created EMPACT (Environmental Monitoring for Public Access and Community Tracking) to promote new and innovative approaches to collecting, managing, and communicating environmental information to the public. Working with communities across the country, the program takes advantage of new technologies to provide community members with timely, accurate, and understandable environmental information they can use to make informed, day-to-day decisions about their lives. EMPACT projects cover a wide range of environmental issues, including water quality, ground water contamination, smog, ultraviolet radiation, and overall ecosystem quality.

The Technology Transfer and Support Division of the EPA Office of Research and Development's (ORD's) National Risk Management Research Laboratory initiated the development of this case study to help interested communities learn more about lead dust monitoring and education programs, to provide them with the technical information they need to develop their own programs, and to minimize the resources needed to implement similar programs in other cities. Both print and CD-ROM versions of the case study are available for direct online ordering from ORD's Technology Transfer Web site at <www.epa.gov/ttbnrmrl>. A PDF version of the case study can also be downloaded from the Syracuse Lead Dust Outreach, Monitoring, and Education Project at <http://www.syracuse-empact.com>. In addition, copies of the case study are available by contacting ORD publications at:

EPA ORD Publications
26 W. Martin Luther King Drive
Cincinnati, OH 45268-0001

EPA National Service Center for Environmental Publications (NSCEP)
Toll free: 800 490-9198
Local: 513 489-8190

Available in hard copy or CD-ROM.

1.2 About the Syracuse Lead Dust Outreach, Monitoring, and Education Project

Syracuse initiated its Lead Dust Outreach, Monitoring, and Education Project (the Syracuse Lead Dust Project) in 1998. The objective was to establish a community-based effort to provide local residents with information to assist them in reducing their exposure to lead dust in residential and public buildings. The project targets minority, immigrant, and low-income residents with a focus on families with small children who live in buildings constructed prior to 1978. Priority is given to households with children under the age of six.

Syracuse's Lead Dust Project collects lead dust level samples, analyzes the samples, reports results to the residents, and coordinates community outreach and education. If a lead hazard is present in a home, Syracuse staff contacts the participant, provides training in a three-step cleaning method, and informs the resident about a High Efficiency Particulate Air (HEPA) vacuum loaner program. If the data indicate that a lead hazard is not present, the participant receives a written copy of their individual sample results.

Syracuse, located in central New York, is a medium-sized city with a 2000 Census population of 147,000. The city's housing stock is relatively old—more than 58 percent of the housing units were built prior to 1940, more than 22,000 of which are considered substandard. Approximately 64 percent of the housing stock is rental property. In the city's revitalization areas, 68 percent of children under age 5 live in poverty, and 1,435 children under the age of six have elevated blood levels, according to 1998 data collected by Onondaga County Lead Poisoning Control.

Working cooperatively with the county's poison control program and its Healthy Neighborhoods Division, along with seven community-based organizations (CBOs), Syracuse is using grant funding from EPA's EMPACT program for lead dust outreach, monitoring, and mitigation in 350 homes located in the same neighborhoods targeted by the city's HUD lead hazard control program.

The city of Syracuse has set up partnerships with the following seven CBOs to implement its EMPACT Lead Dust Project:

- Boys & Girls Clubs of Syracuse <www.bgcsyracuse.org>
- Southeast Asian Center <www.irccny.org/programs/seac.shtml>
- Brighton Family Center
- Girls, Inc. of Central New York <www.girlsinc.com>
- Southwest Community Center <Web site under construction at time of printing. Call 315 474-6823>
- Syracuse Northeast Community Center <http://community.syracuse.com/cc/northeastcommunitycenter>
- Westcott Community Center <www.westcottcc.org>

Before beginning its lead dust project, Syracuse already had a HUD-funded lead hazard reduction program in place. Both programs share common goals: to identify areas where lead dust presents a hazard, to educate homeowners and tenants about lead hazards, and to suggest ways to reduce exposure to lead dust. Having the HUD lead hazard control program in place helped pave the way for the EMPACT Lead Dust Project because the Lead Risk Assessors had an existing relationship with the community, as well as with the Mayor and with other city decision-makers. Since HUD's lead program already had a working office, EPA saved on personnel and other resources. In addition, the CBOs and residents were already somewhat knowledgeable about the hazards posed by lead in the home.

These project partners play a critical role in implementing the Syracuse Lead Dust Project. CBOs recruit residents in the neighborhood to participate in the HEPA vacuum program, store the HEPA vacuums, assist with translation to non-English speakers, and provide critical program feedback from the community. Read more about CBOs and their role in Chapter 3.

1.3 Related Lead Dust or Lead Monitoring Programs

In developing this technology transfer case study, EPA contacted several other similar lead dust programs to gain their perspectives. EPA gathered information from the following other programs:

- The Minnesota Environmental Health Lead Hazard Control Program Minneapolis/St. Paul (See Appendix C)

The city of Minneapolis Lead Hazard Control Program, in partnership with Atrix International Corporation, has developed and implemented a cooperative HEPA vacuum rental program. This program is structured to assist homeowners, tenants, rental property owners, and renovators (do-it-yourselfers) in safely removing lead-based paint dust and chips from their homes.

- HELP Lead Safe Center Providence, Rhode Island

Health & Education Leadership for Providence (HELP) is a community partnership of colleges and hospitals in Providence, Rhode Island. The HELP Lead Safe Center assists families dealing with the complex needs of the lead-poisoned child and works to prevent the poisoning of other children in the home. The Lead Center offers medical and nonmedical case management, environmental and nutritional education, child development assessment, housing advocacy, social service referrals, and an innovative window replacement program for eligible families.

As part of its comprehensive array of services relating to lead safety, the Lead Center conducts home environmental visual assessments. A trained assessor walks through the home with the family, room by room, identifying lead hazards. If lead dust is discovered, the Lead Center recommends cleaning techniques and teaches proper cleaning procedures, such as wet-cleaning lead dust using trisodium phosphate diluted in water. The organization also makes HEPA vacuums available on a loaner basis and provides instructions for their proper use.

- EMPACT Lead-Safe Yard Project
  Boston, Massachusetts (See Appendix D)

The EMPACT Lead-Safe Yard Project (LSYP) in Boston used a variety of low-cost techniques to reduce children's exposure to elevated levels of lead in residential soil. The project used innovative field-portable x-ray fluorescence (XRF) technology to communicate data to residents and implemented low-cost and sustainable landscape measures in residents' yards to reduce children's risk of exposure to contaminated soil. The project also developed a template that other communities and public agencies can use to address the issue of lead in residential soil.

The project improved 61 homes at no cost to the owners; conducted a number of seminars on lead-safe yard work; and developed a "Tool Kit" for use by other communities. These methods were then incorporated into a handbook titled Lead-Safe Yards: Developing and Implementing a Monitoring, Assessment, and Outreach Program for Your Community.

1.4 Alternative Programs

Homeowners or tenants living in an area where no lead dust program exists might want to have trained and licensed consultants determine whether they have a lead problem in their house. In this case, the homeowner or tenant should have dust wipe samples collected by a certified lead-based paint inspector, risk assessor, or sampling technician. For a list of qualified lead professionals, including inspectors, risk assessors, abatement contractors, and analytical laboratories, go to <www.epa.gov/lead> and click on "Finding A Qualified Lead Professional for Your Home" under "Additional Resources." For EPA-run states, call 1-800-424-LEAD.*

Homeowners can contact their state or local childhood lead poisoning prevention program for more information about obtaining lead dust testing. The following Web sites list state and local lead poisoning prevention contacts:

- The Lead Program of the National Safety Council's Environmental Health Center: <www.nsc.org/ehc/nlic/contacts.htm>.

The National Conference of State Legislatures' Directory of State Lead Poisoning Prevention Contacts: <www.ncsl.org/programs/ESNR/pbdir.htm>.

1.5 Are the Practices in this Case Study Consistent with Federal Regulations?

Syracuse's Lead Dust Project complies with the Toxic Substances Control Act (TSCA) Title IV and the Section 403 rule, under which EPA establishes standards for lead-based paint hazards, including hazard levels for lead-contaminated dust in houses.

* EPA-run states are Alaska, Arizona, Florida, Idaho, Montana, North and South Dakota, Nevada, New Mexico, New York, South Carolina, Washington, and Wyoming.

HUD and EPA set reference levels indicating the amounts of lead that might create adverse health effects to pregnant women and children younger than 6 years old. These standards allow landlords, tenants, parents, and child care providers to identify problems and make informed decisions. The Syracuse project based its own hazardous levels of concern on these standards (see table below).

Syracuse Reference Levels for Lead Dust Hazards

Floor	40 µg/ft.^{2}
Window Sill	250 µg/ft.^{2}
Window Trough[1]	400 µg/ft.^{2}

[1] Syracuse's Lead Dust Project uses EPA's clearance level of 400 µg/ft.^{2} for window troughs.

Syracuse's Lead Dust Project provides residents (particularly low-income, urban, minority residents) with practical, low-cost dust cleanup measures that will reduce exposure to lead-contaminated dust in the home. These low-cost measures may be used as interim shorter term solutions until permanent, higher cost solutions are employed as long as homeowners and/or residents carefully and conscientiously follow and continue to practice the recommended cleanup procedures.

Before applying the Syracuse Lead Dust Project's model to your situation, consult local regulatory authorities to determine their specific requirements, such as reference levels for lead-contaminated dust. State, tribal, and local government regulations might be more restrictive than existing federal guidance.

Links to Regulations Related to Lead Dust

- HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. **<www.hud.gov/offices/lead/guidelines/hudguidelines/index.cfm>**
- Residential Lead-Based Paint Hazard Reduction Act of 1992. **<www.epa.gov/lead/titleten.html>**
- The National Conference of State Legislatures' Directory of State Lead Poisoning Prevention Contacts **<www.ncsl.org/programs/esnr/pbdir.htm>**
- The Occupational Safety and Health Administration (OSHA) **<www.osha-slc.gov/SLTC/lead/index.html>**
- HUD's Lead Safe Housing Rule **<www.hud.gov/offices/lead/leadsaferule>**
- EPA's final standards (TSCA 403) for lead-based paint hazards (including lead dust). Office of Pollution Prevention and Toxics Web site **<www.epa.gov/lead/leadhaz.htm>**
- SW-846 is EPA's Office of Solid Waste's official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with RCRA regulations. **<www.epa.gov/epaoswer/hazwaste/test/sw846.htm>**

1.6 How to Use this Case Study

This case study provides information communities can use to create and implement a lead dust project. It provides examples of program planning and implementation along with important background information on lead poisoning.

- Chapter 2 discusses why lead dust is a health hazard; the incidence of lead poisoning; sources of lead; and its pathways into the body.
- Chapter 3 describes the steps taken by Syracuse to plan and implement its lead dust project, including identifying potential target communities, getting to know the community, and selecting program partners.
- Chapter 4 discusses Syracuse's recommendations for communicating about lead dust to residents and property owners. It covers the language and cultural challenges of communicating with immigrant and low-literacy populations and provides examples of effective outreach and educational materials used by Syracuse.
- Chapter 5 provides information about collecting and managing data, including how to interact with residents as dust samples are collected from their homes.
- Chapter 6 discusses use of the field-portable X-ray fluorescence (XRF) instruments to collect timely data, role of field sampling technicians, testing protocols, quality control, health and safety precautions, and equipment maintenance.
- Chapter 7 discusses the mitigation (cleaning) process recommended by Syracuse and the HEPA vacuum loaner program and discusses the importance of continued maintenance.
- Chapter 8 discusses data reporting to residents, landlords, and the public. It also covers recordkeeping and confidentiality.
- Chapter 9 provides information on how Syracuse evaluates the performance of its program.

This case study also includes references to supplementary sources of information, such as Web sites, guidance documents, and other written materials. In addition, the case study includes the following appendices:

- Appendix A provides a glossary of technical terms used in this case study.
- Appendix B comprises Syracuse's Quality Assurance Project Plan (QAPP).
- Appendix C provides a case study on the Minneapolis Lead Hazard Control Program.
- Appendix D contains a case study on the EMPACT Lead-Safe Yard Project in Boston, Massachusetts.
- Appendix E provides a memorandum from Elizabeth Cotsworth, Director, Office of Solid Waste on "Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households."

Initiating and managing a lead dust program is a challenging but worthwhile undertaking. This case study aims to provide information and resources that will help develop new programs, maintain current programs, and educate individuals on how to decrease occurrences of lead dust poisoning in children. We hope that you find the case study informative and easy to use.

1.7 Acknowledgments

The development of this case study was managed by Scott Hedges (U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory) with the support of Eastern Research Group, Inc., an EPA contractor. Technical guidance was provided by the Syracuse Lead Dust Project. EPA would like to thank the following people and organizations for their substantial contributions to the contents of this case study:

Theresa Bourbon, U.S. EPA, Region 2 EMPACT Project Officer

Jeremy Giller, Executive Director, HELP Lead-Save Center, Providence, Rhode Island

Mike Goss, Syracuse Lead Dust Project

Robert Maxfield, U.S. EPA Region 1

Pat McLaine, National Center for Healthy Housing

Johanna Miller, Minnesota Environmental Health Lead-Hazard Control Program

Betsy Mokrzycki, Syracuse Lead Dust Project

Donna Ringel, U.S. EPA, Region 2 EMPACT Program Manager

Patrick Strodel, Lead Safe, LLC

Robert Vanderslice, U.S. Department of Housing and Urban Development

Adam VanHoose, Syracuse Lead Dust Project

1.8 Resources for Additional Information

The following publications and resources provide a wealth of information on lead and lead-contaminated dust:

Department of Housing and Urban Development. 1995. HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Available online at <www.hud.gov/offices/lead/guidelines/hudguidelines/index.cfm>.

Department of Housing and Urban Development. 2000. Residential Lead Desktop Reference, 2nd Edition. CD-ROM containing more than 140 documents, including ASTM scopes, screening guidance, community outreach materials, lead resources, scientific studies and reports, lead statutes and regulations, lead training materials, regulation support documents, reports to Congress, HUD guidelines, and other resources. Available for $10 by calling HUDUSER at 1-800-245-2691.

Lead-Based Paint Hazard Reduction and Financing Task Force. 1995. Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing. Available online at <www.hud.gov/offices/lead/reports/report.pdf>.

U.S. Congress. 1992. Residential Lead-Based Paint Hazard Reduction Act of 1992. Title X (42 USC 4851). Available online at <www.epa.gov/lead/titleten.html>.

U.S. Environmental Protection Agency. 1994. EPA Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead-Contaminated Soil. EPA540-F-94-045. Order online at <www.epa.gov/ncepihom/ordering.htm>.

U.S. Environmental Protection Agency. 1995. EPA Residential Sampling for Lead: Protocols for Dust and Soil Sampling. EPA747-R-95-001.

U.S. Environmental Protection Agency. 1997. Reducing Lead Hazards When Remodeling Your Home. EPA747-K-97-001. Order online at <www.epa.gov/ncepihom/ordering.htm>.

U.S. Department of Housing and Urban Development. 2001. Lead Paint Safety—A Guide for Painting, Home Maintenance, and Renovation Work. HUD-1779-LHC.

Links

U.S. EPA National Lead Information Center at <www.epa.gov/lead/nlic.htm>.
A federally funded hotline and clearinghouse that provides information on lead hazard reduction and exposure prevention. To speak with one of the Center's clearinghouse specialists, call 1-800-424-LEAD Monday through Friday, 8:30 a.m. to 6:00 p.m. EST.

U.S. EPA Office of Pollution Prevention and Toxics (OPPT) at <www.epa.gov/opptintr/lead/index.html>.
Responsible for EPA programs related to lead poisoning prevention and lead regulation. OPPT also provides educational packets for parents, teachers, day care providers, and librarians, as well as technical information and publications.

The Department of Housing and Urban Development (HUD) at <www.hud.gov/lead/leahome.html>.
Sets standards for evaluating and managing lead in federal-assisted housing and promotes efforts to reduce lead hazards in privately owned housing. In addition, provides grants to communities to reduce lead hazards in housing.

2 LEAD DUST: WHY IS IT A PROBLEM?

This chapter provides an overview of the problems posed by lead dust. The information in this chapter should be useful to anyone interested in lead dust hazards and mitigation, including community organizers responsible for implementing a lead dust program or homeowners concerned about elevated lead levels in their own homes.

- Section 2.1 discusses what lead poisoning is and how it affects children's health.
- Section 2.2 discusses the sources of lead in dust.
- Section 2.3 describes the key pathways for childhood exposure to lead.
- Section 2.4 lists resources for additional information.

2.1 What Is Lead Poisoning?

According to the Centers for Disease Control and Prevention (CDC), nearly 1 million children living in the United States in the early 1990s had lead in their blood at levels high enough to cause irreversible damage to their health. CDC defines elevated lead levels in children as 10 micrograms of lead per deciliter of blood (µg/dL) or higher. Although there is no known safe level of lead in blood, lead poisoning is entirely preventable.

The CDC recommends certain actions for various blood lead levels. In its 1991 report, "Preventing Lead Poisoning In Young Children," the CDC recommended an intervention plan, which is currently still in use. In general, CDC recommends urgent follow up for children with blood lead levels of 45 µg/dL. These children should be taken to a clinic or medical center with experience in managing childhood lead poisoning. A child with a blood lead level greater than 70 µg/dL should be hospitalized immediately. The CDC recommends that treatment for lead toxicity, at any level, must always involve removing the child from further exposure. Treating a child for lead toxicity is futile unless the child's exposure can be reduced.

Although childhood lead exposure has diminished in the past 25 years, the problem is far from solved. Deteriorating housing, lack of resources, lack of access to medical care, poor nutrition, and language barriers all contribute to poor and minority children being at risk for lead poisoning. However, no economic or ethnic/racial group is free from the risk of lead poisoning. Many affluent families renovating older homes, for example, have inadvertently exposed themselves and their children to lead hazards through unsafe lead paint removal techniques.

Health Effects of Lead Poisoning

Lead poisoning affects nearly every system in the body and often occurs without noticeable symptoms. Although lead can affect adults, children under the age of 6 are especially vulnerable to the adverse effects of lead. The incomplete development of the blood-brain barrier in fetuses and very young children (up to 36 months of age) increases the risk of lead's entry into the nervous system. Low but chronic exposure can affect the developing nervous system in subtle but persistent ways. In children, blood lead levels as low as 10 to 15 µg/dL can stunt growth rates, affect attention span, cause learning disabilities, lower IQ scores, impair hearing acuity, and cause behavioral problems. In addition, fetuses exposed to elevated levels of lead can suffer

from low birth weight, impaired hearing, and altered gestational age, which can lead to further complications.

In addition to damaging the nervous system, elevated blood lead levels can also affect the kidneys and reproductive system and cause high blood pressure. Very high levels (greater than 80 µg/dL) can cause convulsions, coma, or death. Levels greater than 150 µg/dL are fatal if not treated quickly. Fortunately, exposures resulting in such high levels of lead are rare.

2.2 Sources of Lead in Dust

Lead dust from deteriorated paint is the most significant contributor to childhood lead poisoning.[1] While the use of lead paint in residential buildings was federally banned in the United States in 1978, many homes built prior to 1978 still contain lead-based paint. Paint used in homes built between 1950 and 1978 contained between 0.5 and 50 percent lead, and the paint used prior to 1950 contained higher concentrations. One estimate is that more than 3 million tons of lead-based paint remain in the 57 million homes built prior to 1980[2].

Lead dust forms as lead-based paint peels, chips, chalks, or cracks. Dust also forms when painted surfaces bump or rub together (called friction surfaces, particularly found on doors and windows). The primary sources of lead dust are interior painted building components that receive a lot of wear-and-tear: windows, trim, and sills; doors and door frames; columns, stairs, railings, and banisters; and porches and fences. Lead dust can also form when lead-based paint is dry scraped, dry sanded, or heated during building renovations. Lead dust is especially problematic when found on surfaces that children can reach and chew or mouth, such as window sills, railings, and stair edges that are at child height. Another important source of lead dust is lead that has been deposited in soil. Lead in residential soil comes from several different sources, including lead-based exterior paint. Before 1978, lead paint was widely used on the exteriors of residential and other buildings. As the paint on a building's exterior deteriorates, lead paint chips and dust concentrate in the surrounding soil. Renovating, remodeling, and performing routine home maintenance also will mobilize this lead if proper precautions are not taken. As with interior paint, dry scraping, sanding, and blasting of exterior lead-based paint can mobilize large amounts of lead in a short time. Disturbing the old lead-based paint can increase lead concentrations in soil, especially in the "drip zone," or "drip line," the area surrounding and extending out about 3 feet from the foundation of a building. (See Appendix D for information about an EMPACT program that addresses lead in residential soil).

For additional information refer to an EPA fact sheet entitled, Identifying Lead Hazards in Residential Properties, which is included at the end of this chapter.

---

[1] While not primarily responsible for childhood lead poisoning, other sources of lead in the environment include emissions from industrial sources such as smelters, mining operations, and battery-recycling plants; soil contaminated from vehicular emissions (before leaded gasoline was banned in 1986); lead water pipes; lead-containing tableware and crystal glassware; some hobbies, such a stained glass-making; some folk remedies; and some types of jewelry and pewter-ware.

[2] Centers for Disease Control, *Preventing Lead Poisoning in Young Children*, 1991.

2.3 Exposure Pathways for Lead Dust

The main way that lead enters the body in through ingestion[3]. The most common way for a child to ingest lead is by putting into their mouths objects (e.g., toys or hands) that have lead-contaminated dust or dirt on them. The dust and dirt inside the house may contain lead from deteriorating lead-based paint or from lead-contaminated soil tracked in from outside by people or pets. In addition, when children play outdoors, lead-contaminated dirt and dust can get on hands, toys, and food. Putting these items in the mouth can lead to ingestion of lead.

Young children tend to ingest more lead than adults in a given environment because of their normal hand-to-mouth behavior. They also take in more food and water per kilogram of body weight. Children are at higher risk when their nutritional needs are not being met. Calcium, iron, zinc, and protein deficiencies, in particular, increase lead absorption rates.

2.4 Resources for Additional Information

Publications

American Academy of Pediatrics Committee on Drugs. 1995. "Treatment Guidelines for Lead Exposure in Children." Pediatrics. 96:155–160. Available online at <www.aap.org/policy/00868.html>.

Centers for Disease Control and Prevention. 2002. "Managing Elevated Blood Levels Among Young Children," Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Available online at <www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm>, or call (toll-free) 1-888-232-6789.

U.S. Environmental Protection Agency. 1997. Risk Analysis To Support Standards for Lead in Paint, Dust, and Soil, volumes 1 & 2. EPA747-R-97-006. Available online at <www.epa.gov/ncepihom/ordering.htm>.

U.S. Environmental Protection Agency. 1999. Lead in Your Home: A Parent's Reference Guide. EPA747-B-99-003.

Links

The Centers for Disease Control and Prevention (CDC)
Childhood Lead Poisoning Prevention Program
<www.cdc.gov/nceh/lead/lead.htm>
Provides information about childhood lead poisoning, promotes state and local screening efforts, and develops improved treatments for lead exposure.

Lead Poisoning Prevention Outreach Program
<www.nsc.org/ehc/lead.htm>
The Lead Poisoning Prevention Outreach Program is funded through a cooperative agreement between the U.S. Environmental Protection Agency and the Environmental Health Center (EHC).

[3] Children can also inhale lead dust from deteriorating paint, from clothing brought home by parents exposed to occupational lead sources, or from fumes from hobbies that use lead. In addition, children can breathe lead dust stirred up by conventional vacuuming or during building renovations. These instances are not considered significant exposure pathways, however.

Agency for Toxic Substances and Disease Registry (ATSDR)
ATSDR conducts a public health assessment at sites on the EPA National Priorities List to determine if people are being exposed to hazardous substances, which includes lead. The public can search by region to see which health assessments are currently available in an online database located at: <www.atsdr.cdc.gov/HAC/PHA/>.

National Conference of State Legislatures
<www.ncsl.org/programs/esnr/pbdir.htm>
Contains NCSLnet Search – a directory of state lead poisoning prevention contacts.

Consumer Product Safety Commission (CPSC)
<www.cpsc.gov>
Identifies and regulates sources of lead exposure in consumer products.

The Occupational Safety and Health Administration (OSHA)
<www.osha-slc.gov/SLTC/lead/index.html>
Develops work practice standards and worker exposure limits to protect workers from occupational lead exposure.

United States Environmental Protection Agency (EPA)
Prevention, Pesticides and Toxic Substances (7404)
EPA 747-F-01-002
April 2001
(http://www.epa.gov/lead)

EPA FACT SHEET

Identifying Lead Hazards in Residential Properties

EPA has developed standards to help property owners, lead paint professionals, and government agencies identify lead hazards in residential paint, dust, and soil. These hazards may be paint chips, lead in household dust, child-accessible or mouthable painted surfaces, friction surfaces of windows and doors, and lead in residential soil. The Agency has released this fact sheet to summarize new standards and recommendations to better address lead hazards in and around homes. The complete text of the final rule is available through the National Lead Information Center or EPA's Web site (see For More Information).

Lead Paint Hazard Standards

What Makes Lead Paint a Hazard:
The lead paint is deteriorating. As the paint breaks down, it releases paint chips and lead dust that can contaminate the home and be easily ingested by young children through hand-to-mouth activity.

This deteriorated lead paint may be inside residential buildings or child-occupied facilities or on the exterior of any residential building or child-occupied facility.

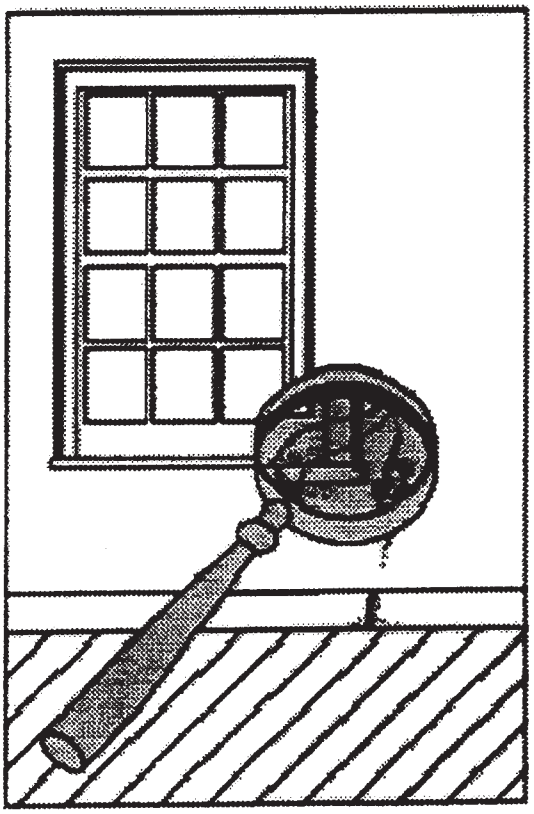
The lead paint is on friction or impact surfaces. Impact to surfaces like door frames or stairs can damage the paint and release lead. Also, the paint on friction surfaces like windows, stairs, and floors can break down during normal use and release lead.

The lead paint is on child-accessible surfaces that show evidence of teeth marks. Beware of lead paint on surfaces such as window sills, railings, and stair edges that are at child height and have been or may be chewed on or mouthed by a child.

All testing for, and identification of, lead hazards should be completed per EPA regulations.

Lead paint is usually not a hazard if the paint:

- Is in good condition.
- Is not on an impact or friction surface (like a window, door, or a stair).



Lead Dust Hazard Standards

The following two standards have been set for lead hazards in dust:

* 40 micrograms per square foot (g/ft^2) for floors (including carpeted floors).

* 250 g/ft^2 for interior window sills.

Lead Soil Hazard Standards

The following two standards have been set for lead hazards in soil:

* 400 parts per million (ppm) in play areas of bare residential soil.

* 1,200 ppm (average) in bare soil in the remainder of the yard.

Lead Abatement Clearance Requirements

Following lead abatement, dust cleanup activities must be repeated until testing indicates that lead dust levels are below the following:

* 40 g/ft^2 for floors (including carpeted floors).

* 250 g/ft^2 for interior window sills.

* 400 g/ft^2 for window troughs.

This Regulation Affects...

The standards established in this regulation apply to most pre-1978 housing and child-occupied facilities (pre-1978 non-residential properties where children under the age of six spend a significant amount of time such as daycare centers and kindergartens).

Anyone who must comply with other Title X regulations, whether issued by EPA, HUD, or by a State under an authorized program, may be affected by this regulation. The following list identifies some of the groups potentially affected by these standards:

- Residential and child-occupied property owners, and owners receiving federal housing assistance.
- Lead paint professionals.
- Training providers.
- Federal agencies.
- Parents.

What Happens If a Lead Hazard Is Identified?

Property are required to notify occupants if they are aware of lead, whether or not it is identified as a hazard. However, this regulation does not require anyone to identify lead hazards, or that any specific action be taken if a lead hazard is identified. Please refer to the Protect Your Family brochure available through the National Lead Information Center for further information on disclosure of lead hazards to residents.

Owners and other decision-makers should actively seek to reduce or prevent children's exposure to lead in paint, dust, or soil that equals or exceeds these hazard levels. The Protect Your Family brochure provides some of these options.

State, local, or tribal governments may have different standards or requirements. EPA recommends you contact them before beginning any work with lead paint.

For More Information, Contact:

* The National Lead Information Center at 1-800-424-LEAD (5323).

* EPA's Web site at <www.epa.gov/lead>.

3 Lead Dust Project Overview

This chapter discusses the process followed by Syracuse to start and manage a lead dust mitigation program.

- Section 3.1 presents a summary of the program development steps involved in planning and launching Syracuse's Lead Dust Project. It also outlines the roles and responsibilities of program partners and staff.
- Section 3.2 reviews the steps Syracuse took in implementing its Lead Dust Project.
- Sections 3.3 and 3.4 discusses selecting program partners, provides an overview of the role of community-based organizations (CBOs), and discusses how to better understand the target community. These topics are covered in greater detail in Chapter 4.

Outreach, sampling and analysis, mitigation, reporting, and evaluation are discussed briefly in this chapter and are covered in more detail in Chapters 4 through 9.

3.1 Steps in the Development of Syracuse's Lead Dust Project

The EPA (EMPACT)-funded Syracuse Lead Dust Project works with both homeowners and tenants—particularly those with small children—and provides free and immediate lead dust mitigation to significantly reduce lead dust levels where small children live and play. Although the program does not eliminate the source of the lead hazard (i.e., deteriorated lead-based paint), it treats the problem in part by providing personalized instruction of proper cleaning techniques. The program also educates parents and child care providers to teach children about the importance of hand washing and keeping their hands out of their mouths.

The target population for the Syracuse Lead Dust Project are households with small children living in the city's revitalization areas. Syracuse knew from the start that essentially all of the inner city rental housing stock had lead dust problems. To inform tenants about the lead hazards and to gain their trust and participation, Syracuse partnered with seven CBOs. The relationship built by the lead dust project with these organizations has been key to the project's development and success.

The following briefly explains Syracuse's major programmatic benchmarks in the development of its lead dust project:

Step 1: Project Planning
First Syracuse developed a project plan with clearly defined goals and objectives, project scope, schedule, and identification of possible funding sources. Since Syracuse decided to use XRF technology, which is not an EPA-approved method for lead dust analysis, confirmatory laboratory analysis was considered necessary to demonstrate the reliability of the technology. To accomplish this, the project was designed in two phases. In Phase I the XRF findings were verified against laboratory analysis. During Phase II the project was implemented based on the results of this analysis.

Step 2: Identifying and Securing Funding
Syracuse spent considerable time identifying sources of funding and determining grant application procedures and schedules. Syracuse allotted time for the application process, which included preparing the grant application, the review process, dealing with grant award procedures, and announcing the grant award to the public with a press event (project kickoff).

Step 3: Establish Quality Assurance Plan and Procedures (QAPP)
Since Syracuse secured an EMPACT grant, the next step was to draft a Quality Assurance Plan and Procedures (QAPP). All work performed or funded by EPA that involves the acquisition of environmental data must have an approved QAPP, which documents the planning, implementation, and assessment procedures for a particular project, as well as any specific quality assurance and quality control activities. It integrates all the technical and quality aspects of the project in order to provide a "blue print" for obtaining the type and quality of environmental data and information needed for a specific decision or use. (See Appendix B).

Step 4: Secure Necessary Equipment and Licenses
Syracuse then had to secure a New York State radiation license, purchase the HEPA vacuums and XRF equipment, and establish other contracts as necessary. Syracuse found that city procurement procedures increased the time needed to finalize this program step. Other programs might consider other options, which include renting or leasing the necessary equipment or hiring consultants who have their own equipment.

Step 5: Hire and Train Staff
Concurrent with Step 4, Syracuse recruited, hired, and trained qualified staff to perform home walk-throughs and to collect lead samples using the XRF At the same time, Syracuse began the process of training other project partners, such as CBO staff, about lead dust hazards and in the use of the HEPA vacuums. Syracuse's full-time staff play multiple roles which are shown in the table below. Syracuse required that its field sampling technicians be EPA-certified inspectors/risk assessors. They also must be licensed by New York State to handle radioactive equipment. It is important to check with applicable state and local regulatory agencies to determine the certification and licensing requirements for staff in comparable lead dust programs.

Roles of Syracuse Lead Dust Project Staff

Title	Role
Program Manager	Secures funding, recruits project partners, hires staff, oversees project implementation
Outreach Coordinator	Works with CBOs, educates residents about lead dust hazards, and enrolls them in the project.
Field Sampling Technician	Conducts walk-throughs of homes to identify dusty areas; collects and analyzes lead dust samples.
HEPA Vacuum Coordinator	Trains residents in three-step cleaning process and demonstrates use of HEPA vacuums.
Data Analyst/Certified Risk Assessor	Reports site-specific results to residents, interprets significance, and consolidates and reports data for the community.

With project staff and equipment in place, Syracuse began to develop outreach and educational materials. These included promotional flyers, informational booklets, report templates, and "how to" guides for wet cleaning and using the HEPA vacuums. Chapter 4 contains specific information and examples of these outreach materials.

Step 7: Project Implementation
To get the project underway, staff worked with the CBOs to recruit participants, conducted dust sampling and analysis, set up home visits for mitigation and training on the cleaning process, initiated the HEPA vacuum lending program, started conducting post-mitigation sampling and reporting, and began holding regular meetings with program partners. Syracuse also designed a program Web site. See Section 3.2 below for more details on the steps taken by Syracuse to implement its lead dust project.

Step 8: Program Evaluation
Because of EMPACT's focus on monitoring and outreach, measuring the effectiveness of the mitigation component of the project has not been elaborate. Nonetheless, the project conducted a "spot check" of the effectiveness of its mitigation intervention (e.g., information about the 3-step cleaning method and the HEPA vacuum loaner program).

In the implementation of its program, Syracuse found that its schedule was influenced by many variables—some not anticipated and out of its control. Project staff successfully resolved several major implementation hurdles that affected the original project schedule. Two steps, in particular, took longer than expected and required significant effort to accomplish. The first was the development, refinement, and ultimate approval of the Quality Assurance Project Plan (QAPP), as required by EPA. The QAPP is discussed in Chapters 5 and 6 and is provided in its entirety in Appendix B. The second was the sequence of steps involved in purchasing the X-ray fluorescence (XRF) equipment. A New York State radiation license is required for the purchase of an XRF. Since Syracuse did not already have a radiation safety officer involved

Mitigation Is Not Abatement

Using a HEPA vacuum and following the mitigation steps explained in Chapter 7 of this case study only cleans the accumulation of lead dust but does not abate, or eliminate, the source of lead dust in a home. Mitigation helps curb exposure to lead dust but will not prevent lead dust from recurring. Residents or homeowners who want to determine whether their lead dust problem is serious enough to require abatement should consult with a certified risk assessor.

A certified risk assessor is trained to determine the existence, nature, severity, and location of lead-based paint hazards in a residential dwelling. A risk assessor can recommend ways to control lead-based paint hazards, including abatement. The National Lead Center Hotline (800 424-LEAD) can help residents locate a certified risk assessor, or visit <www.epa.gov/lead/leadcert.htm> and click on "Training and Certification" then scroll down to the bottom of this page for an interactive map of authorized state lead programs. These links provide lists of lead professionals. Untrained individuals should never attempt to abate lead-based paint hazards in their home without professional help.

When lead-based paint exists on surfaces such as walls, ceilings, woodwork, windows, and sometimes floors, residents and homeowners should take the following precautions to prevent the creation of dust:

- Do not dry scrape or dry sand on painted surfaces.
- Avoid puncturing holes in walls with lead-based paint or encapsulated or enclosed walls.
- Do not repeatedly bump furniture or other objects into older painted surfaces.
- Avoid unnecessarily opening and closing windows or doors with painted sills or frames; these friction surfaces can cause paint to deteriorate and can cause lead dust to be generated.

in its lead hazard control program, staff first had to undergo training in order to apply for the state radiation license.

3.2 Project Implementation Steps

The following briefly summarizes the steps taken by the Syracuse Lead Dust Project to implement its program.

Project Intake (Recruiting Participants)

Syracuse identified at-risk children by targeting neighborhoods with older, wood-framed housing (generally with wooden clapboard siding). Such houses are likely to have lead-based interior or exterior paint. Neighborhoods made up of older housing units, especially homes built before 1978, when the use of lead paint was federally banned in the United States, are more likely than newer communities to have a lead problem. In Syracuse, therefore, officials target buildings built before 1978 that house children. In fact, the prevalence of such structures made intake screening unnecessary—Syracuse accepts all referrals from CBOs that involve small children.

First, CBOs work to inform residents about the city's lead dust project. Then residents or property owners fill out a HEPA Vacuum Intake Questionnaire (see copy at end of Chapter 5) which is submitted to the Syracuse lead team for evaluation. This questionnaire collects basic data, such as household size, number of children under 6, and the age of the building. The team then contacts the resident to set up a time to collect dust wipe samples from the property. At the same time they also provide the individual with a clear understanding of how the process will work. See Chapter 5 for more information on in-home dust sampling conducted by Syracuse.

Lead Dust Sampling and Analysis

Once a resident is enrolled in the Syracuse project, a field sampling technician (accompanied by a CBO representative, as needed), visits the residence and explains the sampling procedure. Prior to sampling, the technician does an initial walk-through to locate the dustiest areas of floors, window sills, and window wells that are most accessible or exposed to children. He collects samples in the house using dust wipes. Then the dust wipe samples are analyzed by field-portable XRF technology. In some cases confirmatory laboratory analyses are also performed, as discussed in Chapter 6.

Lead Dust Mitigation (Cleaning)

In houses where lead levels exceed minimum reference levels for lead hazards, the Syracuse Lead Dust Project provides each participating resident with training in proper cleaning techniques and free access to a HEPA vacuum. (See Section 1.5 of this handbook for Syracuse's reference levels for lead hazards). The project provides HEPA vacuums at no cost to all participants who wish to use them. The Syracuse Lead Dust Project also provides ongoing training and education to the seven participating CBOs to promote the use of the HEPA vacuums.

The resident signs a free seven-day lease agreement and takes responsibility for proper care and use of the vacuum. The HEPA vacuum coordinator trains the resident in a three-step cleaning process, and the actual mitigation is completed by the resident. In some cases, the field sampling technician returns to the home for post-mitigation sampling and also to collect the vacuum. The

Syracuse Project offers free vacuum pick-up and delivery to residents, making the use of the vacuum convenient and attractive to program participants. See Chapter 7 for more information on mitigation and the cleaning process.

A Word About Lead Dust Cleaning Costs

As shown below, Syracuse calculated the average unit costs for the various steps involved in lead dust sampling and cleaning activities. Once the city had purchased its own XRF equipment and had a licensed risk assessor on staff, it discontinued using a consultant to perform many of these tasks. Using in-house staff and equipment, Syracuse's average costs were $181 per home, less than half the cost of using a consultant ($375). The single most expensive cost was for laboratory analysis: $54 for pre-cleaning sampling analysis ($9 per sample; 5–6 samples per household) and $27 for post-cleaning analysis ($9 per sample; 2–3 samples per household).

Syracuse's Lead Dust Cleaning—Average Unit Costs

Step	Time	Cost
Initial Sample	30 minutes	$5.25
Analyze initial samples via XRF; submit confirmations to lab	1.5 hours	$15.75
Generated initial results report	15 minutes	$2.60
Home visit to drop off vacuum; educate occupants on three-step cleaning	30 minutes	$5.25
Post-sampling; pick up vacuum	30 minutes	$5.25
Analyze post-cleaning samples via XRF; submit confirmations to lab	1.5 hours	$15.75
Laboratory analysis	Pre-samples (5–6 samples) Post-samples (2–3 samples)	$54.00 $27.00
Vacuum bag replacement		$15.00
Vacuum filter replacements		$35.00
*Average cost per home (in-house, City of Syracuse)		$181.00
*Total cost per home (contractor at $50 per hour)		$375.00

*This cost does not include administrative overhead. Syracuse used a consultant and Niton instrument until the City was able to purchase its own Niton and train its own risk assessor.

***Total costs ranged from $181.00 to $375.00 per home**

CONT. ON NEXT PAGE

A Word About Lead Dust Cleaning Costs, cont.

Overhead Cost:

Program Manager: Reviews all aspects of program, reports, and development of the QAPP	10% yearly cost	$6,032.00
Purchase of 30 HEPA Vacuums @ $272.00 each (One-time purchase)		$8,160.00
Training of staff (risk assessor, EPA Region 2 certification)		$470.00
Purchase of XRF machine (one-time purchase)		$24,880.00
Replacement of the radiation source of Niton		$7,300.00
Radiation licensing (New York State)		$1,695.00
Safe for Niton		$200.00
Computer equipment/XRF and office supplies		$2,500.00
Dosimetry badges ($64.00 per quarter)		$256.00
	TOTAL	$51,473.00

Reporting

Each participating resident receives a report stating whether a sampled area was above or below the reference levels for lead dust hazard. (See the sample pre-mitigation letter and report at the end of Chapter 8). Originally, the Syracuse project team intended to have these report templates translated into Spanish and Vietnamese but this was determined to be impractical due to the need to communicate site-specific information. Instead, the report is immediately mailed to the resident. For those households requiring mitigation, the report is also presented and explained by the data analyst/certified risk assessor at the time of the home visit, when the HEPA vacuum is delivered and the cleaning process is explained. When necessary, the risk assessor is accompanied by a native speaker who interprets the information for the resident.

In addition to the report, each resident receives printed information on appropriate use of HEPA vacuums, the three-step cleaning process, and a list of suggested cleaning agents. In approximately ten percent of the homes tested, the field sampling technician collects additional samples after the resident cleans the home with a HEPA vacuum. These samples are used to present a post-mitigation report that compares dust levels after mitigation to the reference levels. To reach a larger segment of the public, Syracuse's Web site at <http:\\www.syracuse-empact.com> posts maps and data showing lead levels in the community, while keeping property-specific lead levels confidential. See Chapter 8 for more information on reporting.

Evaluation

The Syracuse Lead Dust project ensures program effectiveness in several ways. It solicits a direct response from the residents who participated in the cleaning and HEPA vacuuming program.

The Syracuse lead dust technician asks residents a series of questions, including their thoughts on the effectiveness of the program and about using the HEPA vacuum. Another way the Syracuse team measures program success is by tracking the number of lead dust walk-throughs conducted, and the number of residents that use the HEPA vacuums through the loaner program. In addition, the Syracuse team conducts post-mitigation sampling (see section 5.1) and encourages residents to continue lead dust mitigation activities such as using a HEPA vacuum (see section 7.1). See Chapter 9 for more information on program evaluation.

3.3 Selecting Project Partners

Syracuse has successfully involved people with diverse and specialized skills in its lead dust project. These include people with skills in program management, risk assessment, and communications. Syracuse has effectively partnered with several organizations, including EPA, an analytical laboratory, the Onondaga County Health Department, and the seven CBOs. Lead Safe, LLC, a contractor, handles coordination and implementation of sampling efforts, and coordinates with the contracted laboratory.

Testing Laboratory

Syracuse established the following requirements for laboratory testing services:

- The selected laboratory must be certified by EPA's National Lead Laboratory Accreditation Program (NLLAP).
- The selected laboratory firm will provide the City of Syracuse Lead Dust Project with a copy of its accreditation from the American Industrial Hygiene Association (AIHA).
- The laboratory must show proficiency during the past five consecutive years in the Environmental Lead Proficiency Testing (ELPAT) Program which is administered by the AIHA for paint chips, dust wipes, and soils.
- Laboratories must be New York State Department of Health ELPAT-approved.
- The selected firm is required to comply with the City of Syracuse's equal employment opportunity requirements. A copy of these requirements can be obtained from the Office of Economic Development upon request.

> Samples from potentially lead dust-contaminated houses should be sent to a testing laboratory recognized by EPA's National Lead Laboratory Accreditation Program (NLLAP). Labs accredited by the NLLAP are proficient in testing for lead in air, paint, soil, or dust (see *Selecting a Laboratory for Lead Analysis: The EPA National Lead Laboratory Accreditation Program*, EPA 747-F-99-002, April 1999).

Community-Based Organizations (CBOs)

Like most urban areas in the United States, the City of Syracuse has experienced a dramatic influx of immigrants from Latin America, Asia, and Eastern Europe. These ethnic populations have been hard to reach with information about lead exposure, because of language barriers and unfamiliarity with the issue. Preoccupied with pressing issues of daily survival, new immigrants often fear government agencies or programs. Establishing a link to these people through community organizations that have bilingual members is key to reaching this population.

The CBOs involved in the Syracuse Lead Dust Project offer a diverse array of services to help immigrants, including teaching English as a second language, child care, and job placement

services. Through its existing HUD program, the lead hazard control program already had working relationships with some of the CBOs. Thus, when Syracuse launched its lead dust program, it involved those CBOs that provided geographic coverage, as well as those that already were reaching mothers and families with small children through their other program activities. In addition, Syracuse actively advertised the project and recruited additional CBOs to participate.

CBOs Provide Community Access

As previously mentioned, one of the primary ways that Syracuse's staff gain trust and access to potential program participants is through their involvement in CBOs that typically serve people in a two- to three-mile radius around the center. The following CBOs participate in lead dust education and outreach activities in Syracuse:

- **Boys & Girls Clubs of Syracuse**—A youth development agency whose goal is to inspire and enable all young people in the Syracuse area, especially those from disadvantaged circumstances, to realize their potential as productive citizens. <www.bgcsyracuse.org>
- **Brighton Family Center**—A neighborhood center that provides a variety of services in a predominantly African-American neighborhood. Services provided include a Young Mothers Program for teens who are pregnant or parenting, preschool and after-school programs, and teen programs.
- **Girls, Inc. of Central New York**—Provides opportunities for girls to meet the challenges of the future by developing their potential through creative programs for girls and their families. <www.girlsinc.com>
- **Syracuse Northeast Community Center**—Helps ensure the physical and emotional well being of children, families, seniors, and other individuals in the north/northeast section of Syracuse. <http://community.syracuse.com/cc/northeastcommunitycenter>
- **Southeast Asian Center**—Serves the Southeast Asian population in Syracuse, which includes more than 3,400 Hmong, Laotian, Vietnamese, Chinese, Korean, and Cambodian people. The center provides various supportive community-building activities, programs, and services to assist Southeast Asian immigrants in assimilating into the central New York community. <www.irccny.org/programs/seac.shtml>
- **Southwest Community Center**—Works with individuals, families, and communities to promote health and well being through prevention, intervention, and education.
- **Westcott Community Center**—Provides a safe, accessible community space for activities and programs that meet community needs; strengthens and unites the community by bringing together its diverse elements; raises awareness through public education and art; and promotes the full inclusion of all persons. <www.westcottcc.org>

The CBOs play a primary role in program outreach, and Syracuse's Lead Dust Project has developed strong and cordial working relationships with them. Through the trust and positive reputation engendered by these organizations, the city's lead program has been able to reach a segment of the population it had difficulty reaching before. The CBOs have helped translate information into Spanish and Vietnamese. The program also intends to produce Bosnian translations to provide that growing population with information about lead safety.

Communicating with a Non-English Speaking Audience

Partnering with agencies and community based organizations (CBOs) that cater to a large non-English speaking audience often presents special challenges, but working with these CBOs provides a vital link to the non-English-speaking community in Syracuse.

First and foremost, their clientele is often frightened. Arriving from third-world countries and war-torn nations, these people are easily intimidated by any type of government intervention. Populations of Vietnamese, Bosnians, and Hispanics are more concerned about getting jobs, locating housing, and appropriate schooling for their children. Childhood lead poisoning is not a priority issue as these people are just struggling to survive every day in a new and foreign land. Fear of government is another obstacle when dealing with immigrants. Syracuse partners with organizations that represent these non-English speaking groups since they have already gained the trust of community residents. This makes the job easier—without the CBOs it would be nearly impossible to reach these special groups. CBO representatives serve as interpreters during face-to-face meetings with prospective program participants (tenants) to ensure effective communications. This involves more time and scheduling to arrange meetings and home visits.

Many residents near the Southeast Asia Community Center speak Vietnamese, Chinese, and Korean, so the project conducts outreach and education in those languages.

Project staff have worked to gain trust, knowing the sensitivities involved in interacting with residents in their homes. Syracuse staff knew that homeowners or tenants might be reluctant to participate because cleanliness and housekeeping are generally considered to be private issues. New immigrants with few alternative housing options might be reluctant to apply, for fear they could get in trouble with the landlord. By ensuring confidentiality, Syracuse successfully avoided these pitfalls.

Because the CBOs are located in neighborhoods with high lead levels, they are the logical and convenient locations from which to operate a HEPA vacuum-loaner program. Each participating CBO is given wide latitude in the way it recruits residents to participate in the lead dust monitoring project. The CBOs are encouraged to design creative, effective outreach tactics. Several CBOs have initiated competitions to increase recruitment. For example, the Boys and Girls Clubs (of which there are three in the city), rewarded the club with the most lead dust project applications with a pizza party.

Maintaining the strong personal relationships is also vital to the program's success. Project staff visit each CBO at least once a week to touch base about community issues and to restock the lead information on display there. Syracuse's outreach coordinator is invited by the CBOs to many different community events, including holiday parties, picnics, and meetings. Often, the Syracuse staff gives the CBOs crayons, coloring books, pencils, and small bars of soap to hand out to children. Much of the handout material is donated by local businesses. The crayons are printed with an important safety message—they are labeled as being lead free according to ASTM D-4236. The bars of soap are a perfect way to remind children of the importance of hand-washing.

The HELP Lead Safe program in Providence, Rhode Island, also has found it tremendously important to involve bilingual members of the community in program outreach, especially those with lead-sick children themselves. Providence also has a Spanish-speaking staff member to build trust with the large Latino population targeted by the program.

Partnerships That Work

The city of Minneapolis partnered with neighborhood hardware store owners to implement the HEPA vacuum loaner program. The city has educated and trained hardware store personnel and has established Neighborhood Lead Centers in several locations. Minneapolis successfully recruits these business owners by showing them how they can benefit and how their knowledge about lead dust can serve as a marketing tool.

The program also educates day care providers, who then educate the parents. Minneapolis also has enlisted the involvement of public health nurses who educate the children in day care settings about the importance of washing their hands and taking off their shoes.

Once a month, Syracuse brings all seven CBOs together to discuss successes and challenges in signing up community members for the HEPA vacuum program. The group discusses performance goals and measures they have taken to meet these goals. While attendance at monthly EMPACT meetings is good, high CBO staff turnover requires both continual and often repeated training.

The CBOs also recruit bilingual community members, who become ambassadors for the lead dust effort and help enlist program participants. Chapter 4 has examples of tools the Syracuse Lead Dust Project and the CBOs have used in conducting outreach.

Syracuse conducted a CBO survey in the Spring of 2002 to assess program effectiveness and to determine ways to increase program participation. A copy of the survey questionnaire is included in Chapter 9. The survey findings indicate that:

- Tenants can be reluctant to participate in the HEPA vacuum program for a variety of reasons, including not wanting strangers to come in their house, fear of upsetting their landlord, or thinking the program does not pertain to them.
- Tenants often are embarrassed because they feel they are being judged on their housekeeping or cleanliness.
- CBOs need more tools like flyers, newsletters, and Web sites to educate the tenants in their community.

Based on the survey findings, Syracuse asked the CBOs to write implementation plans to guide their outreach activities and to bolster recruitment. As of July 2002, six of the seven plans had been submitted. Syracuse reviews and approves the plans, which then serve as blueprints for program implementation. The plan for the Westcott Community Center is shown on page 25 as an example.

Westcott Community Center
EMPACT Outreach Action Plan

Activities within the After School Program in the month of June:

- Poster contest with the After School Program during the month of June as well as viewing the Sesame Street video to prepare the kids with information. (Target yield is to have 7-10 kids involved).
- Dinner with the kids and their parents. We would like to have a showing of a presentation of the HEPA VAC. Also at this time, the winner of the poster contest will be honored. (Target yield is 4-6 families that would get involved in and go through the HEPA program).
- We plan to follow-up with a letter to the parents and ask them again if they would like to go through the process.

Membership Involvement

- We plan to target a key group of members through a letter campaign and get them to go through the HEPA VAC program.

Board Involvement

- During a board meeting, we will request that all board members sign up to go through the HEPA VAC process. Target yield is 11 of 15 members. This would include a letter campaign.
- We would like to have Mike Goss and Adam present on this board.

Employee Involvement

- We will request that all employees and stakeholders living within city limits go through the HEPA VAC Program. Target yield is 5. (Susan and Gloria)

Volunteer Involvement during the Fall of 2002 and Spring of 2003

- Encourage all student volunteers (college, university, high school) to go through HEPA VAC Program. We hope to have at least 25 percent of volunteers get involved.

Local Organization Involvement

- Attempt to partner with local schools to write articles regarding the HEPA VAC Program.
- Credit Union: Home Ownership Program.
- Partner with the Westcott Community Development Corporation in relation to joint marketing schemes. He periodically performs outreach to the neighborhood through door hangers.

Program Involvement

- We plan to target a small group of key program users and renters to encourage them to go through the HEPA VAC Program. (Target yield is 5-6 families).
- We have put in a grant proposal to become a site for the Parent Success Initiative. Should we receive it, we would encourage residents to go through the HEPA VAC Program.

Direct Outreach

- Newsletter.
- Vista Volunteer.
- Letters to members and program users.

What we need to assist us in the process:

- We are hoping to receive a one-page document that can be given to potential HEPA VAC renters that would clearly define and explain the process and what they can expect, should they go through the process.
- Be available for the booking of speakers and presentations.

4 COMMUNICATING ABOUT LEAD DUST

This chapter describes how Syracuse educated residents about the problem of lead dust in homes and the benefits of their participation in the project. Information in this chapter is designed primarily for managers who are implementing lead dust monitoring and outreach programs and for outreach workers who are responsible for communicating about lead in the home.

- Section 4.1 describes the outreach methods and materials used by Syracuse to inform and involve affected households and community members.
- Section 4.2 discusses the types of skills needed by Syracuse's outreach workers, dealing with language and cultural barriers, interviewing potential program participants, and promoting and advertising the lead dust program.
- Section 4.3 provides examples of some of the most effective outreach and educational materials used by Syracuse.

4.1 Syracuse's Outreach Methods and Materials

Syracuse's strategy for reaching parents and care givers of at-risk children was to utilize the CBOs. Through them, the lead dust project tapped into community events. Communities with mature lead awareness and abatement programs will probably just need to add specific lead dust information to existing lead outreach materials and activities. A municipality without a HUD or other lead program in place will need to develop a more comprehensive lead dust outreach plan. The following are some of the creative lead dust education and outreach tools developed by the city of Syracuse. Several examples are provided at the end of this chapter:

- **Milk cartons.** Syracuse's outreach coordinator contacted a local dairy and requested that the lead program's message be printed on the back of its milk cartons. The dairy worked the "Got Lead?" message into its rotation of milk carton panels. More than 100,000 households in central New York learned about lead dust through this outreach method.
- **Ce-LEAD-brity.** Syracuse wrote personal letters to more than 100 local and national celebrities asking them to help fight childhood lead poisoning by sending an 8" by 10" autographed photo with a personal message, such as "Be a lead fighter," or "Keep your neighborhood lead safe." The city collected more than 40 autographed photos from TV and radio personalities and celebrities, including Whoopi Goldberg, Jim Carrey, Big Bird, Mr. Rogers, the Sesame Street gang, Fats Domino, John Travolta, and numerous athletes. Syracuse's display has been exhibited widely in the community, as well as at two national lead safety shows.
- **Slide show.** The City of Syracuse has created several slide shows for various conferences and exhibitions. "Soup to Nuts", in particular, is a step-by-step sequence of the city's lead dust program. The slide show—a useful tool for communicating to homeowners, landlords, and other prospective clients—gives prospective applicants an idea of the various steps required to go through the program.
- **Free soap.** Because the project emphasizes that children keep their hands clean, Syracuse puts bars of soap in "goodie bags" handed out to children. The program contacted local

hotels and restaurants and persuaded them to donate thousands of small bars of soap. These businesses benefit from the positive community relations engendered by their donation, and the children receive a real tool that helps reduce their lead exposure.

- **Holiday-related outreach.** Syracuse developed a "Hol-lead-day Coloring Book" and distributes it to children during the winter holiday season. It also developed another coloring book with a St. Patrick's Day theme. The books included holiday-themed pictures for children to color, along with safety messages to help reduce lead exposure. The city also held a pumpkin-painting contest at Halloween to promote National Lead Poisoning Awareness Week and distributed information on getting children tested for lead poisoning with Thanksgiving food baskets.

The following table summarizes the various outreach materials, languages, and distribution channels used by three lead dust programs to provide a sense of the types of materials that can be used to recruit program participants:

Examples of Communications Materials and Media Used To Reach Residents by Several Lead Dust Programs

Program/City	Communications Format/Material	Languages	Media/Distribution Channels
Syracuse, NY	• Coloring/activity books for children • Milk cartons • Celebrity photos • "Look Out for Lead" flyer • Parents' Reference Guide • Video PSA • Publications and pamphlets	English Spanish Vietnamese Hmong Chinese Korean Laotian Cambodian Bosnian Braille	• CBOs • Directly to residents and kids • Local food markets • Personal contact • Web site • Cable television • Holiday gift baskets • Luncheons • Special events at the convention center
Providence, RI	• Pamphlets • Videos	English Spanish Cambodian Nigerian Liberian	• HELP Lead Safe program
Minneapolis/St. Paul, MN	• Pamphlets • Video • Radio announcements • In-store posters, signs, counter displays	English Somali Spanish Hmong	• Cable TV • Radio • Transit ads (bus shelters) • Visiting Nursing Association • Public health clinics • Libraries • Neighborhood retailers • Day care providers

Minneapolis/St. Paul Plugs into Local Media Outlets

The Minneapolis/St. Paul area has the largest Somali immigrant population in the United States. Many of these residents are fearful of government and are largely illiterate. In addition to reaching them through CBOs and with translated material distributed in public health clinics, the program is also using local Somali-language cable TV and radio stations. Minneapolis also is using donated advertising space to place informational posters in bus stop shelters within targeted neighborhoods. Minneapolis finds that free "remnant" (unsold) transit advertising space is often available in low-income neighborhoods.

• Video Public Service Announcement. Syracuse produced a video public service announcement (PSA) for the local cable television station. The mayor's public relations coordinator, who had been a local television news anchor, was instrumental in getting the PSA produced and aired. The PSA text is included at the end of this chapter.

4.2 Approaching and Recruiting Program Participants

In Syracuse, one of the biggest challenges has been overcoming residents' discomfort with strangers coming into their homes. Some people might worry that if inspectors identify a lead hazard, the government might make them move or might call social services to report lead poisoning in the children. In addition to the frustrations of trying to communicate with limited English language skills, residents might also feel anxious about the possibility that their child might be lead-poisoned. Syracuse overcame these challenges by hiring non-threatening, sensitive, appropriately dressed staff with strong "people skills" to conduct home visits and to teach affected households the proper cleaning methods.

According to Syracuse's outreach coordinator, "Many people don't want someone telling them how to clean their homes. It's like trying to teach an adult how to brush their teeth—they don't want to learn because they've been doing it for years." As an example, a woman in Syracuse who was remodeling her home had exposed her child to lead poisoning. She very much feared that if she enrolled in the program, something would happen to her child or to her home. She was finally persuaded to participate and was so pleased after using the HEPA vacuum and seeing the post-intervention results that she purchased her own HEPA vacuum to keep treating her house.

A warm, friendly disposition goes a long way toward gaining trust. "Be assertive but still friendly, and emphasize that the program promotes children's health," representatives from Syracuse advise. Thanks to their success in relationship building, Syracuse's Lead Dust Project staff can

Minneapolis' Lead Inspectors Need "People Skills"

The city of Minneapolis recognizes the important interactive role lead inspectors play. Not only are they technical experts and program enforcers, but they also are program ambassadors. Because interpersonal skills are so vital, the city is adding such requirements to its job description for lead inspectors. In fact, "people skills" are necessary not only to recruit program participants, but also to interact with property owners, who must ultimately remediate the lead contamination in their buildings. The draft job description includes the following language:

Human relations communication and group facilitation skills are of primary importance because of the interaction with large numbers of people and organizations from diverse backgrounds. Excellent oral and written communications skills are, therefore, essential, as is the ability to mediate and resolve disputes.

walk into any of the CBOs and be greeted with a smile and a hug.

Syracuse project staff meet with CBO representatives

Other Lessons Learned

Syracuse learned the importance of timing in program implementation. Project staff learned the hard way to wait until all elements were finalized and approved before making public announcements. Early outreach efforts drew participants who were ready to begin treating their homes, but EPA could not allow Syracuse to collect dust wipe samples until the Quality Assurance Project Plan (QAPP) was finalized and approved. Therefore, Syracuse staff had to delay the start of the implementation phase until all program components were in place, but they felt the wait was worthwhile because of the valuable framework provided by the QAPP.

Another pitfall of successful outreach occurred when a large number of people wanted to borrow the HEPA vacuums without formally joining the program. The solution to this dilemma was to lend the vacuums to anyone interested but to give first priority to those who had signed up for the full program.

4.3 Resources for Additional Information

EPA and the City of Syracuse have developed a variety of resources to help community members learn more about lead dust issues. Several examples of Syracuse's lead dust materials are included at the end of this chapter. Residents can also order the following publications to teach them more about safely managing lead dust in their homes:

A series of pamphlets: City of Syracuse Lead Program for Homeowners and Investor-Owners; City of Syracuse Lead Dust Outreach, Monitoring and Education Program (in English and Vietnamese), City of Syracuse Department of Community Development. Order by calling 315 448-8710.

Lead in Your Home: A Parent's Reference Guide (in English and Vietnamese), U.S. EPA Office of Prevention, Pesticides, and Toxic Substances, EPA 747-B-99-003, May 1999.

Identifying Lead Hazards in Residential Properties (EPA Fact Sheet), U.S. EPA Office of Prevention, Pesticides, and Toxic Substances, EPA 747-F-01-002, April 2001.

Risk Communication in Action: Environmental Case Studies, U.S. EPA, EPA 625-R-02-011, September 2002.

Testing Your Home for Lead in Paint, Dust, and Soil, U.S. EPA, Office of Pollution Prevention and Toxics, EPA 747-K-00-001, July 2000.

Fight Lead Poisoning with a Healthy Diet, U.S. EPA, Office of Pollution Prevention and Toxics, EPA 747-F-01-004, November 2001.

Protect Your Family from Lead in Your Home (in English and Spanish) U.S. EPA, U.S. Consumer Product Safety Commission, and U.S. Department of Housing and Urban Development, EPA 747-K-99-001, September 2001.

Reducing Lead Hazards When Remodeling Your Home (in English and Spanish) U.S. EPA, Office of Pollution Prevention and Toxics, EPA 747-K-97-001, September 1997.

For more resources, visit EPA's Office of Pollution Prevention and Toxics (OPPT) Lead Web Page at <www.epa.gov/lead/> or call 1-800-LEAD FYI to order EPA publications.

COMMUNICATING ABOUT LEAD DUST

Community Partners:

Brighton Family Ctr.
424-9378

Girls Inc. of CNY
474-0746

Boys & Girls Clubs
of Syracuse
472-6714

Southeast Asian Center
422-1593

Syracuse Northeast Com. Ctr.
472-6343

Southwest Community Ctr.
474-6823

Westcott Community Ctr.
478-8634

Working Together to Create Low Cost Solutions

EMPACT

EPA
United States Environmental Protection Agency

LEAD-SAFE AMERICA

Syracuse New York

Department of
Community Development

Betsy Mokrzycki
Lead Hazard Control Program
201 E. Washington St.
Syracuse, N.Y. 13202

Phone: 448 - 8710
Fax: 448 - 8659
http://www.syracuse-empact.com

EQUAL HOUSING OPPORTUNITY

EPA | *EMPACT*

CITY OF SYRACUSE

Lead Dust Outreach, Monitoring and Education Project

Matthew J. Driscoll , Mayor

Department of
Community Development

Tel: 315-448-8710

W hat is EMPACT?

In 1996 a Presidential initiative charged EPA and its partners with developing a program to improve the measurement, access, understanding and dissemination of key environmental information in the US metropolitan areas.

What are EMPACT's goals?

- *Incorporate improved and upda ted tec h nologies for time -relevant enviro n- mental measurement and monitoring.*
- *Facilitate public access to comprehe n- sive, easily understood environmental information.*
- *Provide effective tools for communica t- ing, interpreting, and applying enviro n- mental data and information.*
- *Establish partnerships within metro a r- eas to ensure the information is useful and timely for families and communities*
- *Develop a management and data fram ework within which communities can work, but which also provide the ability to aggregate information on a local, regional, and n ational scale.*

How Does the City of Syracuse fit in?

Funded by a grant from USEPA, the City of Syracuse has developed a program designed to measure the lead dust content in homes. Aided by community based organization partners, the City will make available HEPA Vacuums that can be borrowed as needed to control leaded dust. Also, the program will provide current data and information on a web site.

How much of a hazard is lead dust? More children are poisoned by exposure to lead dust from lead-based paint in older homes than by any other source, usually through normal hand-to-mouth activity after getting lead dust on their hands and toys!

What is a HEPA Vacuum? A *H*igh *E*fficiency *P*articulate *A*ir vacuum is a vacuum that is equipped with a filter that is capable of trapping 99.97% of the dust that it collects.

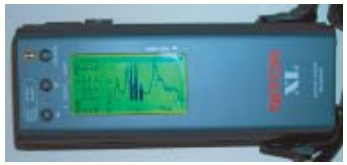
Why can't I just use my household vacuum? The lead dust is so fine that your regular vacuum cannot contain the dust. It simply flows through the bag only to be spread around your home.

A HEPA vacuum looks just like my shop vacuum, can't I just use that? No! Shop vacuums are not equipped with HEPA filtering equipment and therefore cannot trap the tiny lead particles.

http://www.syracuse-empact.com

[1] Alliance to End Childhood Lead Poisoning

How do they measure lead in the dust? The program will collect samples from various places in your home to determine if a lead dust hazard exists. These samples will be analyzed utilizing a portable XRF.



What is an XRF? An XRF is a testing device that is capable of determining the presence of lead in a dust wipe sample. Since this is cutting edge technology, some of the samples will be sent to a lab for confirmatory analysis.

How do I part icipate in the program? Simply call the City or the partner listed on the back in your area and request to enroll in the HEPA vacuum program. Its easy and it's a simple way to protect your family from lead hazards.

CALL TODAY!!

448-8710

Department of
Community Development

Betsy Mokrzycki
Lead Hazard Control Program
201 E. Washington St.
Syracuse, N.Y. 13202

Phone: 448 - 8710
Fax: 448 - 8659
http://www.syracuse-empact.com

DEPARTMENT OF COMMUNITY DEVELOPMENT
LEAD HAZARD CONTROL PROGRAM

Matthew J. Driscoll, Mayor

PSA...EMPACT PROGRAM

If you own a home or rent an apartment in the City of Syracuse, **or** if you are an investor-owner of City residential property, take advantage of the **free** use of our Hepa-vacuum cleaner in your home today. This specially designed vacuum cleaner can help eliminate potentially hazardous lead dust, allergens, pollens and dust mites from your home. For more information call the City of Syracuse's **Lead Hazard Control Program** at 448-8710.

*"We're puttin' the **ain't** in lead paint!"*

4/02/02
mag

WE ARE LOOKING FOR PEOPLE ☺

WHO RESIDE IN THE **CITY** WHO

WOULD LIKE TO USE OUR **HEPA-**

VAC FREE FOR 1 WEEK.

THIS SPECIALLY DESIGNED

VACUUM CLEANER CAN HELP

ELIMINATE POTENTIALLY

HAZARDOUS LEAD DUST FROM

YOUR HOME OR APARTMENT.

CALL US AT 448-8710 AND ASK

FOR ADAM OR MIKE. ☺

[redacted]

City of Syracuse

Lead Paint Program: 315-448-8710

ATTENTION KIDS!!!

Have your moms and dads fill out the **Intake Form and**

They can **use** one of our special hepa-vacuum cleaners **free** for one week.

These vacuum cleaners are specially designed to pick up and trap dangerous **lead dust** particles. It also removes dust mites and other particles that might cause allergies and/or other breathing disorders.

Just bring the filled-out form back to the **Boys & Girls Club** and your name will be put in our raffle box. You could win a **computer game** just for getting mom or dad to fill out the form. Now that's a good deal!!! ☺

If you mom or dad has any questions tell them to call Mike or Adam at 448-8710. We're in 8:30 to 4:30 Monday thru Friday.

Help us make your home cleaner and healthier and you can be our lucky winner. Be *lead safe* and remember *healthy kids are happy kids*! ☺ ☺ ☺

City of Syracuse Lead Program
448-8710

DEPARTMENT OF COMMUNITY DEVELOPMENT
LEAD HAZARD CONTROL PROGRAM

Matthew J. Driscoll, Mayor

Attention Landlords;

Enclosed is some lead-friendly information provided to you by the City of Syracuse's **Lead Hazard Control Program**. We offer money for qualified owner-occupants as well as investor-owners to reduce potential lead hazards in City homes. Through our **EMPACT Program** we can also provide homeowners and/or tenants the use of a Hepa-vac free for one week. This specially designed vacuum cleaner can significantly reduce hazardous lead dust as well as dust mites and other allergens in your home.
For more information on either program, please contact us at (315) 448-8710.
We're hoping to make your homes lead-safer for your children.
Thanks for helping us!

City of Syracuse
Lead Hazard Control Program

www.syracuse.ny.us
http://www.syrempact.lead-safe.com

201 E. WASHINGTON ST. • RM. 500 • SYRACUSE, NEW YORK 13202-1430 • (315) 448-8710
Web Page: www.syracuse.ny.us

5 Collecting and Managing Data on Lead Dust

This chapter describes the steps taken by Syracuse to collect and manage samples on lead dust in homes. With a target of 350 homes, Syracuse collects dust wipe samples in a way that ensures the quality of the data and that also helps participants understand the procedure and findings.

- Section 5.1 outlines the chronology of interactions with participants, including sampling, mitigation, and reporting.
- Section 5.2 discusses step-by-step in-home lead dust sampling.
- Section 5.3 describes the role of the Quality Assurance Project Plan (QAPP).
- Section 5.4 offers resources for additional information.

Syracuse has integrated X-ray fluorescence (XRF) technology into its lead dust program. An XRF is a small portable device capable of reading lead dust wipes and determining lead levels in seconds. This technology provides significant time savings when compared to sending dust wipes away for traditional laboratory analysis. Although XRF technology is not yet an EPA-approved method for analyzing lead dust, it has been demonstrated to provide reliable and representative results when compared with laboratory data.

Syracuse's QAPP specifies the procedures for using XRF analysis of lead dust samples. It also outlines the steps necessary to statistically correlate XRF results with laboratory results. Read more about how Syracuse established a statistical correlation between XRF and laboratory results in Chapter 6. See Section 5.3 below and Appendix B for more information about the QAPP.

5.1 Chronology: from Data Collection to Reporting

After a resident signs up for the program, Syracuse staff visits the home and collects lead dust data. The protocol used by Syracuse staff to interact with participants is as follows:

Step 1. Call participant to set up appointment to collect pre-mitigation dust samples.

Step 2. Gather pre-mitigation samples from the designated sampling locations; leave residence.

Step 3. Read samples with XRF (see Chapter 6).

Step 4. If necessary, send pre-mitigation samples to accredited laboratory for confirmatory analysis.

Step 5. Call participant to report results and mail written report.

Step 6. If necessary, set up appointment to review sample results, drop off HEPA vacuum, and explain three-step cleaning procedure. (See Chapter 7 on Mitigation).

Step 7. Arrange for HEPA vacuum pickup and post-mitigation sampling, if necessary.

Step 8. Read post-mitigation samples with XRF.

Step 9. If necessary, send post-mitigation samples to accredited laboratory for confirmatory analysis.

Step 10. Mail or deliver final report to participant and landlord. (See Chapter 8 for Reporting.)

A Syracuse Lead Dust Project staff member interacts with residents during sampling and mitigation. This person is a certified inspector/risk assessor who collects the samples following the protocol in the QAPP and ensures that the samples are labeled and recorded correctly before sending them off for confirmatory analysis. He also sets up appointments and explains the benefits of the program and the cleaning process to participants. He makes the experience pleasant and positive for the resident and assures them that the information is confidential and will not jeopardize their tenancy at the property. As soon as results are available they are mailed to the resident and project staff visit the home if the resident decides to participate in the HEPA loaner program.

5.2 Visiting the Home (Step-by-step In-home Sampling)

Syracuse usually allots about a half-hour for sampling a typical residence. Initially, sampling took about an hour, but Syracuse soon halved that time as staff became more familiar with the process and began using XRF to analyze samples offsite instead of at the residence.

As previously discussed in Section 3.2, project staff first interviews the resident using the HEPA Vacuum Intake Questionnaire, a copy of which can be found at the end of this chapter. During the home visit, staff review the information with the resident and also visually examines the house, identifying the principal play areas and determining where children spend most of their time. By asking questions and observing current conditions in the house, high-risk or high-use areas are identified.

Syracuse uses the same protocol for collecting samples, whether they are analyzed by traditional laboratory analysis, field portable XRF technology, or both. The field sampling technician collects dust wipe samples in accordance with the HUD Guidelines for the Evaluation and Control

Syracuse Uses Certified Risk Assessors

New York State is one of 13 states that choose to follow federal regulations for lead hazard control activities rather than establish their own state regulatory programs. Syracuse, therefore, requires that their field sampling technicians be EPA-certified inspectors/risk assessors. An EPA lead inspector conducts a surface-by-surface investigation to determine whether lead-based paint is present in the home, how much is present, and where it is located. He determines the existence, nature, severity, and location of lead-based paint hazards in a residential dwelling. The assessor performs visual inspections, tests household dust from floors and windows and other locations, and presents a report identifying the location of the types of lead-based paint hazards and ways to control them.

The Syracuse Lead Dust Project initially contracted with an EPA-certified risk assessor but then trained one of its own staff to become certified, thereby realizing a substantial cost savings.

Visit <www.epa.gov/lead/traincert.htm> for a map of the United States with links to state lead programs, or call 1-800-424-LEAD for information on the 13 EPA-run states (Alaska, Arizona, Florida, Idaho, Montana, North and South Dakota, Nevada, New Mexico, New York, South Carolina, Washington, and Wyoming).

of Lead-Based Paint in Housing at <www.hud.gov/offices/lead/guidelines/hudguidelines/index.cfm>, and HUD's Lead Safe Housing Rule at <www.hud.gov/offices/lead/leadsaferule>. The results are then compared to the EPA regulations at TSCA Chapter 4, Section 403 lead hazard standards. Although each house is different and must be approached with its unique characteristics in mind, Syracuse's testing typically focuses on three to four main areas: the principal play area, the kitchen, and the bedrooms of the youngest children (there might be more than one child's bedroom to test).

The most common method for collecting a dust sample is a surface wipe. Because XRF instruments are very sensitive, however, the sampling medium (dust wipe) should meet ASTM E 1792-96a "Standard Specification for Wipe Sampling Materials for Lead in Surface Dust." Syracuse purchased a Niton XRF, and initially, the sampling media provided by the contract laboratory did not meet the Niton specifications for XRF use. The Syracuse team found that the moisture content of the various wipes can affect the accuracy of the Niton XRF readings. They researched and experimented with several different sampling media before finding the one that met its needs. Syracuse found that Palintest and PACE wipes provided the most accurate results for use with the XRF.

Although various testing formats are possible, Syracuse's QAPP calls for the following 10 samples:

1. Principal play area floor
2. Principal play area interior window sill
3. Kitchen floor
4. Kitchen window sill
5. Kitchen window and trough
6. Youngest child's room floor
7. Youngest child's room window sill
8. Youngest child's room window trough
9. Floor of next youngest child's room
10. Sill of next youngest child's room

Guarding Against Lead Hazards

When handling lead dust and samples, lead can enter the body through ingestion, which occurs as a result of routine hand-to-mouth activities such as eating, drinking, and smoking. Inspectors needed to wear gloves and refrain from hand-to-mouth activities on the job. When work is complete, inspectors wash their hands upon leaving a site.

Two field blanks, labeled 11 and 12, are submitted to the laboratory with each set of samples. At 10 percent of the residences, Syracuse plans post-mitigation sampling (i.e., samples are taken after residents have completed the three-step cleaning/HEPA procedure). These samples, plus two additional field blanks, are labeled 13 through 24.

Each sample bag is given a unique number (e.g., 012–07) that identifies the house (range: 001–350) and the sampling location within the house (01–10). As inspectors take samples, they record the lead level of each sampling location on a site worksheet. Any other relevant descriptive information, such as the general condition of the paint, high levels of dust, or unusual use of the area, is noted on the worksheet as well. Finally, the worksheet provides convenient spaces to write down any relevant descriptive information such as the condition of paint or excessive levels of dust.

5.3 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) documents the planning, implementation, and assessment procedures for a particular project, as well as any specific quality assurance and quality control activities. It integrates all the technical and quality aspects of the project in order to provide a "blue print" for obtaining the type and quality of environmental data and information needed for a specific decision or use. All work performed or funded by EPA that involves the acquisition of environmental data must have an approved QAPP. For more information, visit EPA's Web site at <www.epa.gov/quality>.

Development of the QAPP required Syracuse to address essential project details. How will the data be collected? How will the data be used? Will the data support the decision-making process? How will the data be stored and presented? This up-front planning allowed Syracuse to work through issues before actually encountering them and saved time during project implementation.

Syracuse found that the exercise of developing a QAPP imposed an important discipline that guided the entire project. Syracuse took six months to develop the QAPP and continues to update it as the project matures. Although the initial push can be challenging, Syracuse staff believes that the process is worthwhile. A copy of the Syracuse QAPP appears in Appendix B.

5.4 Resources for Additional Information

Methods 6200, 6010B, and 7420 from EPA (entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods). Ordering information or a copy of the text can be obtained online by accessing <www.epa.gov/epaoswer/hazwaste/test/sw846.htm>.

ASTM D1792-96a, Standard Specification for Wipe Sampling Materials for Lead in Surface Dust, ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. For individual reprints call 610-832-9585; visit www.astm.org; or send an e-mail to service@astm.org.

HEPA VACUUM
INTAKE QUESTIONNAIRE

Occupant Address:

Name:_____ Date:_____

Address:_____
Street, City, Zip Code

Telephone:_____ Telephone:_____
Day Time Evening

Owners Address (If Different):

Name:_____ Date:_____

Address:_____
Street, City, Zip Code

Telephone:_____ Telephone:_____
Day Time Evening

Tenant:_____(Y/N) Owner/Occupant:_____

Age of person Leasing HEPA Vacuum: (Please Check One)
18-21:_____ 22-30:_____ 31-45:_____ 46-60:_____ 61 or Older:_____

Household Size:_____

Number of Children 6 and under:_____

Do any children have a known elevated blood level?_____(Y/N)

Do you know the approximate age/ year of the residence?_____

Length of time living in residence: Years_____ Months:_____

How did you become aware of the program? (Check One)

Friend/Relative_____ Internet_____

Media (Newspaper, Brochure)_____ Other_____

Community Organization_____

6 Analyzing Lead Dust Samples Using XRF Technology

This chapter describes the steps taken by the Syracuse Lead Dust Project to incorporate cutting-edge technology into its program. The field-portable X-ray fluorescence (XRF) instrument is a hand-held, battery-powered device that produces timely data on lead levels in household dust, soil, or paint. The XRF user must be trained and certified to meet federal, state, or local requirements for collection of environmental samples.

- Section 6.1 describes the advantages of XRF technology used by the Syracuse Lead Dust Project.
- Section 6.2 provides information on how Syracuse obtained the XRF equipment and associated licensing, operator training and certification, and laboratory verification of XRF analysis.
- Section 6.3 discusses the importance of quality control.
- Section 6.4 covers health and safety precautions for inspectors.
- Section 6.5 highlights equipment maintenance.
- Section 6.6 provides resources for more information.

6.1 Advantages of XRF Technology

Experience has shown that lead concentrations inside homes vary significantly. The XRF instrument can instantly detect unusually high lead levels and the field sampling technician can tell residents where children or other occupants of the household are most likely to be exposed to lead. While Syracuse made a substantial capital investment to purchase XRF technology, in the long term, the city is saving money with this equipment because it has dramatically reduced costs for laboratory analysis.

To analyze a sample using the XRF, the technician places a folded wipe sample in the XRF sample holder and follows the manufacturer's procedures to get results. A 30- to 60-second measurement should yield reliable results. An important benefit of XRF analysis is that the sample remains intact so that the same samples subsequently can be analyzed by a laboratory.

Appropriate wipes that meet the requirements of ASTM E1792-96a, *Standard Specification for Wipe Sampling Materials for Lead in Surface Dust,* should be used. See Chapter 5 for more information on the types of wipes that Syracuse used for sampling, and for important lessons learned about the choice of sampling media. The resource section at the end of this chapter includes information for obtaining a copy of the ASTM standard specification.

Although an XRF instrument has many advantages, its purchase and use requires careful consideration. Because XRFs contain radioactive materials, operators must have valid licenses or

permits from the appropriate federal, state, and local regulatory bodies and must meet any applicable state or local notification requirements.

6.2 Requirements and Qualifications

Depending on the state, operators may be required to hold three forms of proof of competency: a manufacturer's training certificate (or equivalent), a radiation safety license, and a state lead-based paint inspection certificate or license.

Manufacturer's Training

In most states, operators must be trained by the manufacturer or receive equivalent training. Syracuse staff took a one-day free training course on the use of the XRF instrument offered by the manufacturer, Niton. The course met New York state requirements and covered radiation safety, XRF theory, worker exposure, as well as hands-on analysis of dust wipes and paint chips.

Radiation Licensing and Safety Training

The U.S. Nuclear Regulatory Commission (NRC) requires radiation safety training for licensing purposes. Radiation safety officer certification is necessary before NRC will grant a license to own, operate, transfer, or store an XRF unit. Since Syracuse did not already have a radiation safety officer involved, staff first had to undergo a rigorous training program required by the state of New York to handle radioactive equipment. Once personnel were trained, Syracuse was

XRF Use Licenses and Certification

In addition to training and any required accreditation, a person must have valid licenses or permits from the appropriate federal, state, and local regulatory bodies to operate XRF instruments. All portable XRF instrument operators should be trained by the instrument's manufacturer (or equivalent). Depending on the state, operators may be required to hold three forms of proof of competency: a manufacturer's training certificate (or equivalent), a radiation safety license, and a state lead-based paint inspection certificate or license. To help ensure competency and safety, EPA and HUD recommend hiring only operators who hold all three.

The regulatory body responsible for oversight of the radioactive materials contained in portable XRF instruments depends on the type of material being handled. Some radioactive materials are federally regulated by the U.S. Nuclear Regulatory Commission (NRC); others are regulated at the state level. States are generally categorized as "agreement" and "non-agreement" states. An agreement state has an agreement with NRC to regulate radioactive materials that are generally used for medical or industrial applications. (Most radioactive materials found in XRF instruments are regulated by agreement states). For non-agreement states, NRC retains this regulatory responsibility directly. At a minimum, however, most state agencies require prior notification that a specific XRF instrument is to be used within the state. Fees and other details regarding the use of portable XRF instruments vary from state to state. Contractors who provide inspection services must hold current licenses or permits for handling XRF instruments, and must meet any applicable state or local laws or notification requirements.

As an NRC-agreement state, New York regulates the handling of radioactive materials and the Syracuse Project is in compliance with all relevant state regulations.

able to apply for a New York state radiation license. A special safe had to be purchased to secure the XRF with its radioactive source.

Costs for the Instrument

In addition to investing in trained, licensed, and certified staff, those seeking to implement an extensive lead dust monitoring program may want to buy their own field-portable XRF. Syracuse purchased a Niton Model XL309, which costs about $21,000, making it the most substantial expense the project faced. This model costs less than other Niton instruments because it tests only for lead rather than a wide range of metals detectable with other models. The same model with soil analysis capability would cost an additional $3,000. Programs will face an additional expense to replace the instrument's radioactive source once every two years, if not more frequently. The Niton source costs $7,300.

Programs committed to a combination of dust, paint, or soil inspection for the long term will find that the investment will more than pay for itself. In addition to its EMPACT Lead Dust Project, the city of Syracuse also uses XRF technology for its HUD lead abatement program, plus a new soil analysis program, making the cost per sample less than it would be for laboratory analysis for each sample. Sending samples to a lab involves not only charges for the analysis itself, but also the expenses of shipping and handling. After Syracuse completed Phase I and started using only the XRF for most of the analysis, the cost savings became more apparent.

EPA Verifies Use of XRF for Measurement of Lead in Dust

In the fall of 2002, EPA's Environmental Technology Verification (ETV) program published a report verifying the use of five field-portable XRF technologies for the measurement of lead in dust. The Niton XL-300 and XL-700 series XRF instruments were among the five brands tested. ETV evaluated overall performance of the Niton as " . . . biased slightly high (but within the limits of acceptable bias), very precise, and in good linear agreement to an NLLAP-laboratory [National Lead Laboratory Accreditation Program] result."

The ETV program facilitates the deployment of innovative or improved environmental technologies through the performance of verification and dissemination of information. The goal of the ETV program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. For more information visit the ETV Web site at <www.epa.gov/etv>.

6.3 Quality Control

Quality control is an important component of the Syracuse Lead Dust Project. The QAPP (See Appendix B) ensures that staff follow consistent protocols, test methods, and data management procedures. Syracuse employs additional quality control measures, as described in the following section, that help meet its objectives of confirming the capabilities of XRF and training residents to reduce lead dust levels in homes.

Data Evaluation and Confirmatory Analysis

One objective of the Syracuse Lead Dust Project is to validate the accuracy of XRF readings for lead dust monitoring by comparing field XRF data to laboratory data. Because there is no EPA-approved method for lead dust analysis by XRF, Syracuse judged XRF results against the highest standards of accepted practice; namely, inductively coupled plasma/atomic emission

(ICP/AE) and atomic absorption (AA) methods, both of which are conducted in a laboratory and typically take two to four days to get results.[4]

During Phase I, Syracuse sent all samples from the first 15 homes to the laboratory for analysis using these methods. In addition, Syracuse provided XRF data for these samples. The laboratory performed a statistical comparison between samples analyzed by XRF and the same samples analyzed by ICP/AE + AA, yielding a percent difference for each set of values. The EPA Region 2 laboratory reviewed these values and helped establish performance criteria to be used by the field XRF operators. In conducting this evaluation, Syracuse took into account the fact that XRF technology tends to have a bias to the low side of laboratory determined values. To protect against false negative results due to instrument bias, Syracuse reviewed results from tests where both XRF and laboratory methods were used. Results where the XRF reading taken was above the laboratory result for the same sample were disqualified from the analysis as outliers. The remaining data were separated by location type (i.e., floors, window sills or window wells); the difference between the XRF and laboratory methods were taken for each set of samples; and a standard deviation calculated for each location type. Results within one standard deviation below the acceptable level are also considered positive results as a "worst case estimate". To protect against false positive results, where the worst case estimates are within 2 times the limit of detection, samples are sent to the laboratory to confirm results.

The project team used these findings during Phase II to determine which new samples would be sent for laboratory confirmation. After establishing a statistical correlation, Syracuse started sending only those XRF samples falling within a specific range to the laboratory for confirmation (See table adjacent as well as the post mitigation report entitled "Settled Dust Sample Results" included at the end of Chapter 8). Syracuse expects that the laboratory will continue to refine this statistical analysis as more data become available. Current results, however, show an acceptable correlation between XRF and laboratory data.

XRF Readings Requiring Laboratory Confirmation

Sample Type	XRF Reading	Lab Confirmation?
Floor	>40 µg/ft² (MDL)	No
Floor	<40 µg/ft²	Yes
Window Sill	<100 µg/ft²	No
Window Sill	100 µg/ft² and 250 µg/ft²	Yes
Window Sill	>250 µg/ft²	No
Window Well	<180 µg/ft²	No
Window Well	180 µg/ft² and 400 µg/ft²	Yes
Window Well	>400 µg/ft²	No

Data Management

In Syracuse, the XRF instrument is the main data management tool used by the field sampling technician. The XRF has pre-loaded software that can read and store up to 3,000 entries before data is downloaded to alternative storage. As explained in Chapter 5, each sample bag is given a unique number designating the sampling location within the house. Upon completion of sampling and analysis, Syracuse downloads the data from the XRF to the City of Syracuse computers.

[4] It should be noted that the samplings conducted by the Syracuse project are not regulatory compliance tests and therefore do not require the use of an EPA-approved method.

Calibration

Niton XRFs are factory-calibrated, but regular checks are an essential aspect of quality control. Before Syracuse's inspectors begin to test a property, they take readings on standard reference materials (SRMs) whose lead levels are known to be within the anticipated range for lead in household dust. A manufacturer's standard is used for this calibration check. If any of these readings fail the quality control criteria, possible problems are investigated and the check is re-run until the instrument passes. If the instrument does not pass, it is sent back to Niton to be re-calibrated. These same field checks need to be completed before and after each property is tested to ensure that the calibration has remained intact throughout the testing period.

Laboratory Selection

Using an accredited laboratory is an important quality control step for Syracuse. The residential dust samples are analyzed by a laboratory on EPA's National Lead Laboratory Accreditation Program (NLLAP) list for dust. Each state might have its own lead program and different regulations. For example, the New York State Department of Health requires all labs analyzing samples from the state to be certified under its Environmental Laboratory Approval Program. For more information, contact the National Lead Information Center (NLIC) at 1-800-424-LEAD, visit <www.epa.gov/lead>, and your state and local health agencies.

Proficiency Through ELPAT

The Syracuse Lead Dust Project recommends that programs using XRF participate in the Environmental Lead Proficiency Analytical Testing (ELPAT) program. ELPAT is run by the American Industrial Hygiene Association and is designed to help a laboratory assess and/or improve its analytical performance, by providing it with test samples on a quarterly basis and evaluating the results. Participation in the ELPAT program is open to all laboratories, but it is mandatory for laboratories seeking accreditation by one of the organizations recognized under EPA's NLLAP program.

XRF Usage and Radiation Exposure

An XRF operator must wear a dosimetry badge, which monitors exposure to radiation. Even though no radiation dosimetry is required for some isotopes, users should wear a dosimetry badge for the following reasons:

- XRF instrument operators have a right to know the level of radiation to which they are exposed during the performance of the job. In virtually all cases, the exposure will be far below applicable exposure limits.
- The cost of dosimetry is low.
- Long-term collection of radiation exposure information can aid both the operator (employee) and the employer. The employee gains peace of mind and the employer benefits by having an exposure record that can be used in deciding possible health claims.
- The public benefits by having exposure records available to them.
- The need for equipment repair can be quickly identified.

Safe Operating Distance

XRF instruments used in accordance with manufacturer's instructions will not cause significant exposure to ionizing radiation. But the instrument's shutter should never be pointed at anyone, even if the shutter is closed. Also, the operator's hand should not be placed on the end plate during a measurement.

The safe operating distance between an XRF instrument and an individual depends on the radiation source type, radiation intensity, quantity of radioactive material, and the density of the materials being surveyed. As the radiation source quantity and intensity increases, the required safe distance also increases. Placing materials, such as a wall, in the direct line of fire reduces the required safe distance.

According to NRC rules, a radiation dose to an individual in any unrestricted area must not exceed 2 millirems per hour. One of the most intense sources currently used in XRF instruments is a 40-millicurie 57Co (cobalt-57) radiation source. Other radiation sources in current use for XRF testing of lead-based paint generally produce lower levels of radiation. Generally, an XRF operator following manufacturer's instructions would be exposed to radiation well below the regulatory level. Typically, XRF instruments with lower gamma radiation intensities can use a shorter safe distance, provided that the potential exposure to an individual will not exceed the regulatory limit.

No one should be near the other side of a wall, floor, ceiling or other surface being tested. The operator should verify this prior to initiating XRF testing activities and check on it during testing.

Finally, the effectiveness of the instrument's radiation shielding should be assessed every 6 months using a leak test. The XRF manufacturer or owner's manual can be consulted to obtain vendors of leak test kits. If these safety practices are observed, the risk of excessive exposure to ionizing radiation is extremely low and will not endanger any inspectors or occupants present in the dwelling.

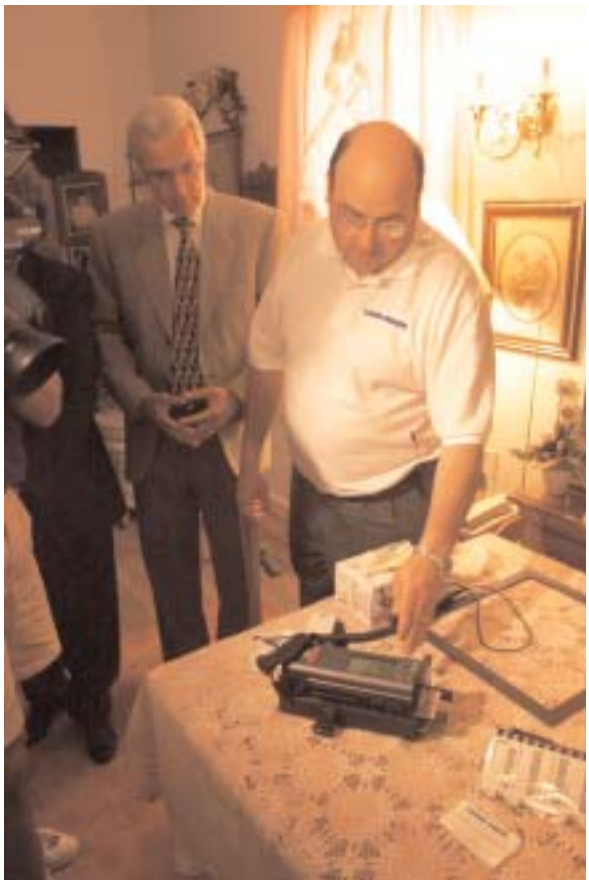
Each quarter, Syracuse receives sample kits with four concentration levels for each of three matrices: paint chips, soil, and dust wipes. The city analyzes these samples and sends the results back to ELPAT for evaluation. Performance ratings are based on accumulated results over four rounds. The acceptable range is based on consensus values from all laboratories. A laboratory's performance for each matrix is rated as proficient if either of the following criteria are met: in the last two rounds, all samples are analyzed and the results are 100 percent acceptable; or, three-fourths or more of the accumulated results over four rounds are acceptable. Syracuse has consistently been rated as proficient using XRF.

For more information on the ELPAT Program, visit <www.aiha.org/LaboratoryServices/html/elpat1.htm> or contact the Laboratory Accreditation Department at AIHA, (703) 849-8888.

6.4 Health and Safety When Using XRF

Guarding Against Radiation Hazards

Portable XRF instruments used for lead analyses contain radioactive isotopes that emit X-rays and gamma radiation. Proper training and handling of these instruments is needed to protect the instrument operator and any other persons in the immediate vicinity during XRF use. The XRF instrument should be in the operator's possession at all times. The operator should never defeat or override any safety mechanisms of XRF equipment. The City of Syracuse has dosimetry badges that are worn by each of the XRF operators whenever the instrument is in



use. These badges are evaluated each quarter to check for personal radiation exposure. In addition, in accordance with New York State regulations, the instrument is leak-tested every six months.

6.5 Maintaining Equipment

Day-to-day maintenance of the XRF is generally not difficult or costly. Operators should clean the instrument's display window with cotton swabs, clean the case with a soft cloth, and charge the batteries as directed in the owner's manual. Beyond that, operators usually just need to take care not to drop the instrument, get it wet, or neglect the calibration checks recommended by the manufacturer.

Over the long term, however, XRF owners face the very significant maintenance concern of replacing the instrument's radioactive source. All radioactive isotopes decay at a fixed rate. The half-life of 109Cd (cadmium-109), for example, is about 18 months. After that, the XRF can still be used, but the instrument becomes progressively less efficient. Readings that once took 30 to 60 seconds take progressively longer. Eventually the wait becomes burdensome, and the isotope must be replaced. Syracuse sends its instrument back to the manufacturer, which disposes of the spent radioactive source, installs the new source, upgrades the instrument's software, and provides whatever preventive maintenance is needed. See Chapter 7, Section 7.3 for more information on managing and disposing of hazardous wastes generated in a lead dust monitoring and mitigation program.

6.6 Resources for Additional Information

XRF Accuracy

U.S. EPA, Office of Research and Development, Environmental Technology Verification Report on Field Portable X-ray Fluorescence Analyzer, Niton XL Spectrum Analyzer, March 1998, EPA/600/R-97/150. Visit www.epa.gov/etv/verifications/vcenter1-22.html.

Midwest Research Institute, XRF Performance Characteristic Sheet, Edition Number 4, Niton XL 309, 701-A, 702-A, and 703-A Spectrum Analyzers, April 17, 1998, in accordance with EPA Methodology for XRF Performance Characteristic Sheets, September 1997, EPA 747-R-95-008. Copies can be obtained from the National Lead Clearinghouse at 1-800-424-LEAD.

Clark, Scott, William Menrath, Mei Chen, Sandy Roda, and Paul Succop. Use of a Field Portable X-Ray Fluorescence Analyzer to Determine the Concentration of Lead and Other Metals in Soil and Dust Samples. To order, contact the University of Cincinnati Department of Environmental Health at 513 558-1749.

Test Methods

SW-846 is EPA's Office of Solid Waste's official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with RCRA regulations. Visit <www.epa.gov/epaoswer/hazwaste/test/sw846.htm> to learn more about SW-846 and obtain a copy online.

Methods 6200, 6010B, and 7420 from EPA (entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846). For ordering information, or to obtain a copy online, go to <www.epa.gov/epaoswer/hazwaste/test/sw846.htm>.

ASTM E1792-96a, Standard Specification for Wipe Sampling Materials for Lead in Surface Dust, ASTM, 1100 Barr Harbor Drive, West Conshohoken, PA 19428-2959. For individual reprints call 610-832-9585; visit www.astm.org or send an e-mail to service@astm.org.

7 Mitigation and Maintenance

This chapter describes the mitigation (cleaning) steps for indoor areas identified as having a lead dust hazard. This chapter presents the three-step wet cleaning method and explains the use of High Efficiency Particulate Air (HEPA) filter vacuums used by the Syracuse Lead Dust Project. Consistent with the goals of EMPACT, this mitigation approach is low cost and convenient to the affected community.

- Section 7.1 is written for residents interested in learning how to mitigate (clean) lead dust in their homes.
- Section 7.2 is written for managers and decision-makers who might be considering a lead dust program in their community and for organizers who are actually implementing a lead intervention program. It also describes Syracuse's HEPA vacuum loaner program.
- Section 7.3 provides information on the proper management and disposal of lead dust debris.
- Section 7.4 contains information on maintaining lead-safe practices in the home.
- Section 7.5 provides resources for further information.

7.1 Lead Dust Mitigation

Residents of homes and apartment buildings built before 1978 (the year a federal ban was imposed on lead-based paint used in residential settings) should consider contacting the local city or county health department to test for lead dust. In Syracuse, once lead dust is detected through inspection and sampling, the project allows participants to borrow a HEPA vacuum and recommends a three-step wet cleaning process.

In a report published in March 2002 entitled, *Managing Elevated Blood Lead Levels Among Young Children*, CDC's Advisory Committee on Childhood Lead Poisoning Prevention states that repeated cleaning of household lead dust has been associated with decreases in children's mean blood lead levels.

A HEPA vacuum cleaner is superior to other types of vacuums (including shop vacuums and other regular household vacuums) because it is equipped with a filter that can trap almost 100 percent of the dust that it collects. While the vacuum can be used without supervision, training might be necessary to properly and safely operate it, especially because lead dust is involved. Household vacuums should never be used to pick up lead dust or paint chips. Conventional vacuum filters are not equipped to handle and hold fine dust particles, and will simply redistribute lead dust through the exhaust.

An area that contains lead dust or debris should also be wet cleaned with a cleaning agent and then rinsed with water; it should never be dry wiped or dry dusted. Syracuse uses paper towels or two disposable rags or sponges (one for the cleaning solution, and one for the rinse water). This helps avoid recontaminating areas that have already been cleaned.

Cleaning Areas

Lead dust comes from opening and closing windows and other friction surfaces painted with old lead-based paint. Syracuse, therefore, recommends focusing wet cleaning efforts on areas such as old windows, floors, and play areas. These areas should be cleaned at least once a week or whenever they appear dirty, because windows can continually generate lead paint chips and dust on their sills and wells. In addition, lead dust can get on the bottom of shoes by walking on bare soil. This can occur if the exterior housepaint is chipping and releasing lead dust onto porch areas or other outside surfaces. The Syracuse Lead Dust Project provides residents with information to help them target their cleaning efforts on areas where lead dust tends to accumulate in their specific living units.

Materials

In addition to the HEPA vacuum, other useful items are a household cleaning agent (such as dishwashing soap), waterproof gloves, disposable rags or towels (preferably paper towels), buckets, and trash bags for disposing of any lead dust debris. The following cleaning agents can be found in local grocery or hardware stores and are suggested by the Syracuse Lead Dust Project:

- Pine-Sol
- Liquid Tide
- Cascade (granular dishwasher formula)
- Spic and Span
- Lead Clean

Although high-phosphate detergents such as trisodium phosphate (TSP) are effective, certain states have restricted the use of TSP because of environmental concerns. TSP also is a skin and eye irritant and must be used with caution. Non-TSP detergents developed for lead dust removal are available at some hardware stores.

Cleaning Process

Once proper cleaning materials and a HEPA vacuum are obtained, removing lead dust and lead debris from homes involves a few simple steps. In Syracuse, the coordinator meets with each resident to explain the following cleaning procedure and to answer any potential questions:

Step 1: Vacuum. Use a vacuum cleaner equipped with a HEPA exhaust filter. Vacuum all surfaces in the room (e.g., ceilings, walls, trim, and floors). Start with the ceiling and work down, while moving toward the entry door. Work from the back of the house or apartment and move toward the main exit and finish there. Be sure to move slowly to ensure that the HEPA vacuum can pick up all the lead dust. Use attachments, such as extension hoses, straight tubes, brushes, crevice tools, and angular tools, to reach surfaces other than floors, including ceilings, light fixtures, radiators, built-in cabinets, and appliances. Pay close attention to surfaces such as window troughs, porous concrete, old porous hardwood floors, and the corners of rooms, as they require additional vacuuming to achieve an acceptable reduction in lead dust.

Step 2: Wet-clean. Wear plastic or rubber gloves. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination; then rinse. Wash the ceiling first and then proceed to the floors; plan the work so you avoid passing through any rooms that have already been cleaned. Be careful not to scrub so hard as to remove any intact paint. Consider using three separate buckets: one for the cleaning solution, one for the clean rinse water, and one empty one, into which you can squeeze the dirty sponge or rag when using the cleaning solution. Use a new batch of cleaning mixture for

each room to avoid recontaminating an area by cleaning it with dirty water. The cleaning mixture can be put into a spray bottle, which will help keep dust levels down. Use paper towels to avoid using dirty rags that might recontaminate areas that have already been cleaned.

Step 3: Vacuum again. Start at the far end of the unit, and again work toward the main exit. Vacuum every inch of the windows, and use the attachments to reach difficult areas, such as where the floor meets the floor boards. Use the brush attachment for the walls. Move slowly and carefully to capture all the remaining dust.

7.2 HEPA Vacuum Loaner Program

The Syracuse Lead Dust Project makes HEPA vacuums available, free of charge, to the community through the CBOs, who have trained staff that help residents implement recommended cleaning methods. The HEPA vacuum coordinator demonstrates use of the HEPA vacuum and instructs CBOs on proper equipment handling and storage. Vacuum maintenance is performed by the Syracuse staff, as explained in section 7.3 below.

Each CBO has program applications and lease agreement forms for the HEPA vacuums. (See the back of this chapter for a sample HEPA vacuum lease form). Syracuse worked to develop a lease that not only covered legal issues, but that also avoided legal jargon that might discourage residents from wanting to participate in the program. After filling out a questionnaire that requires basic information (e.g., name, address, telephone, number of people living in the household), the resident signs a lease form agreeing to properly operate the vacuum. Syracuse arranges for the pick-up and drop-off of the HEPA vacuums at the residents' homes. This way, residents can get the vacuum in hand, avoiding the burden of transporting the vacuum back and forth to the CBO storage area.

HEPA Vacuums Available Through Retail Stores in Minneapolis

The city of Minneapolis' Lead Hazard Control Program has established an innovative and highly successful lead education and HEPA vacuum rental program through local retailers.

Implemented through local community organizations, the program provides "turnkey" information and technical assistance to local retailers such as hardware stores, paint stores, and gardening centers, as well as neighborhood churches and community centers, to establish and run a lead center inside of their establishments. See Appendix C for more information about Minneapolis' Lead Dust program.

7.3 Disposal of Lead Dust Debris and Used HEPA Filter

EPA has interpreted federal hazardous waste regulations to exclude lead dust and waste from lead-based paint activities in residences. This means that in states like New York that follow federal guidelines, lead dust and debris from cleaning activities can be disposed of with regular household waste. EPA recommends the following best management practices for the proper handling and disposal of lead-based paint waste:

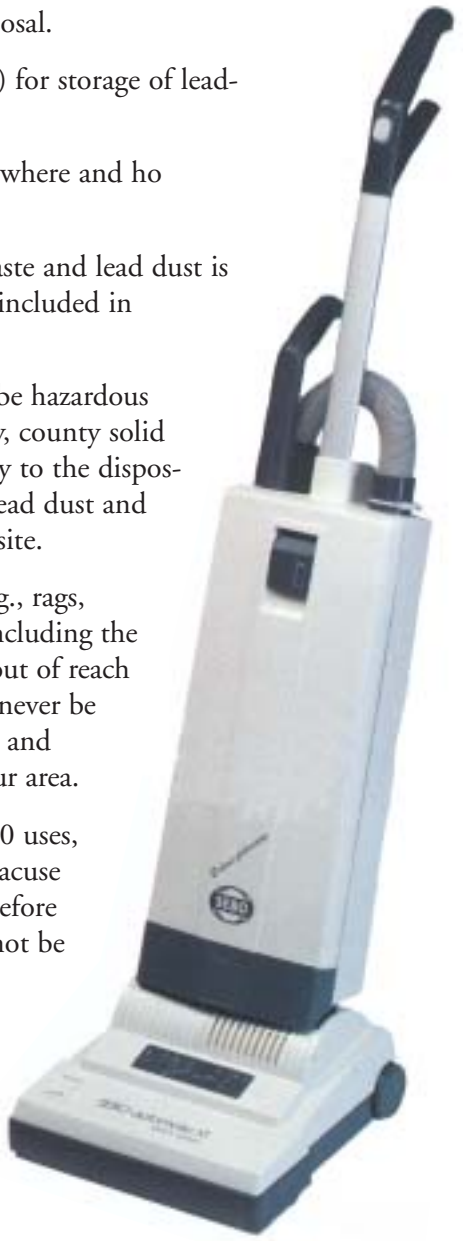
- Collect paint chips and dust, dirt, and rubble in plastic trash bags for disposal.

- Store larger architectural debris pieces in containers until ready for disposal.
- Consider using a covered mobile dumpster (such as a roll-off container) for storage of lead-based paint debris until the job is done.
- Contact local municipalities or county solid waste offices to determine where and ho debris can be disposed of.

The full text of EPA's interpretation on the disposal of lead-based paint waste and lead dust is included in a memorandum issued by the Office of Solid Waste, which is included in Appendix E of this document.

It is important to note that certain states consider lead dust and debris to be hazardous waste. It is imperative to contact your state government, local municipality, county solid waste offices, and/or tribal authorities to determine if any restrictions apply to the disposal of such waste. If restrictions do apply, these sources can tell you where lead dust and debris can be disposed of, such as a household hazardous waste collection site.

In Syracuse, residents are instructed to place items used during cleaning (e.g., rags, paper towels, paint chips, used cleaners) into a double-thick garbage bag, including the HEPA filter if fully used. The waste bag should be sealed tightly and kept out of reach of children and pets. In addition, wash water used for wet-cleaning should never be poured onto the ground. Syracuse recommends consulting your local water and sewage utility for directions on the proper disposal of the wash water in your area.



The Syracuse Lead Dust Project maintains all the HEPA vacuums. After 10 uses, the bags are replaced; after 10 bags, the team replaces the HEPA filter. Syracuse staff dampen the filter with water to control the potential spread of dust before removing or disturbing it. It is extremely important that the HEPA filter not be opened or emptied at anytime during removal as to avoid any exposure to lead dust. The Syracuse Lead Dust Project uses triple-layered HEPA bags that can be disposed of in the regular waste stream.

7.4 Maintaining Lead-safe Practices in the Home

Along with detecting and reducing high lead dust levels, continuing lead-safe activities in the home is a crucial element in any lead dust program. Syracuse HEPA vacuum coordinator provides residents with a comprehensiv information packet that could be used in addition to, as well as independently of, the lead dust project. Also, as explained in Chapter 9, Syracuse conducts an interview with residents who have completed the program, during which they encourage continued lead dust cleaning.

Educating Residents About Continued Regular Maintenance

Once a resident participates in the lead dust program, Syracuse staff encourages residents not only to regularly follow the cleaning procedure for lead dust, but to contact Syracuse's lead program or the CBO for further assistance. Residents also can request and are encouraged to have their home rechecked for lead dust levels and to use the HEPA vacuum again.

Syracuse emphasizes to program participants the importance of regular cleaning and maintenance as long as lead-based paint remains in the house. It is especially important to clean windows periodically since lead dust is created every time a window with lead-based paint is opened or closed. Paint on doors, door jambs, and walls also can be disturbed, creating paint chips or lead dust. Syracuse has had to make clear to residents that if lead-based paint is disturbed by drilling into a wall to hang a picture or cutting to access wiring, then the dust should be cleaned up immediately.

7.5 Resources for Additional Information

For more information on EPA's final standards (TSCA 403) for lead-based paint hazards (including lead dust), visit the Office of Pollution Prevention and Toxics Web site at <www.epa.gov/lead/leadhaz.htm> .

See Appendix E for a copy of a memorandum from Elizabeth A. Cotsworth, Director, U.S. EPA Office of Solid Waste to RCRA Senior Policy Advisors entitled Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households., July 31, 2000. This document is also available at <www.epa.gov/lead/fslbp.htm>.

HUD's Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance (24 CFR Part 35) can be found online at <www.hud.gov/lead/> .

City of Syracuse Empact
HEPA Vacuum Lease

Inv. #: _____

THIS EQUIPMENT LEASE is made and effective_____ 200a, by and between (_____), herein named as "Lessor" and "Lessee".

Name:_____
Home Address:_____
City, State, Zip:_____

Lessor desires to lease to Lessee, and Lessee desires to lease from Lessor, certain tangible personal property.

NOW, THEREFORE, in consideration of the mutual covenants and promises hereinafter set forth, the parties hereto agree as follows:

1. **Lease**

Lessor hereby leases to Lessee, and Lessee hereby leases from Lessor, the following described equipment, the **HEPA Vacuum.**

2. **Term**

The term of this lease shall commence on _____, 2002 and shall expire seven(7) days thereafter.

3. **Use**

Lessee shall use the Equipment in a careful and proper manner and shall comply with and conform to all national, state, municipal, police and other laws, ordinances and regulations in any way relating to the possession, use or maintenance of the equipment.**[Other Restrictions]**. The Lessee shall sign an additional form stating that they have received instructions on the proper usage of the HEPA Vacuum.

[Warranty Options] *Lessor disclaims any and all other warranties express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, except that Lessor warrants that Lessor has the right to lease the equipment, as provided in this lease.*

4. **Loss and Damage**

A. Lessee hereby assumes and shall bear the entire risk of loss and damage to the HEPA Vacuum from any and every cause whatsoever. If the Equipment is damages, Lessee at its own expense, shall keep the HEPA Vacuum in good repair, condition and working order. No loss or damage to the HEPA Vacuum or any part thereof shall impair any obligation of lessee under this lease, which shall continue in full force and effect through the term of the lease.

B. In the event of loss or damage of any kind whatsoever to the HEPA Vacuum, Lessee shall, at Lessor's option:

I. Place the same in good repair, condition and working order; or
II. Repair the same with like equipment in good repair, condition, and working order;
III. Pay to Lessor the replacement cost of the HEPA Vacuum.

5. **Surrender**

Upon the expiration or earlier termination of this Lease, Lessee shall return the HEPA Vacuum to Lessor in good repair, condition and working order, ordinary wear and tear resulting from proper use thereof expected, by delivering the HEPA Vacuum at Lessee's cost and expense to such place as Lessor shall specify within the city or county in which the same was delivered at Lessee.

6. **Insurance**

Lessee shall be responsible under their Homeowner's Insurance for-All risk insurance against loss of and damage to the HEPA Vacuum for not less than the full replacement value of the HEPA Vacuum.

7. **Default**

If Lessee fails to pay any rent or other amount herein provided within (10) days after the same is due and payable, or if Lessee fails to perform any provisions of this lease the Lessor has the right to exercise any or more of the following remedies:

A. To declare the entire amount of the HEPA Vacuum hereunder immediately due and payable without notice or demand to Lessee.

B. To sue for and recover all costs of HEPA Vacuum and/or take possession of the HEPA Vacuum, without demand or notice wherever same may be located, without any court order or other process. Lessee hereby waives all damages occasioned by such taking possession.

C. To terminate his lease and/or to pursue any other remedy at law or in equity.

8. **Ownership**-The HEPA Vacuum is, and shall at all times be and remain, the sole and exclusive property of Lessee; and lessor shall have no right, title or interest therein or thereto expect as expressly set forth in this Lease.

9. **Entire agreement**- This instrument constitutes the entire agreement between parties and shall not be amended or altered except by further writing signed by the parties hereto. Also, Lessee shall not assign this Lease or its interest in the HEPA Vacuum to any other person(s) without the prior written consent of lessor

10. **Notices**-Service of all notices under this Agreement shall be sufficient if given personally or mailed certified, return receipt requested, postage prepaid, at the address hereinafter set forth.

11. **Governing law**-This Lease shall be enforced according to the laws of the State of New York.

12. **Headings**- Headings used in this Lease are provided for convenience only and shall not be used to construe meaning or intent.

IN WITNESS WHEREOF, the parties hereto have executed this lease as of the day and first above written.

_____ Lessee

_____ Agency

8 Reporting

This chapter discusses the tools and procedures Syracuse uses to report and disseminate the results of its lead dust program. Reports include those to residents, tenants, and to the public via the Internet. Since the Syracuse project is not performing formal lead hazard screening, it does not need to comply with regulatory reporting requirements, but these reports are meeting the project's communication and data collection objectives.

- Section 8.1 describes how written results are presented to individual program participants.
- Section 8.2 describes how Syracuse presents written results to the public, while maintaining participant confidentiality.
- Section 8.3 reviews the use of a Web site for posting data.
- Section 8.4 lists resources for more information.

8.1 Participant Reports

Syracuse's documentation process begins upon accepting applications from potential participants. Once Syracuse staff determine how much lead dust is in the home, they present results to the resident. As part of the reporting process, the project teaches the significance of the data, identifies probable or potential sources of lead contamination, and recommends cleaning procedures for homes with lead dust levels above the reference levels.

Syracuse uses two different reports to present findings to participants: a pre-mitigation report after the initial sampling and a post-mitigation report for some residents who lease a HEPA vacuum and who agree to a second round of sampling. (Samples of these reports and a copy of Syracuse's transmittal letters are included at the end of this chapter.) The pre-mitigation report presents initial lead dust levels for each of the 10 areas sampled and indicates whether they passed or failed based on the references levels established for that area (e.g., floors, window sills, and window troughs). (See section 1.5). When lead dust levels are over the reference levels, Syracuse staff meet with the participant to discuss and interpret the results and explain the use of HEPA vacuums and the three-step cleaning process.

In Phase I of the Syracuse project, all residents who consented to a second round of sampling received post-mitigation reports. During Phase II of the project, approximately 10 percent of randomly-selected participants receive post-mitigation sampling with their consent. If HEPA vacuuming and cleaning is successful in treating the problem, post-mitigation levels are expected to fall below the reference thresholds. In Syracuse, the project mails the final report to the participant. If levels remain over the thresholds, staff will schedule another face-to-face meeting with the resident.

When preparing its report format, Syracuse considered what the program participant needed to know. Syracuse's reports present the data in a straightforward way to ensure that residents understand the results and are not intimidated by technical jargon. For example, next to the actual lead-dust level findings the report shows whether each sampling area passed (green) or failed (red), presenting the information in an easy-to-understand manner to residents.

Syracuse also includes a glossary of technical terms such as "lead-based paint hazard," "friction surface," and "reference level" with these reports. Residents are also informed that, while the report covers only those areas sampled, other areas also might contain a lead dust hazard. They are advised that if they treat all areas in their home the same as the improved areas, then the risk is likely reduced.

Syracuse staff find that face-to-face reporting in the home is most effective and that translating reports into other languages is sometimes necessary. Some CBOs provide translators who accompany project staff on site visits to explain the report findings to residents in their native languages and to answer questions. As discussed previously, interacting with residents in their own language is a tremendous help in building trust and enlisting participation.

When delivering a report, the field sampling technician locates areas of concern and identifies potential sources of lead dust such as paint rubbing off window sills. If necessary, mitigation (cleaning) is recommended. (Read about mitigation in Chapter 7). If the participant has been randomly selected for post-mitigation sampling, that is also discussed. The resident is also encouraged to repeatedly follow the three-step cleaning process to control lead dust levels (see Section 7.4 on program maintenance). Residents and property owners also receive printed material providing information on how to control lead in their home.

Property Owner/Landlord Disclosure Requirements

In addition to providing the tenant with a report on the results of the lead dust mitigation, the Syracuse Lead Dust Project provides a copy of the lead dust analysis and cleaning report to the property owner (or landlord) after the mitigation is completed. Syracuse project staff learned that, because the city already had a separate HUD-funded lead hazard reduction program in place, the community was already aware of lead issues, and landlords have been responsive when lead hazards are identified in their properties. Landlords are required to disclose this information to future tenants when they sign a new lease, and to a purchaser if the property is subsequently sold. A sample of Syracuse's letter to the landlord, and the sample forms used by EPA to inform landlords of these disclosure requirements, can be found at the end of this chapter. These forms are also available from EPA in Spanish.

8.2 Public Reports

Once Syracuse gathers enough data to determine a trend, it can report that trend to the community. Recording the results on a map to see if a geographical pattern emerges has proven to be useful. Some target communities have relatively homogeneous housing types, and other homes are likely to contain similar levels of lead dust. Also, homeowners or residents who have not participated in the program need to know of potential lead hazards. Syracuse found that maps work best when there is data from numerous houses in the community to consolidate, because the identity of individual homes is lost in the data, thereby maintaining confidentiality. Maps are not a good choice, however, when there are only a few data points.

Information can also be made available to the public on a Web site, which also serves to promote awareness of the lead dust problem and help homeowners and communities make more informed decisions. (See Section 8.3 below for more on Syracuse's Web site). Other formats used by Syracuse to report to the public include the use of posters that rotate though the CBOs, a quarterly newsletter, monthly meetings with the CBOs, and broadcasting public service announcements on cable television.

Syracuse is also in the process of finalizing a "Lead Registry," a comprehensive database that will compile data from all lead-related programs (e.g., Lead Dust Project, HUD Program, and Lead-Safe Yards).

Recordkeeping and Confidentiality

Generally, homeowners do not want information about their home shared with their neighbors. To avoid this, Syracuse consolidates data without divulging specific locations. Consolidating data retains the homeowner's privacy and allows the ability to track trends. One way to convey this information is to consolidate the data on a geographical basis.

Syracuse keeps good records to help track lead dust data and protect its participants' privacy. Staff start a file and keep records of all correspondence as soon as a participant submits an application and is accepted into the program. A participant's file contains the application, raw data, final reports, and other correspondence. The project also tracks the progress of each participant by using a simple spreadsheet that includes the resident's basic information, lab results, HEPA use, and disposition of the case. Residents' files are stamped "confidential" and kept in a secure location in the program management office.

Syracuse staff learned that organizing and filing records by the participant's address makes them easy to find regardless of who is living at the address. The program also keeps the property owner's name and the resident's name in their files, since in some cases it will not only correspond with the person living in the home, but also with the property owner as well. For example, if the property has exceptionally high lead levels, Syracuse might contact the property owner if vacuuming is only a short-term solution to a larger problem.

8.3 Web Site

The Syracuse Lead Dust Project Web site is at <http://www.syracuse-empact.com>, To post lead dust data, the site uses a map of the city showing the CBO neighborhoods. Syracuse reports average lead dust levels in micrograms per square foot for pre-mitigation and post-mitigation for floors, sills, and window wells. Syracuse also presents individual sample points so that users can get an impression of the range of values. Although Syracuse reports individual values, the project does not report the property address or even the street, keeping that information confidential.

The site also provides general information about the project and links to participating CBOs and posts educational materials and information about lead hazards. Once the web site is fully operational, project staff will be able to correspond with visitors through e-mail to respond to questions and comments.

8.4 Resources for Additional Information

The following resources will provide more information on reporting the results of lead levels:

Risk Communication in Action: Environmental Case Studies, U.S. EPA, EPA 625-R-02-011, September 2002.

The Syracuse Lead Dust Project Web site shows how a map of the city linked to the CBOs is used to provide neighborhood-specific lead dust data. Visit <http://www.syracuse-empact.com>.

National Lead Information Center Hotline at 1-800-424-LEAD.

Pre-Mitigation Tenant Letter

Date-

Name
Address
Syracuse, N.Y.

RE: Lead Dust Test Results

Dear Ms. XXXX

Thank you for helping us with our lead dust testing and education program. We've enclosed the results of the tests we did in your home on –Date-. We measured lead in house dust, which we and others have found to be the most important source of lead in most homes. However, please be aware that there may be other sources of lead in your home, (i.e., paint, soil, water), that this report does not address.

Please read this report carefully and if you have any questions, please call Adam VanHoose at 448-8708. The City of Syracuse can let you use a special vacuum that can remove lead dust safely. For more information about the HEPA vacuum loaner program call Adam or visit our website at http://syrempact.lead-safe.com. Please be advised that the information collected will be kept confidential.

Sincerely

Betsy Mokrzycki
Program Manager

Enclosures:
Report
Cleaning instructions HUD Chapter 14
"Protect Your Family" EPA Brochure
etc.

Syracuse Lead Dust Outreach Monitoring and Education Project

Funded by EPA

SETTLED DUST SAMPLE RESULTS

For The Dwelling Located at:

-Address-

-Date-

GENERAL INFORMATION

The City of Syracuse conducted sampling of settled dust at -Address-, Syracuse, New York on –Date-.

An initial walk-through was conducted in the dwelling to locate the dustiest areas of floors, window sills, and window wells, which were accessible or exposed. The information contained in this report has been collected in accordance with current regulations.

PURPOSE

The settled dust testing was conducted according to chapter 5 of the HUD Guidelines. Reference levels are levels listed below:

DUST WIPE SAMPLES

Floors	40 µg/ft^2
Window Sills	250 µg/ft^2
Window Troughs	400 µg/ft^2

NARRATIVE

Ten samples of settled dust were collected from within the dwelling from floors and window sills that appeared to be the dirtiest and most accessible to the children. Samples results that exceed the reference limits are indicated in red type on the quick summary page. Six of the ten wipe samples exceeded the reference limits for lead content. It is our recommendation that all window sill surfaces be cleaned using the HUD recommended three step cleaning method as described in Chapter 14-11 of the HUD Guidelines.

QUICK SUMMARY OF LEAD TESTING RESULTS

Dwelling: -Address- Date: X/XX/XX
Inspector: XXXXXXXX Job #: XX

SAMPLE	LOCATION	RESULT	Pass/Fail
1	Princ. Play Area Floor	<20.0 µg/ft^2	Pass
2	Princ Play Area Sill	306.2 µg/ft^2	Fail
3	Kitchen Floor	<20.0 µgft^2	Pass
4	Kitchen Window Sill	667.6 µg/ft^2	Fail
5	Kitchen Window Trough	2,892.1 µg/ft^2	Fail
6	Youngest child's bedroom floor	<20.0 µg/ft^2	Pass
7	Youngest child's bedroom window sill	264.9 µg/ft^2	Fail
8	Youngest child's bedrm. Win. trough	1, 258.0 µg/ft^2	Fail
9	2nd Youngest child's bedroom floor	<20.0 µg/ft^2	Pass
10	2nd Youngest child's bedroom window sill	483.0 µg/ft^2	Fail

REFERENCE LEVELS

Glossary

Deteriorated paint means any interior or exterior paint or other coating that is peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Friction surface means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Impact surface means an interior or exterior surface that is subject to damage by repeated sudden force such as certain parts of door frames.

Interior window sill means the portion of the horizontal window ledge that protrudes into the interior of the room.

Lead-based paint hazard
(a) *Paint-lead hazar*d. A paint-lead hazard is any of the following: (1) Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor) are equal to or greater than the dust-lead hazard levels identified in paragraph (b) of this section. (2) Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame. (3) Any chewable lead-based painted surface on which there is evidence of teeth marks. (4) Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(b) *Dust-lead hazar*d. A dust-lead hazard is surface dust in a residential dwelling or child-occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 mg/ft^2 on floors or 250 mg/ft^2 on interior window sills based on wipe samples.

(c) *Soil-lead hazar*d. A soil-lead hazard is bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million (mg/g) in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples.

Play area means an area of frequent soil contact by children of less than 6 years of age as indicated by, but not limited to, such factors including the following: the presence of play equipment (e.g., sandboxes, swing sets, and sliding boards), toys, or other children's possessions, observations of play patterns, or information provided by parents, residents, care givers, or property owners.

Residential building means a building containing one or more residential dwellings.

Reference Level(s) means levels that have been set by HUD and EPA to indicate surface dust that contains an amount of lead which may pose a threat of adverse health effects in pregnant women or children less than the age of six years of age.

Room means a separate part of the inside of a building, such as a bedroom, living room, dining room, kitchen, bathroom, laundry room, or utility room. To be considered a separate room, the room must be separated from adjoining rooms by built-in walls or archways that extend at least 6 inches from an intersecting wall. Half walls or bookcases count as room separators if built-in. Movable or collapsible partitions or partitions consisting solely of shelves or cabinets are not considered built-in walls. A screened in porch that is used as a living area is a room.

Window trough means, for a typical double-hung window, the portion of the exterior window sill between the interior window sill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered. The window trough is sometimes referred to as the window ''well."

Wipe sample means a sample collected by wiping a representative surface of known area, as determined by ASTM E1728, ''Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques, or equivalent method, with an acceptable wipe material as defined in ASTM E 1792, ''Standard Specification for Wipe Sampling Materials for Lead in Surface Dust."

XRF means a testing device that is capable of determining the presence of lead in a dust wipe sample.

Post-Mitigation Tenant Letter

Date

Name
Address
Syracuse, N.Y. 13210

RE: Lead Dust Test Results

Dear Ms.

Thank you for helping us with our lead dust testing and education program. We've enclosed the results of the tests we did in your home on -Date-. We measured lead in house dust, which we and others have found to be the most important source of lead in most homes. However, please be aware that there may be other sources of lead in your home, (i.e., paint, soil, water), that this report does not address.

Please be advised that the lead levels in your home were found to be below the detection limit, due to the proper use of the HEPA Vacuum. It is our recommendation that you continue the 3-step cleaning method recommended by HUD as described in Chapter 14 of the HUD Guidelines.

Please read this report carefully and if you have any questions, please call Adam VanHoose at 448-8708. Please be advised that the information collected will be kept confidential.

Sincerely

Betsy Mokrzycki
Program Manager

Enclosures:
Report
Cleaning instructions HUD Chapter 14
"Protect Your Family" EPA Brochure
etc.

Syracuse Lead Dust Outreach Monitoring and Education Project

Funded by EPA

SETTLED DUST SAMPLE RESULTS
Post Wipes

For The Dwelling Located at:

Address
Syracuse New York

-Date-

GENERAL INFORMATION

The City of Syracuse conducted post sampling of settled dust at -Address- Syracuse, New York on –Date-.

The information contained in this report has been collected in accordance with current regulations.

PURPOSE

The settled dust testing was conducted according to chapter 5 of the HUD Guidelines. Reference levels are levels listed below:

DUST WIPE SAMPLES

Floors	40 µg/ft^2
Window Sills	250 µg/ft^2
Window Troughs	400 µg/ft^2

NARRATIVE

Ten samples of settled dust were collected from within the dwelling from floors and window sills that appeared to be the dirtiest and most accessible to the children. Samples results that exceed the reference limits are indicated in red type on the quick summary page. None of these ten wipe samples exceeded the reference limits for lead content. It is our recommendation that you continue to clean all surfaces using the HUD recommended three step cleaning method as described in Chapter 14-11 of the HUD Guidelines.

QUICK SUMMARY OF LEAD TESTING RESULTS

Dwelling: Address, Syracuse N.Y. Date: X/XX/XX
Inspector:XXXXX Job # XX

SAMPLE	LOCATION	RESULT	Pass/Fail
13	Principle .play area floor	<20.0 µg/ft^2	Pass
14	Principle Play area sill	34.4 µg/ft^2	Pass
15	Kitchen floor	<20.0 µgft^2	Pass
16	Kitchen sill	46.0 µg/ft^2	Pass
17	Kitchen Trough	50.2 µg/ft^2	Pass
18	Youngest child's bedroom floor	<20.0 µg/ft^2	Pass
19	Youngest child's bedroom window sill	39.9 µg/ft^2	Pass
20	Youngest child's bedrm. Win. trough	64.8 µg/ft^2	Pass
21	2nd Youngest child's bedroom floor	<20.0 µg/ft^2	Pass
22	2nd Youngest child's bedroom window sill	42.9 µg/ft^2	Pass

REFERENCE LEVELS

Floors	40 µg/ft^2
Window Sills	250 µg/ft^2
Window Trough	400 µg/ft^2

Glossary

Deteriorated paint means any interior or exterior paint or other coating that is peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Friction surface means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Impact surface means an interior or exterior surface that is subject to damage by repeated sudden force such as certain parts of door frames.

Interior window sill means the portion of the horizontal window ledge that protrudes into the interior of the room.

Lead-based paint hazard
(a) *Paint-lead hazar*d. A paint-lead hazard is any of the following: (1) Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor) are equal to or greater than the dust-lead hazard levels identified in paragraph (b) of this section. (2) Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame. (3) Any chewable lead-based painted surface on which there is evidence of teeth marks. (4) Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(b) *Dust-lead hazar*d. A dust-lead hazard is surface dust in a residential dwelling or child-occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 mg/ft^2 on floors or 250 mg/ft^2 on interior window sills based on wipe samples.

(c) *Soil-lead hazar*d. A soil-lead hazard is bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million (mg/g) in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples.

Play area means an area of frequent soil contact by children of less than 6 years of age as indicated by, but not limited to, such factors including the following: the presence of play equipment (e.g., sandboxes, swing sets, and sliding boards), toys, or other children's possessions, observations of play patterns, or information provided by parents, residents, care givers, or property owners.

Residential building means a building containing one or more residential dwellings.

Reference Level(s) means levels that have been set by HUD and EPA to indicate surface dust that contains an amount of lead which may pose a threat of adverse health effects in pregnant women or children less than the age of six years of age.

Room means a separate part of the inside of a building, such as a bedroom, living room, dining room, kitchen, bathroom, laundry room, or utility room. To be considered a separate room, the room must be separated from adjoining rooms by built-in walls or archways that extend at least 6 inches from an intersecting wall. Half walls or bookcases count as room separators if built-in. Movable or collapsible partitions or partitions consisting solely of shelves or cabinets are not considered built-in walls. A screened in porch that is used as a living area is a room.

Window trough means, for a typical double-hung window, the portion of the exterior window sill between the interior window sill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered. The window trough is sometimes referred to as the window ''well."

Wipe sample means a sample collected by wiping a representative surface of known area, as determined by ASTM E1728, ''Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques, or equivalent method, with an acceptable wipe material as defined in ASTM E 1792, ''Standard Specification for Wipe Sampling Materials for Lead in Surface Dust."

XRF means a testing device that is capable of determining the presence of lead in a dust wipe sample.

Post-Mitigation Landlord Letter

July 23, 2002

Mr John Doe
123 Sesame Street
Syracuse, N.Y. 13202

RE: Lead Dust Test Results

Dear Mr. Doe:

Your tenant at 123 Sesame Street recently received lead wipe sampling through the City of Syracuse Lead Dust Outreach, Monitoring and Education Project. Please be advised that the information collected will be kept confidential. We've enclosed the results of the monitoring we did on your property on July 15, 2002. We measured lead in house dust, which we and others have found to be the most important source of lead in most homes. However, please be aware that there may be other sources of lead in your tenants home, (i.e., paint, soil, water), that this report does not address.

Please keep this report, which will need to be released to any future tenants or disclosed to new owners in the event the property goes up for sale in order to comply with Section 1018 Real Estate Disclosure Rule.

Please read this report carefully and if you have any questions, please call Adam VanHoose at 448-8708. For more information about the HEPA vacuum loaner program call Adam or visit our website at http://www.syracuse-empact.com.

Sincerely

Betsy Mokrzycki
Program Manager

Enclosures:
Report
Cleaning instructions HUD Chapter 14
"Protect Your Family" EPA Brochure
etc.

Sample Disclosure Format for Target Housing Sales

Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards for Sales

Property Address:

Lead Warning Statement

Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase.

Seller's Disclosure ***[Seller should initial both (a) and (b)].***

_____ (a) Presence of lead-based paint and/or lead-based paint hazards ***(check one below):***

☐ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

_____

_____

☐ Seller has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

_____(b) Records and reports available to the seller ***(check one below)***:

☐ Seller has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).

_____

_____

☐ Seller has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Purchaser's Acknowledgment ***[Purchaser should initial (c), (d) and (e)]***.

_____(c) Purchaser has received copies of all information listed above.

_____(d) Purchaser has received the pamphlet *Protect Your Family from Lead in your Home.*

_____(e) Purchaser has *(check one below):*

☐ Received a 10-day opportunity (or mutually agreed upon period) to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards; or

☐ Waived the opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

Agent's Acknowledgment ***[Seller's Agent should initial (f)]***.

_____ (f) Agent has informed the seller of the seller's obligations under 42 U.S.C. 4852(d) and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy ***[Purchaser should be <u>the last person</u> to sign and date this form].***

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided by the signatory is true and accurate.

_____ Seller	Date	_____ Purchaser	Date
_____ Seller	Date	_____ Purchaser	Date
_____ Seller's Agent	Date	_____ Purchaser's Agent	Date

Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards

Lead Warning Statement
Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, lessors must disclose the presence of lead-based paint and/or lead-based paint hazards in the dwelling. Lessees must also receive a federally approved pamphlet on lead poisoning prevention.

Lessor's Disclosure ***[Landlord or agent should initial both (a) and (b)].***

_____ (a) Presence of lead-based paint and/or lead-based paint hazards ***(check one below):***

☐ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

_____

_____

☐ Lessor has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

_____ (b) Records and reports available to the lessor ***(check one below)***:

☐ Lessor has provided the lessee with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).

_____

_____

☐ Lessor has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Lessee's Acknowledgment ***[Tenant should initial both (c) and (d)]***.

_____(c) Lessee has received copies of all information listed above.

_____(d) Lessee has received the pamphlet *Protect Your Family from Lead in your Home.*

Agent's Acknowledgment ***[Agent, if not landlord's direct employee, should initial (e)]***.

_____ (e) Agent has informed the lessor of the lessor's obligations under 42 U.S.C. 4852(d) and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy ***[Tenant should be <u>the last person</u> to sign and date this form].***
The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided by the signatory is true and accurate.

_____	_____	_____	_____
Lessor	Date	Lessor	Date
_____	_____	_____	_____
Lessee	Date	Lessee	Date
_____	_____	_____	_____
Agent	Date	Agent	Date

SAMPLE DISCLOSURE FORM FOR RENTALS AND LEASES - CERTIFICATION BY LANDLORD

Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards

Lead Warning Statement

Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, lessors must disclose the presence of lead-based paint and/or lead-based paint hazards in the dwelling. Lessees must also receive a federally approved pamphlet on lead poisoning prevention.

Lessor's Disclosure ***[Landlord or agent should initial both (a) and (b)].***

AL (a) Presence of lead-based paint and/or lead-based paint hazards ***(check one below):***

☒ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

A lead inspection found lead-based paint on bannister in hallway.

☐ Lessor has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

AL (b) Records and reports available to the lessor ***(check one below)***:

☒ Lessor has provided the lessee with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).

Report is available in office upon request.

☐ Lessor has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Lessee's Acknowledgment ***[Tenant should initial both (c) and (d)]***.

FT (c) Lessee has received copies of all information listed above.

FT (d) Lessee has received the pamphlet *Protect Your Family from Lead in your Home.*

Agent's Acknowledgment ***[Agent, if not landlord's direct employee, should initial (e)]***.

_____ (e) Agent has informed the lessor of the lessor's obligations under 42 U.S.C. 4852(d) and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy ***[Tenant should be <u>the last person</u> to sign and date this form].***

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided by the signatory is true and accurate.

Any Landlord	2/15/02		
Lessor	Date	Lessor	Date
First Tenant	11/15/02	Second Tenant	11/15/02
Lessee	Date	Lessee	Date
Agent	Date	Agent	Date

SAMPLE DISCLOSURE FORM FOR RENTALS AND LEASES - CERTIFICATION BY AGENT

Disclosure of Information on Lead-Based Paint and/or Lead-Based Paint Hazards

Lead Warning Statement

Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, lessors must disclose the presence of lead-based paint and/or lead-based paint hazards in the dwelling. Lessees must also receive a federally approved pamphlet on lead poisoning prevention.

Lessor's Disclosure ***[Landlord or agent should initial both (a) and (b)].***

AA (a) Presence of lead-based paint and/or lead-based paint hazards ***(check one below):***

☐ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

_____

_____

☒ Lessor has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

AA (b) Records and reports available to the lessor ***(check one below)***:

☐ Lessor has provided the lessee with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).

_____

_____

☒ Lessor has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Lessee's Acknowledgment ***[Tenant should initial both (c) and (d)]***.

FT (c) Lessee has received copies of all information listed above.

FT (d) Lessee has received the pamphlet *Protect Your Family from Lead in your Home.*

Agent's Acknowledgment ***[Agent, if not landlord's direct employee, should initial (e)]***.

AA (e) Agent has informed the lessor of the lessor's obligations under 42 U.S.C. 4852(d) and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy ***[Tenant should be <u>the last person</u> to sign and date this form]*.**

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided by the signatory is true and accurate.

_____		_____	
Lessor	Date	Lessor	Date
First Tenant	11/15/02	Second Tenant	11/15/02
Lessee	Date	Lessee	Date
Any Agent	11/01/02	_____	
Agent	Date	Agent	Date

9 Evaluating Syracuse's Lead Dust Project

The goal of the EMPACT-funded Lead Dust Project in Syracuse is to provide environmental information so that the public can make informed decisions to protect themselves and their families from environmental hazards. The program emphasis is on monitoring; data delivery and management; and on communication and outreach, not mitigation or treatment. In response to anticipated resident concerns over elevated lead dust levels communicated by the project, however, Syracuse also decided to provide information and training about the three-step cleaning process along with a HEPA vacuum lease program, so that residents would have a low-cost measure they could immediately implement, if elevated lead dust levels were found.

Because of EMPACT's focus on monitoring and outreach, measuring the effectiveness of the mitigation component of the project has not been elaborate. Nonetheless, the project did build in a "spot check" of the effectiveness of its cleaning and HEPA vacuuming methods.

To conduct this initial spot check, Syracuse reviewed sample data from a total of 119 individual locations where both before- and after-mitigation data was available. Of these 119 locations, 74 were determined to have "pre-mitigation" lead dust levels below the project action levels, and 45 were determined to have "pre-mitigation" lead dust levels above the project action levels. After mitigation was performed, lead dust levels were reduced below project action levels in 82 percent (37 of 45) of the locations previously determined to have excessive lead dusts levels.

The following table summarizes the results of this effectiveness evaluation. The post samples were taken an average of 37 days after initial mitigation was conducted. Based on these findings, the Syracuse project continues to conduct post sampling for a minimum of 10 percent of the locations tested.

Preliminary Evaluation of Syracuse Project Effectiveness[5]

Pre-Samples (119 Total)	Percent (%)	Post Samples (119 Total)	Percent (%)
Below Action Levels - 74	62%	Below Action Levels - 70 Above Action Levels - 4	95% 5%
Above Action Levels - 45	38%	Below Action Levels - 37 Above Action Levels - 8	82% 18%

[5] The fact that four post-mitigation samples showed increased lead dust levels is possibly attributable to the re-accumulation of lead dust during the 37-day lag between pre- and post-sampling.

Different project goals may require different project evaluation schemes. If a project's major focus is mitigation, as opposed to monitoring and outreach, evaluation measures should be designed accordingly.

Syracuse also regularly solicits feedback from program participants and CBOs through questionnaires and interviews to evaluate project effectiveness, strengths, and weaknesses. Once a

participant completes a cleaning procedure, for example, project staff set up a time to interview the resident to gather feedback. Syracuse developed a brief questionnaire that technicians personally administer in the home with residents to learn about their experience with the program. A copy of this questionnaire is included at the end of this chapter. Syracuse staff prefer to do face-to-face interviews to more effectively understand residents' opinions of the program, as well as to give the program a more personal touch and perhaps make a more significant connection with residents. This interview also provides an opportunity to encourage residents to continue the lead dust cleaning activities they learned through the program.

Syracuse also found it important to request feedback from CBOs since they interact with both residents and landlords. The CBOs can provide a broader perspective of the program and make it more accessible to the community. In a brief written survey, Syracuse asks its partner CBOs about HEPA vacuum use among residents and how to better market the program to generate greater interest. A copy of the questionnaire used to solicit this feedback is included at the end of this chapter.

Syracuse evaluates the outreach portion of its program in a number of ways. First, it quantifies how many residents submit a HEPA Vacuum Intake Questionnaire for participating in the project. This shows how effectively information about the program is disseminated to the community. The Syracuse program manager also looks at the number of residents who used the HEPA vacuums and will review the number of "hits" to the project Web site.

Participant Questionnaire

Date: __/__/__

Participant's Name: _____

Address: _____

Pre-wipes __/__/__ HEPA Dropped Off __/__/__ Post wipes __/__/__

1. What do you think of this program?

2. Was the information provided easy to understand? If not please comment.

3. How did the vacuum perform for you? Please comment about any problems you had if any.

4. Where did you use the vacuum? (floors, sills, wells, etc) Please specify.

5. How often did you vacuum with the HEPA vacuum? (More than once?)

6. Which attachment did you find most useful?

7. Would you recommend this program to others? Why or Why not?

8. Do you have access to the internet? Give out the web address. (syrempact.lead-safe.com)

Please provide any additional comments – use back if necessary:

LEAD SAFE, LLC
2410 East Lake Road • Skaneateles, New York 13152 • (315) 685-0864 Fax (315) 685-0940
http://www.lead-safe.com

EMPACT PROGRAM SURVEY

In an attempt to better serve the recipients of the EMPACT Program and to increase the number of cases for Hepa-vac use, please take a few moments to answer the following questions. Please be honest as your response is vital to the program's success. Thanks!

1. To increase Hepa-vac use among City homeowners and/or tenants, how can we more effectively market the program to generate more interest? _____
_____
_____
_____
_____
_____

2. Are you finding that people are reluctant to come through the EMPACT program? Yes___ No___ If yes, please explain **why** they are reluctant._____
_____
_____
_____
_____
_____

3. Do you think that tenants are reluctant to go through the EMPACT program because they fear the landlords and/or feel that the landlords may not approve of the Hepa-vac use?_____
_____
_____
_____
_____

4. Do you think landlords would be reluctant having their tenant(s) go through the EMPACT program due to liability or an "invasion of privacy" issue? _____
_____
_____
_____
_____
_____

5. Is there a fear from either the tenant, homeowner or the landlord about a government agency stepping in?_____
_____
_____
_____
_____

6. Is vacuuming such a private/personal issue that people may be *embarrassed* to enroll in the EMPACT program? Yes___ No___

7. Is any part of the EMPACT Program's process too cumbersome or too confusing? ie; intake or site visits?_____

_____

_____

_____

8. Do you think that there is confusion between the LEAD & EMPACT programs? Yes__ No__
If yes, explain_____

_____

9. Are tools such as websites, newsletters, fliers etc. important? Yes__ No__
What do you think would work the best?_____

_____

_____

10. How can WE help your agency to increase awareness & intake numbers?

_____

_____

Misc. Comments:_____

_____

_____

_____

_____

_____

_____

Appendix A
Glossary

Community based organizations (CBOs): Organizations that interact with a community on a regular basis, and can help educate the community on lead dust hazards.

Deteriorated paint: Any exterior or interior paint that is peeling, chipping, chalking, or cracking, or any other paint located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Dosimetry badges: Used to determine radiation levels reaching a person's breathing space. It is a small, like a luggage tag, and clips on to a person's clothing, usually around the lapel.

Dust wipe sample: A sample of lead dust collected from a surface following a specified procedure.

Friction surface: An interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Half-life: The amount of time needed for the activity of a radioactive source to decrease by one half.

HEPA vacuum: A High Efficiency Particulate Air (HEPA) vacuum is equipped with an enhanced air filtration device that increases the amount of dust captured by the vacuum.

Impact surface: An interior or exterior surface that is subject to damage by repeated sudden force such as certain parts of door frames.

Interior window sill: The interior ledge of a window; it is the principal area for collecting lead dust samples.

Lead-based paint hazard: Typically results from deteriorated paint and includes lead-based paint chips, lead dust, and lead contaminated soil.

Lead dust hazard: Surface dust in a residential dwelling or child-occupied facility that contains a concentration of lead equal to 40 g/ft2 on floors or 250 g/ft2 on interior window sills based on dust wipe samples.

Lead soil hazard: Bare soil on residential property or on property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million (ppm) in a play area, or an average of 1,200 ppm of bare soil in the rest of the yard, based on soil samples.

Lead inspector: An EPA-certified professional who conducts a surface-by-surface investigation to determine whether there is lead-based paint in the home and where it is located. Painted surfaces are inventoried and tested. Soil, dust, and water are not typically tested but are reserved for a risk assessor.

Paint chip: A piece of dried paint. As paint deteriorates, paint chips tend to collect along the floor or the exterior perimeter of a house.

Play area: An area of frequent contact by children less than age 6 as indicated by, but not limited to, such factors including the following: the presence of play equipment (e.g., sandboxes,

swing sets, and sliding boards); toys; or other children's possessions; observations of play patterns; or information provided by parents, residents, care givers, or property owners.

Post-intervention sample (also referred to as "post-mitigation" sample: A sample taken after residents have completed the three-step cleaning/HEPA vacuum procedure.

Reference level(s): Levels set by the Department of Housing and Urban Development (HUD) and EPA to indicate surface dust that contains an amount of lead that may pose a threat of adverse health effects in pregnant women or children less than age 6.

Residential building: A building containing one or more residential dwellings.

Risk assessor: An EPA-certified professional who determines the existence, nature, severity, and location of lead-based paint hazards in a residential dwelling.

Wet cleaning: A method for cleaning lead dust in the home; involves washing surfaces with a suitable cleaning agent to dislodge any ground-in contamination; then rinsing with clean water.

Window trough: For a typical double-hung window, the portion of the exterior window sill between the interior window sill and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered. The window trough is sometimes called the window "well."

X-ray fluorescence (XRF) instrument: A handheld, battery-powered device used to analyze dust wipe samples. The device provides timely and accurate data, allowing inspectors to measure parts per million (ppm) lead levels for individual dust wipes within seconds.

United States Environmental Protection Agency
Region II

Quality Assurance Project Plan
For Environmental Monitoring Projects

Revision 02

Syracuse Lead Dust Outreach, Monitoring and Education Project

Theresa Bourbon	_____	_____
EPA Project Officer	Signature/Organization	Approval Date
Marcus Kantz	_____	_____
EPA Quality Assurance Manager	Signature/Organization	Approval Date
Betsy Mokrzycki	_____	_____
Project Manager	Signature/Organization	Approval Date
Rebecca Markus	_____	_____
Project Quality Assurance Officer	Signature/Organization	Approval Date

1. Distribution List:

Theresa Bourbon (Terry)
U.S. Environmental Protection Agency
Region 2
2890 Woodbridge Avenue
Edison, NJ 08837

Donna Ringel
U.S. Environmental Protection Agency
Region 2
2890 Woodbridge Avenue
Edison, NJ 08837

Betsy Mokrzycki
City of Syracuse, Department of Community Development
Lead Program
201 East Washington Street
Syracuse, New York 13202

Rebecca Markus
Lead-Safe
2410 East Lake Road
Skaneateles, New York 13152

Community Based Organizations - See Attachment 1 for Addresses:
Southwest Community Center
Syracuse Northeast Community Center
Southeast Asian Center
Boys & Girls Clubs of Syracuse
Brighton Family Center
Girls Inc.
Westcott Community Center

2. Project Description/Background:

The overall goal of the proposed project is the establishment of a community-based outreach, monitoring, and education effort aimed at reducing exposure to lead dust in residential and public buildings throughout the City of Syracuse, New York. Dust samples will be collected from buildings and analyzed for lead content and the results will be provided to residents and property owners. All sampling will be coordinated through the City of Syracuse Lead Division with assistance from the community organizations and shall include sampling before and after the education program to examine the resulting improvement, if any. The target buildings will be found in one of the City of Syracuse's revitalization areas and in buildings built prior to 1950. Approximately 350 homes will be included in the project. Users of this data include: residents, property owners, City of Syracuse Lead Inspectors, and the general public. An EPA certified risk assessor will collect dust wipe samples, and analyze them in the field using an XRF instrument. Samples will be collected in accordance with the HUD Guidelines for the Evaluation and Control of Lead-Based Paint, HUD Lead Safe Housing Regulation, and EPA TSCA 402. Action levels of concern will be based on the HUD Guidelines for the Evaluation and Control of Lead-Based Paint protocol: Floors - 40 micrograms of lead per square foot sampled (µg/ft.2), Window Sills - 250 µg/ft.2, and Window Troughs - 400 µg/ft.2 When action levels are exceeded, residents and proper-

ty owners will be notified. All participants will be trained in dust control methods and will be informed of the HEPA-VAC loaner program.

If it were necessary to change this QAPP, Terry Bourbon and Betsy Mokrzycki would determine what changes were necessary. Changes would be documented in writing and sent to the distribution list in section 1.

This sampling scheme is designed to be flexible and will be adjusted, as needed depending on the correlation of the statistical analyses. All samples will be analyzed using the portable XRF. To evaluate the data, some samples will be sent to the lab for confirmation by atomic adsorption spectroscopy (AA). A two phase process will be used. Phase I will consist of 100% confirmatory testing for the first 12 homes. This will yield approximately 120 samples including field blanks. The XRF data will be forwarded to the laboratory so that a statistical analysis can be performed. The laboratory will be required to perform an appropriate statistical comparison between the XRF and AA values for the three sets of samples in phase 1 (floor, sill and well).

Phase 1 of our sampling scheme has been completed. Based on our review of the XRF and laboratory data from phase 1, (see attachment 8), we have revised our sampling and analysis scheme to require confirmation analysis as follows:

Sample Type	**XRF Reading**	**Lab Confirmation?**
Floor	40 µg/ft^2	Yes
Floor	>40 µg/ft^2	No
Window Sill	<100 µg/ft^2	No
Window Sill	100 µg/ft^2 and 250 µg/ft^2	Yes
Window Sill	> 250 µg/ft^2	No
Window Well	<180 µg/ft^2	No
Window Well	180 µg/ft^2 and 400 µg/ft^2	Yes
Window Well	>400 µg/ft^2	No

In addition to the confirmation analysis described in the Table above, we will also confirm 10% of the XRF data that is within the acceptable ranges, (i.e., XRF readings that would not automatically require lab confirmation).

The XRF analysis will be made available to the program participants in a written report. When lab confirmation is required, lab results will replace the XRF results in the written report. Post- intervention sampling will be conducted in 10% of the participating residences. Post- intervention sampling will be conducted exactly as the pre-intervention sampling described above, once the training and HEPA/Loaner aspects of the project have been in-place at the property for approximately one week. Post intervention sample collection will use the same numbering scheme as the pre-intervention sampling, only the starting number will be 13, (i.e., principle play area - 13, principle play area interior window sill - 14, etc). In addition, two field blank samples will also be submitted. These will be samples 23 and 24.

The XRF analysis, chain of custody, and bagging of samples, will be the same as the pre-intervention.

The results from the post-intervention sampling will also be communicated to program participants in a written report. Post-intervention sampling results will also be used to help determine the effectiveness of the project in lowering dust levels within the residence.

In order to address confidentiality of the participants, the public will receive encoded general information in a number of ways. These include monthly Internet updates, poster displays, quarterly newsletters, monthly meetings and public service announcements on cable network. Also information will be made available through contractual arrangements with Community Based Organizations.

The success of the outreach portion of the project will be determined by the number of individuals who: 1.) Request inspections, 2.) Utilize the HEPA vacuum through the loaner program, and 3.) Utilize the web site. The success of the educational program will also be evaluated by the evaluation of pre/post intervention lead dust levels.

3. Project/Task Technical Design:

Residents/property owners of the City of Syracuse will be made aware of this program through various project outreach campaigns. Residents/property owners then contact their local community-based organization, or the City of Syracuse Lead Division, to express their interest in participating in the program. These residents are asked to complete an intake questionnaire. This questionnaire is provided to the Lead Coordinator at the City of Syracuse Lead Division. The Lead Coordinator schedules an appointment for a Lead Inspector/Risk Assessor to visit the property and collect the necessary lead dust samples.

Lead levels in dust will be measured using a Niton portable XRF. Specifically, dust samples will be collected from the following residential locations: floor and interior window sill of principle play area, floor, window sill and window trough of kitchen, floor, window sill, and window trough of youngest child's bedroom, floor and window sill of next youngest child's bedroom. In most instances we anticipate collecting 10 samples per dwelling.

Prior to the commencement of work on this project, the laboratory will be required to supply either a QA Manual or other documentation substantiating the relevance of its QA procedures for this project, certifying that it will use the required methods, stating its calibration frequency, etc.

If some Community Based Organizations wish to evaluate lead dust at their facilities, per *HUD Guidelines for the Evaluation and Control of Lead-Based Paint and HUD Lead Safe Housing Regulations*, additional samples will need to be collected. We anticipate that dust wipe samples collected in the warmer months will yield higher results, as the windows are more likely to be open. (See Attachment Number 6 - Niton R factor data).

A data report is generated for each residence tested. This report is reviewed and a determination made as to whether or not a lead dust hazard is present. Written reports are then provided to the program participant. If a lead hazard is present, the program participant is contacted, provided training in the 3-step cleaning method, and informed about the HEPA Vacuum loaner program. If the data indicate that a lead hazard is not present, the program participant is mailed a copy of their individual report.

4. Project Organization and Task Responsibilities: See Attachment 7

5. Special Training Requirements and Responsibility:

The inspectors will need to be USEPA Certified as Lead Inspector and Risk Assessor. The City of Syracuse will keep on file copies of the each inspector's certificate. As a USEPA certified Lead Inspector or Risk Assessor, one is trained in the basic dust sampling procedures, including chain of custody requirements. In addition, those individuals that will be performing the XRF analysis are required by New York State law to be trained by the manufacturer in the use of the Niton instrument and on radiation safety. Proof of all training required will be kept on file along with the EPA certificates for each individual inspector. In addition to these formal training requirements, the Lead Inspectors/Risk Assessors participating in this project, will be required to read this QAPP and participate in a pre- sampling briefing to review these project-specific requirements.

The contract laboratory for this project will be accredited by the American Industrial Hygiene Association, (AHA) and will be New York State Department of Health ELAP approved.

6. Project Schedule: See Attachment 2

7. Field Sampling Table or Related Information:

Sample Matrix	Analyze/ Parameter	Total # Samples	Sample Volume	Type of Container	Sample Preservation	Holding Time
Dust wipe	Lead (Pb)	4800-5000	N/A	Centrifuge tube	N/A	N/A

8. Field Sampling Requirements:

Required materials: Latex gloves, 1ft^2 template, a tape measure, a calculator, masking tape, dust wipe media, Niton XRF.

Sample Collection Procedure:

The sample collection procedure follows ASTM Method 1728-99 for collection of a surface dust wipe. At completion, the dust wipe has been folded three times. For floor samples the sample will be taken from inside the 1ft2 template. If the surface to be tested is a window sill or well, the inspector will tape off an area of the surface to be tested and measure the length and width of this area. This measurement, expressed in square inches, will be divided by 144 and will be recorded on the sample chain of custody that is sent to the lab.

The observations of the Lead Risk Assessors will be made in accordance with the training they have received as part of their ISAPI certification.

XRF Testing Procedure:

1. Fold wipe neatly twice more for a total of five folds and place in a plastic bag.
2. Place wipe in a sample holder provided by NITON Corporation. The holder will only shut tightly if the wipe was folded neatly.
3. Place sample holder with wipe into filter test stand provided by NITON.

4. The NITON XRF prompts the operator for four tests, each one on different regions of the wipe. The test stand and holder is configured to automatically position the wipe in four fixed positions.

See Attached ASTM Method 1728-99.

9. Sample Handling and Custody Requirements:

The collected samples will immediately be placed in plastic bags for XRF analysis. These bags will be labeled with a unique sample identification number. Samples will be numbered as to the residence number and the specific sample location within the residence, (xxx-xx). Residences will be identified in numerical sequence, (i.e., 001- 350). Sample location numbers will be as follows: 01 - principle play area floor, 02 - principle play area interior window sill, 03 - kitchen floor, 04 - kitchen window sill, 05 - kitchen window trough, 06 - youngest child's room floor, 07 - youngest child's room window sill, 08 - youngest child's room window trough, 09 - floor of next youngest child's room, and 10 - sill of next youngest child's room. Sample numbers 11 and 12 are field blanks. (Note: One field blank will be analyzed for every 10 samples sent to the lab). After the XRF analysis is complete, the samples (still in the plastic bag) will be placed in a plastic centrifuge tube labeled with the same sample identification number as the plastic bag. All the centrifuge tubes a given residence will be placed in another plastic bag with the Chain of Custody (attached). The Chain of Custody shall be signed by the inspector and shipped via common carrier (i.e. Federal Express) to the contract laboratory. Samples that are not being sent to the laboratory for analysis will be held in the Syracuse Lead Division's offices until the final reports are issued. Once the final reports are issued, the samples will be discarded. The XRF sample bags will be purchased from Niton Corporation. The centrifuge tubes will be provided by the laboratory and are pre-cleaned.

10. Analytical Method Requirements:

The laboratory will follow EPA Method SW846-3050 for the digestion of the samples and EPA Method SW846-7420 for the Atomic Absorption Spectrometry. Field sampling will be done with Niton Portable XRF using the manufacturer's method.

The detection limit, precision and accuracy of the AA are acceptable for this project, since the methods being used are the standard HUD/EPA methods for lead dust analysis. As part of this project, we plan to evaluate the detection limit, precision, and accuracy of the XRF by comparing it with the AA method, (see discussion in Section 2). Thus the XRF values stated in the Table below are approximate.

Sample Matrix	Analyze/ Parameter	Analytical Method	Detection Limit	Estimated Accuracy	Estimate Precision	Action Levels
Dust wipe	Lead (Pb)/Niton	Niton	20 µg/ft^2	25%	40±10µg/wipe	floor 40µg/ft^2
Dust wipe	Lead (Pb)/AA	EPA SW-846-7420	10 ug/ft^2	20%	10± 2ug/wipe	sill 250 µg/ft^2
						well 400µg/ft^2

11. Secondary Data (Non-Direct Measurement) Projects: Not Applicable

12. Other Data Quality Indicators:

The purpose of the laboratory analysis is to verify the XRF analysis. The laboratory will follow EPA Method SW846-3050 for the digestion of the samples and EPA Method SW846-

7420 for the Atomic Absorption Spectrometry. Field analysis will be done with Niton Portable XRF using the manufacturer's method.

a. Representativeness:

The samples collected are representative of the route of exposure to lead poisoned children, based upon the established HUD Guidelines and EPA Regulations at 40 CAR Part 745, Requirements of Lead-Based Paint Activities in Target Housing for this type of sampling. See section #3.

b. Comparability:

The data we collect will be comparable with other lead dust data collected because we are following the same sampling protocols.

c. Completeness:

The program anticipates participation by 350 residents/property owners. This represents a cross-section of the entire affected population and is based on the City of Syracuse's experience with the ongoing program knowledge of the population affected with lead poisoning. For the primary purpose of this project, the minimum number of houses which participate has no bearing on the quality of the data generated. However, a minimum of twelve residences must be tested before a comparison is made of the XRF data and the AA data. The results of a minimum of 90% of the AA/XRF samples must be provided prior to the issuance of a final report to any program participant.

Evaluation of the XRF as Action levels will be based on the HUD Guidelines for the Evaluation and Control of Lead-Based Paint and HUD Lead Safe Housing Regulations. Currently the levels are: floors - 40 µg/ft^2, interior window sills - 250 µg/ft^2, and window troughs - 400 µg/ft^2.

13. Peer Review:

The project proposal that was prepared for this EMPACT project has successfully undergone a peer review. No additional reviews are planned.

14. **See Niton Documents** - See Attachments 4 & 5

15. Assessments/Oversight:

Terry Bourbon, the EPA Project Officer, will be performing various reviews and audits. If any issues need attention from the EPA they will be included in the Quarterly Progress Reports to the EPA. Midway through our project's time span, the EPA Project Officer will plan a site visit to review the entire project. This review will include an inspection of project files and data reports to insure that the project is being conducted in accordance with this QAPP. A report detailing the findings of this review will be provided to the Project Manager from the City of Syracuse.

16. Data Review, Validation and Usability:

We plan to evaluate the results from the blanks against the results for the samples associated with those blanks. The impact of the blank will be assessed and the data will be qualified, as appropriate. If the sample results are less than ten times the blank, the data will be flagged and re-sampling will occur.

Aside from the XRF and AA comparisons described in Section 2, no additional replicate sampling or analysis will be conducted.

Sample results will be reported individually for each location sampled within a dwelling.

The following limitations should be considered when data is interpreted: limit of detection, calibration of equipment, and condition of the paint. The report template will be translated into multiple languages. Project participants will receive relevant reports; other citizens may see results and updates via the website. In order to maintain the integrity of the data blank samples will be sent to the laboratory and read with the XRF. For each dwelling sampled, both residents and owners will be provided with a report indicating the individual sample results for each location sampled.

The affected population will be the children who reside in the City of Syracuse. We will be following these HUD regulations and guidelines throughout the course of this project. Therefore, the standard default assumptions are applicable to our affected population.

Data and interpretation will be provided to our primary customers (the public). The data interpretation, which will be provided, will be based on the action levels described in section 2. We are hoping that the public will utilize the HEPA vacuum loaner program and that the training provided will be effective in controlling lead dust in contaminated homes. A phone number and email address will be provided so that any questions can be answered.

17. Documentation and Records:

The information and data will be delivered to the public in a number of ways. The project will provide the residents and property owners with a copy of the individual inspection report when completed. For Phase I it is anticipated that it will take 5 to 7 days from the day of the inspection to the individual receiving the report. The inspection report will consist of the sample locations and results highlighting those samples that exceed the federal limit. The report will also include any observations the Risk Assessor has made about the general condition of the paint, and recommendations regarding the findings. Residents and property owners will also receive printed material providing information on how to control lead in their home. The specific residential data will be kept confidential and only released to the appropriate family by the City of Syracuse, and the inspectors involved in the project. There will be poster displays at community centers, newsletter articles and presentations at community meetings. There will be a project web site, which will contain information and data for public access in text and map formats. Finally, all this information will be translated into a number of languages so that they are understandable to the non-English speaking populations of the community.

Data and information on the web site will be updated monthly. Poster displays will be rotated at least quarterly. In addition, monthly meetings will be held among the Community Based Organizations to review progress, results and problems.

Raw data, (lab reports and XRF reports) will be kept on file at the City of Syracuse. Individual reports will be kept in a secure file for a minimum of 3 years. All reports will be stamped, “Confidential,” to insure data is not used for other purposes.

Attachment 1

Community Based Organizations

Southwest Community Center
401 South Avenue
Syracuse, New York 13204

Syracuse Northeast Community Center
716 Hawley Avenue
Syracuse, New York 13203

Southeast Asian Center
503 North Prospect Avenue
Syracuse, New York 13208

Boys & Girls Clubs of Syracuse
375 West Onondaga Street
Syracuse, New York 13202

Brighton Family Center
100 Edmund Avenue
Syracuse, New York 13205

Girls Inc.
401 Douglas Street
Syracuse, New York 13203

Westcott Community Center
826 Euclid Avenue
Syracuse, New York 13210

Onondaga County Health Department
421 Montgomery Street
Syracuse, New York 13202

Appendix C
Minneapolis Lead Hazard Control Program

About the Program

Minneapolis, Minnesota, implemented a Lead Hazard Control Program, a comprehensive monitoring, outreach, and education program to control lead dust in homes, day care facilities, and other areas where lead dust is a problem. This program educates businesses and the general public about lead dust poisoning and provides "turnkey" information written for local agencies and nonprofit organizations interested in setting up lead centers inside of retail stores in their communities. Lead centers offer information and supplies to help protect children from lead poisoning. Minneapolis's goal is to eliminate lead hazards by the year 2010.

Established in 1998, the Lead Hazard Control Program has been well received by participating retailers and the general public. As a result of the program's implementation, the general public is increasing its knowledge of lead-based paint and has an effective, affordable, and convenient way to clean up potentially harmful lead dust in their homes and apartments. People who were potentially creating lead hazards, such as painters and home-remodeling contractors, learn about lead-safe work practices. Retailers who set up lead centers at locations such as hardware stores, paint stores, and garden centers attract additional customers, which increases their business and store sales and engenders good will with their customers. Store staff provide guidance on lead-safe work practices and offer products and resources that are needed for working safely with lead, beyond the use of a HEPA vacuum.

Partner Organizations

The city of Minneapolis's Lead Hazard Control Program receives funding from the U.S. Department of Housing and Urban Development. Minneapolis also collaborates with a number of community, city, county, and state organizations to help fund and realize this effort.

Identifying the Audience

Since children under age 6 are most susceptible to lead poisoning, the state of Minnesota passed guidelines requiring mandatory blood testing of all children in this age group living in the Minneapolis/St. Paul metropolitan area. These guidelines were developed and are being implemented by health commissioners, pediatric doctors, and nurses working with the state health commissioner and Department of Health. The city is alerted if lead blood levels exceed 10 micrograms of lead per deciliter of blood (µg/dL). A letter is sent to parents and the property owner is notified if a child tests at a "low level" of concern (10 to 19 µg/dL). Members of the child's household are invited to participate in the HEPA vacuum lender program and are offered a free lead dust inspection of their premises. They are instructed with simple steps to clean and reduce the child's lead exposure. For children with elevated blood levels (more than 15 µg/dL for 90 days), lead inspectors visit the home immediately. Minnesota reports a 90 percent success rate in reaching the homes that need treatment.

Day care providers are another target for lead dust education in Minneapolis. The program educates the day care provider, who then educates the parents. The program also has enlisted the involvement of public health nurses who educate the children in day care settings about the importance of washing their hands and taking off their shoes before entering their houses.

Outreach Barriers and Strategies

The Minneapolis/St. Paul area has the largest Somali immigrant population in the United States. Many of these residents are fearful of government and are largely illiterate. In addition to reaching them through community-based organizations and with translated material distributed in public health clinics, the program is also using local Somali-language cable TV and radio stations. Minneapolis is using donated advertising space to place informational posters in bus stop shelters within targeted neighborhoods. Minneapolis finds that free "remnant" (unsold) transit advertising space is often available in low-income neighborhoods.

The city of Minneapolis printed a *Guide to Setting Up a Lead Center* that explains in clear and simple terms the steps involved in setting up and operating a lead center. It covers everything from identifying suitable locations, approaching local store owners, educating store staff (who play a major outreach role), running the HEPA vacuum rental program, disposing of hazardous waste, understanding liability issues, and more. Local retailers, such as hardware stores, paint stores, and gardening centers, as well as neighborhood churches and community centers, can use this guide to establish and run a lead center inside of their establishments and to implement the HEPA vacuum loaner program. The city has educated and trained hardware store personnel and has established Neighborhood Lead Centers in several locations. Minneapolis successfully recruits these business owners by showing them how they can benefit and how their knowledge about lead dust can serve as a marketing tool.

The lead centers display bilingual brochures and videos about lead poisoning and the treatment of lead dust. They also manage rentals of HEPA vacuums. Nine lead centers are currently operating in the Minneapolis/St. Paul area, with several more in the planning stages. In addition to the actual HEPA vacuums, the centers are supplied with all necessary equipment and accessories such as vacuum filters, wet wipes, disposable gloves, and disposable bags. Minneapolis provides each center with standard rental agreement forms, vacuum equipment, supply checklists, reorder forms, and standard lead center policy notices for posting. It also provides information and training for retail store employees on lead-safe work practices and the HEPA loaner program, which the employees, in turn, pass on to their customers. Additionally, the program provides tips on identifying, approaching, and recruiting potential retail partners, as well as tips on program publicity, media relations, and general program outreach.

Minneapolis also recognizes the important interactive role lead inspectors play. Not only are they technical experts and program enforcers, but they also are program ambassadors. Because interpersonal skills are so vital, the city is adding requirements to its job description for lead inspectors, such as "human relations communication" and "group facilitation" skills, as well as an ability to work with people of diverse backgrounds and to resolve disputes.

Lead Clean-up and Prevention

To give residents the tools and information needed to clean up lead dust and debris, Minneapolis's Lead Hazard Control Program developed a brochure that succinctly describes the important steps for cleaning lead dust.

Minneapolis lends the HEPA vacuums free of charge but residents pay a $10 filter replacement fee. Lead centers might request a deposit to cover the replacement cost of the vacuum cleaner ($175). The deposit can be used to offset the cost of damaged or lost equipment or accessories, and is refunded upon the safe return of the equipment. Customers can borrow the machines for

a 48-hour period, and centers may charge a late fee for each additional day past due. Each filter lasts for approximately five uses, and customers may purchase additional filters if necessary at cost using the re-order form provided in the lead center program materials. The organizations responsible for the lead centers must visit each center periodically to collect and properly dispose of used filters, as defined by municipality guidelines.

Hennepin County, Minnesota, accepts used filters as residential waste, but in other municipalities, the lead center must check with its local hazardous waste disposal authority. Airtight containers, buckets, or drums may be used by a lead center to temporarily store used filters. The organization sponsoring the lead center is responsible for periodically visiting the centers to collect any generated waste. The centers also must track the number of uses for each filter by writing the address of the user with a permanent marker directly on the filter.

Results

On average, 150 children per year are found to have blood levels of 20 µg/dL and 300 are found to have a level between 10 µg/dL (the current level of concern as defined by the CDC) and 19 µg/dL. But these numbers are still not an accurate reflection of the number of children who are actually being exposed to and impacted by lead. In fact, the most recent reports show that less than 20 percent of Minneapolis children have a blood lead test. And the Minnesota Department of Health reports that 40 percent of Minneapolis's Somali and Laos population are tested positive to have blood lead levels over 10 µg/dL.

Despite limited funds, the Minneapolis project has already made an impact. The project has helped create 14 lead centers throughout the Minneapolis area over the last five years. And lead programs all over the nation contact the Minneapolis program's leaders all the time asking for guidance and assistance.

Awards and Recognition

In May 2001, the Minneapolis Lead Hazard Control Program received the 2001 Lead Star Award presented by the National Lead Assessment and Abatement Council.

For More Information

Johanna (Jo) Miller
Project Coordinator
Children's Environmental Health
Minneapolis Environmental Services
250 South 4th Street, Room 401
Minneapolis, MN 55415
612 673-3856

Appendix D
EMPACT Lead-Safe Yard Project in Boston, Massachusetts

About the Program

The EMPACT Lead-Safe Yard Project (LSYP) in Boston, Massachusetts was a three-phased, community-based program that used a variety of low-cost techniques to reduce children's exposure to elevated levels of lead in residential soil. The project's goals were (1) to generate real-time data of lead concentrations in residential yard soils using innovative field-portable x-ray fluorescence (XRF) technology and to communicate these data to residents; (2) to plan and implement low-cost and sustainable landscape measures in residents' yards that would reduce children's risk of exposure to contaminated soil and that residents would be taught to maintain; and (3) to develop a template that other communities and public agencies can use to address the issue of lead in residential soil. Each partner organization was assigned tasks to implement, including outreach and education, safety training, sampling and analysis, soil mitigation, and creation of a template for community action.

Partner Organizations

During the pilot phases, the project's community partners in the Boston area were Boston University School of Public Health, the Bowdoin Street Community Health Center, and two non-profit landscaping companies, Dorchester Gardenlands Preserve and Garden Futures.

Identifying the Audience

The initial target community selected for the first two phases of the project was a several-block area in the Bowdoin Street neighborhood, consisting of approximately 150 mostly older, wood-framed houses in the North Dorchester section of Boston. This is an inner-city community, with a large minority and immigrant population. Bowdoin Street is situated in the "lead belt" of Boston, where the majority of children in the city with elevated blood levels reside.

During the third phase of the project, the program targeted a different community—the Dudley Street neighborhood—which is also located in the lead belt of Boston.

Outreach Barriers and Strategies

In an effort to gain support for the project, EMPACT LSYP followed a model commonly used for community education and outreach: a bilingual outreach worker from the community health center conducted typical outreach activities, including walking in the neighborhood, knocking on doors, distributing flyers, speaking at community meetings, and talking with people one-on-one. These efforts were culturally specific to the neighborhood and conducted at an appropriate literacy level.

After Phase 2 of the project was completed, outreach workers returned to the homes where yard work had been performed and interviewed its occupants. They found that people had not really comprehended the lead problem, but viewed the project more as a landscaping program. To remedy this, the outreach worker underwent more extensive training on the lead issue and then returned to the site with a video to teach residents about the hazards of lead. After viewing the video, the residents were given a short quiz, and then had the opportunity to discuss the topic afterward, thereby utilizing three modes of learning: visual, written, and oral.

Soil Sampling and Analysis

After outreach workers completed their interviews and created a list of participants who agreed to have their yards tested for lead, the soil sample and analysis began. EMPACT LSYP found XRF testing to be an effective tool that gives results on the spot. This process allowed trained inspectors to get timely and accurate onsite readings of lead levels in soil with a hand-held, battery-powered device. Onsite inspectors were able to get real parts per million (ppm) lead levels for individual soil samples within seconds. This way, lead inspectors could discover any unusually high lead levels right away as opposed to waiting two to four weeks for laboratory results to come back. And, if necessary, inspectors could adjust their testing strategy for the property accordingly as a whole, taking appropriate precautions. After all readings are taken, inspectors produced a color-coded map of a property's lead levels well before the results of confirmatory lab tests were available.

Once a sizable cross-section of properties was tested, inspectors could record the results on a map to see if a geographical pattern emerged. If such a pattern did emerge, then this information could be made accessible to the public.

Remedial Measures and Yard Treatments

After a property's soil had been tested and confirmed for lead hazard, the next step was to set up a yard treatment schedule. The EMPACT LSYP targeted areas such as drip zones and removed plants and vegetables in those areas, replacing them with raised-perimeter boxes milled with mulch or gravel and plantings. The program also improved existing lawns by loosening soil, adding a seed mixture of rye, fescue, and bluegrass, topping the new seed with ¼ inch of topsoil. Where appropriate, the program installed new lawns on raised beds and created raised mulch beds with or without plantings. Parking areas needed to be graveled or asphalted. Children's play areas needed to be raised and covered with mulch over filter fabric weed barrier. Porches with open soil areas underneath had to be barricaded with lattice and trim. EMPACT LSYP used only ACQ pressure-treated wood, as opposed to wood treated with chemicals such as arsenic and chromium which would have created another soil hazard.

Results

The pilot project was funded in two phases, which took place in the summers of 1998 and 1999. During these two years, the project addressed 42 residences at no cost to the homeowners; conducted a number of seminars on lead-safe yard work; and developed a "Tool Kit" for use by other communities, which were then incorporated into a handbook titled Lead-Safe Yards: Developing and Implementing a Monitoring, Assessment, and Outreach Program for Your Community.

Phase 3, completed in 2001, addressed 19 homes. And, in conjunction with the EMPACT project, the city of Boston completed 24 homes during the same period.

Awards and Recognition

Because of the EMPACT LSYP's innovative approaches and far-reaching impacts, project partners have received several prestigious awards for their work. These include:

- 1999 Regional Science Award. Two scientists from EPA's Office of Environmental Measurement and Evaluation also received EPA Bronze Medals for this work.

- 1999 Harvard Award for Excellence in Children's Health.
- 2000 Boston University School of Public Health Award for Excellence in Public Health Practice.

For More Information

Visit the EMPACT Lead-Safe Yard Project's Web site at <www.epa.gov/region01/leadsafe> or contact:

Robert Maxfield
Environmental Investigation and Analysis
EPA-New England Regional Laboratory
11 Technology Drive
North Chelmsford, MA 01863-2431
617 918-8640

APPENDIX E
MEMORANDUM FROM ELIZABETH COTSWORTH, DIRECTOR, OFFICE OF SOLID WASTE

2000

MEMORANDUM

From: Elizabeth A. Cotsworth, Director
Office of Solid Waste

To: RCRA Senior Policy Advisors
EPA Regions 1 - 10

Subject: Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households

What is the purpose of this interpretation?

This memorandum clarifies the regulatory status of waste generated as a result of lead-based paint (LBP) activities (including abatement, renovation and remodeling) in homes and other residences. Since 1980, EPA has excluded "household waste" from the universe of RCRA hazardous wastes under 40 CFR 261.4(b)(1). In the 1998 temporary toxicity characteristic (TC) suspension proposal, we clarified that the household waste exclusion applies to "all LBP waste generated as a result of actions by residents of households (hereinafter referred to as "residents") to renovate, remodel or abate their homes on their own." 63 FR 70233, 70241 (Dec. 18, 1998). In this memorandum, EPA is explaining that we believe lead paint debris generated by contractors in households is also "household waste" and thus excluded from the RCRA Subtitle C hazardous waste regulations. Thus, the household exclusion applies to waste generated by either residents or contractors conducting LBP activities in residences.

What is the practical significance of classifying LBP waste as a household waste?

As a result of this clarification, contractors may dispose of hazardous-LBP wastes from residential lead paint abatements as household garbage subject to applicable State regulations. This practice will simplify many lead abatement activities and reduce their costs. In this way, the clarification in today's memorandum will facilitate additional residential abatement, renovation and remodeling, and rehabilitation activities, thus protecting children from continued exposure to lead paint in homes and making residential dwellings lead safe for children and adults.

LBP debris (such as architectural building components -- doors, window frames, painted wood work) that do not exhibit the TC for lead need not be managed as hazardous waste. However, LBP waste such as debris, paint chips, dust, and sludges generated from abatement and deleading activities that exhibit the TC for lead (that is, exceed the TC regulatory limit of 5 mg/L lead in the waste leachate), are hazardous wastes and must be managed and disposed of in accordance with the applicable RCRA subtitle C requirements (including land disposal restrictions) except when it is "household waste." Under 40 CFR 261.4(b)(1), household wastes are excluded from the hazardous waste management requirements. Today, EPA is clarifying that waste generated as part of LBP activities conducted at residences (which include single family homes, apartment buildings, public housing, and military barracks) is also household waste, that such wastes are no longer hazardous wastes and that such wastes thus are excluded from RCRA's hazardous waste management and disposal regulations. Generators of residential LBP waste do not have to make a RCRA hazardous waste determination. This interpretation holds regardless of whether the waste exhibits the toxicity characteristic or whether the LBP activities were performed by the residents themselves or by a contractor.

Where can I dispose of my household LBP waste?

LBP waste from residences can be discarded in a municipal solid waste landfill (MSWLF) or a municipal solid waste combustor. Dumping and open burning of residential LBP waste is not allowed. Certain LBP waste (such as large quantities of concentrated lead paint waste -- paint chips, dust, or sludges) from residential deleading activities may be subject to more stringent requirements of State, local, and/or tribal authorities.

What is the basis for this interpretation?

The household waste exclusion implements Congress's intent that the hazardous waste regulations are "not to be used either to control the disposal of substances used in households or to extend control over general municipal wastes based on the presence of such substances." S. Rep. No. 94-988, 94th Cong., 2nd Sess., at 16. EPA regulations define "household waste" to include "any waste material (including garbage, trash, and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas)." 40 CFR 261.4(b)(1). The Agency has applied two criteria to define the scope of the exclusion: (1) the waste must be generated by individuals on the premises of a household, and (2) the waste must be composed primarily of materials found in the wastes generated by consumers in their homes (49 FR 44978 and 63 FR 70241).

In 1998, EPA concluded that LBP waste resulting from renovation and remodeling efforts by residents of households met these criteria. (63 FR 70241-42, Dec. 18, 1998). In short, the Agency found that more and more residents are engaged in these activities and thus the waste can be considered to be generated by individuals in a household and of the type that consumers generate routinely in their homes. Wastes from LBP abatements performed by residents were also considered household wastes.

EPA clarifies that this interpretation also applies to contractor-generated LBP waste from renovations, remodeling and abatements in residences. Both the definition of household waste in section 261.4(b)(1) and the Agency's criteria for determining the scope of the exclusion focus on the type of waste generated and the place of generation rather than who generated the waste (e.g., a resident or a contractor). This approach is consistent with prior Agency policy.[1] Since contractor-generated LBP waste from residential renovations, remodeling, rehabilitation, and abatements are of the type generated by consumers in their homes, it is appropriate to conclude that such waste, whether generated by a resident or contractor, falls within the household waste exclusion. This clarification will facilitate lead abatements and deleading activities in target housing by reducing the costs of managing and disposing of LBP waste from residences.

What is the relationship of this interpretation to the on-going LBP debris rulemaking?

On December 18, 1998, EPA proposed new TSCA standards for management and disposal of LBP debris (63 FR 70190) and simultaneously proposed to suspend temporarily the applicability of the RCRA hazardous waste regulations that currently apply to LBP debris (63 FR 70233). This memorandum responds to stakeholders requests that EPA clarify whether the existing household waste exclusion applies to both homeowners and contractors conducting LBP activities in residences. While the Agency still intends to finalize aspects of the two proposals, we are making this clarification in advance of the final rule to facilitate LBP abatement in residences without unnecessary delay.

How does this interpretation affect EPA's enforcement authorities?

Under this clarification, LBP wastes generated by residents or contractors from the renovation, remodeling, rehabilitation, and/or abatement of residences are household wastes that are excluded from EPA's hazardous waste requirements in 40 CFR Parts 124, and 262 through 271. The household waste provision of 40 CFR 261.4(b)(1) only excludes such wastes from the RCRA regulatory requirements. However, it does not affect EPA's ability to reach those wastes under its statutory authorities, such as RCRA §3007 (inspection) and §7003 (imminent hazard). See 40 CFR §261.1(b).

What are the "best management practices" for handling residential LBP waste?

---

[1]In the final rule establishing standards for the tracking and management of medical waste, EPA concluded that waste generated by health care providers (e.g., contractors) in private homes would be covered by the household waste exclusion. 54 FR 12326, 12339 (March 24, 1989). In the specific context of LBP, the Agency stated in a March 1990 "EPA Hotline Report" (RCRA Question 6) that lead paint chips and dust resulting from stripping and re-painting of residential walls by homeowner or contractors (as part of routine household maintenance) would be part of the household waste stream and not subject to RCRA Subtitle C regulations. Similarly, in a March 1995 memorandum on the "Applicability of the Household Waste Exclusion to Lead-Contaminated Soils," we found that if the source of the lead contamination was as a result of either routine residential maintenance or the weathering or chalking of lead-based paint from the residence, the hazardous waste regulations do not apply so long as the lead-contaminated soil is managed onsite or disposed offsite according to applicable solid waste regulations and/or State law mandated by RCRA.

Although excluded from the hazardous waste regulations, EPA encourages residents and contractors managing LBP waste from households to take common sense measures to minimize the generation of lead dust, limit access to stored LBP wastes including debris, and maintain the integrity of waste packaging material during transfer of LBP waste. In particular, we continue to endorse the basic steps outlined in the 1998 proposals for the proper handling and disposal of LBP waste (63 FR 70242) as the best management practices (BMPs) including:

- Collect paint chips and dust, and dirt and rubble in plastic trash bags for disposal.
- Store larger LBP architectural debris pieces in containers until ready for disposal.
- Consider using a covered mobile dumpster (such as a roll-off container) for storage of LBP debris until the job is done.
- Contact local municipalities or county solid waste offices to determine where and how LBP debris can be disposed.

In addition, contractors working in residential dwellings are subject to either one or both of the following:

- The HUD Guidance for contractors doing publically-funded rehabilitation/renovation projects in public housing. (See Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. U.S. Department of Housing and Urban Development, June 1995) The HUD guidelines can be accessed via the Internet at: http://www.hud.gov/lea/learules.html

- TSCA 402/404 training and certification requirements. (See 40 CFR Part 745; 61 FR 45778, August 29, 1996) and the proposed TSCA onsite management standards (See 40 CFR Part 745, Subpart P; 63 FR 70227 - 70230, Dec. 18, 1998). [EPA expects to issue the final rule next year.]

The above-mentioned BMPs for households are similar to those included in the HUD Guidelines for individuals controlling LBP hazards in housing. HUD requires that contractors using HUD funding adhere to LBP hazard control guidelines. Non-adherence to these guidelines can potentially result in the loss of funding.

Does this interpretation apply in my State and/or locality?

We encourage contractors and residents to contact their state, local and/or tribal government to determine whether any restrictions apply to the disposal of residential LBP waste. This verification is necessary since, under RCRA, States, local and tribal governments can enforce regulations that are more stringent or broader in scope than the federal requirements. Thus, under such circumstances, LBP waste from households may still be regulated as a hazardous waste as a matter of State regulations.

We are distributing this memorandum to all 56 States and Territories, and Tribal Programs and various trade associations. We encourage States to arrange for implementation of the

interpretation discussed in this memo in their States to facilitate residential LBP abatements making residential dwellings lead-safe. We encourage trade associations to inform their memberships about this memo and instruct them about ways to manage residential LBP waste.

Whom should I contact for more information?

If you have additional questions concerning the regulatory status of waste generated from lead-based paint activities in residences, please contact Ms. Rajani D. Joglekar of my staff at 703/308-8806 or Mr. Malcolm Woolf of the EPA General Counsel's Office at 202/564-5526.

cc: Key RCRA Contacts, Regions 1 - 10
RCRA Regional Council Contacts, Regions 1 - 10
RCRA Enforcement Council Contacts, Regions 1 - 10
Association of State and Territorial Solid Waste Management Officials (ASTSWMO)

United States
Environmenta Protection
Agency

Office of Research and
Development
National Risk Management
Research Laboratory
Cincinnati, OH 45268

Official Business
Penalty for Private Use $300

EPA/625/R-02/014
February 2003

Please make all necessary changes on the below label, detach or copy, and return to the address in the upper left-hand corner.

If you do not wish to receive these reports CHECK HERE ❐;
detach, or copy this cover, and return to the address in the upper left-hand corner.

PRESORTED STANDARD
POSTAGE & FEES PAID
EPA
PERMIT No. G-35

EPA/625/R-02/014 Developing and Implementing a Lead Dust Monitoring, Outreach, and Education Program in Your Community