

LEAD-BASED PAINT INVESTIGATION REPORT

**S-40-80 BRIDGE OVER I-26
SCDOT #407008000100
RICHLAND COUNTY, SOUTH CAROLINA**

REPORT PREPARED FOR:



**SOUTH CAROLINA DEPARTMENT OF
TRANSPORTATION
C/O Mark Hunter
955 Park Street
Columbia, SC 29202**

BY:

**F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205
(803) 254-4540**

March 13, 2013

☒ Yes, lead was found.
☐ No, lead was not found.

E5350.02

March 13, 2013

Mr. Mark Hunter
South Carolina Department of Transportation
955 Park Street
Columbia, South Carolina 29202

Re.: Lead-Based Paint Investigation Report
S-40-80 Bridge over I-26
SCDOT #407008000100
Richland County, South Carolina
F&ME Project No.: E5350.02

Dear Mr. Hunter:

As requested, F&ME Consultants has completed a Lead-Based Paint (LBP) Investigation for the above-referenced bridge structure. The results of our investigation are reported herein. The investigation revealed the presence of a suspect silver paint/ coating on pipe hanger steel, beam seat plates and beam tie-rod assemblies. The XRF indicated that the silver paint associated with the pipe hanger steel is negative for lead, while the silver paint/ coating on the beam seat plates and beam tie-rod assemblies tested positive for lead content $\geq 0.7 \text{ mg/cm}^2$. Photographs of these bridge components as well as XRF data are included in the appendix of the following report.

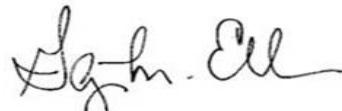
We appreciate the opportunity to assist you in this matter. If you have any questions or require additional information, please feel free to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS



Jeffrey S. Leary
Environmental Professional
EPA Certified S.C. Lead-Based Paint Inspector
EPA Certification No. SC-I-18721-1
Expiration Date 07/29/2015



Glynn M. Ellen
Senior Environmental Professional

JSL/jls

TABLE OF CONTENTS

I. Introduction	1
II. LBP Background	1
III. Existing Bridge Structure	2
IV. Investigation Results.....	2
V. Recommendations	2

APPENDIX A

- Site Vicinity Map (Figure 1)
- XRF Data (Table I)
- Photographs of Bridge Components

APPENDIX B

- Personnel Certification

APPENDIX C

- SCDHEC Lead-Based Paint Disposal Fact Sheets

I. INTRODUCTION

As authorized, F&ME Consultants has completed a Lead-Based Paint (LBP) investigation on the S-40-80 Bridge over I-26 (SCDOT Bridge #407008000100) located in Richland County, South Carolina. The purpose of this investigation was to locate and identify lead-based painted or coated bridge components in anticipation of planned demolition and/or renovation activities. The field investigation was performed on February 21, 2013.

The scope of the investigation included identifying structural and non-structural components of the subject bridge that may be coated with lead-based paint utilizing our Thermo Scientific Niton X-Ray Fluorescence (XRF) Portable Analyzer (Model XLp300A, Serial #18185, Isotope 1: Cd109, 40mCi, source date 11/15/2011); assessing the condition of those surfaces (i.e. flaking, peeling, intact etc.); and providing the proper handling methods that would be necessary to stay within regulatory compliance should lead be identified. Measurements were recorded in mg/cm^2 . The XRF scans all paint layers including the primer coat, although it is unable to differentiate which paint layer or coating is positive for lead content. The XRF's threshold was set to 0.7 mg/cm^2 in accordance with SCDHEC's rules and regulations regarding the disposal of LBP-coated materials.

II. LBP BACKGROUND

HUD defines "lead-based paint" as any coating that has a lead concentration of 1.0 milligram of lead per square centimeter ($1.0 \text{ mg}/\text{cm}^2$) or greater, or if the lead concentration is greater than 0.5% by weight. The Consumer Product Safety Commission (CPSC) currently considers paint to be lead-containing if the concentration of lead exceeds 90 ppm (0.009% by weight). In 1978, the CPSC banned the sale of lead-based paint to consumers, and banned its application in areas where consumers have direct access to painted surfaces. Both the CPSC and HUD definitions of lead-containing paint are aimed at protecting the general population from exposure to lead in the residential setting. By contrast, the mission of the Occupational Safety and Health Administration (OSHA) with respect to lead-containing paint is to protect workers during construction activities that may generate elevated airborne lead concentrations. OSHA states that construction work (including renovation, maintenance, and demolition) carried-out on structures coated with paint having lead concentrations lower than the HUD or CPSC can still result in airborne lead concentrations in excess of regulatory limits. For this reason, OSHA has not defined lead-containing paint, but states that paint having **any** measurable level of lead may pose a substantial exposure hazard during construction work, depending upon the work performed.

This report has been prepared exclusively for the South Carolina Department of Transportation and shall not be disseminated in whole or part to other parties without prior consent from the South Carolina Department of Transportation or F&ME Consultants, Inc. No other environmental issues are addressed in this report. The results, conclusions, and recommendations of this investigation are representative of the conditions observed at the site on the date of the field inspection. F&ME does not assume responsibility for any changes in conditions or circumstances that occur after the inspection.

III. EXISTING BRIDGE STRUCTURE

The subject bridge is a two (2) lane SCDOT bridge structure (~210'L x 26'W, measured from inside curb edge to inside curb edge). According to a stamped date on the bridge's guardrail, it was originally built in 1958. The structural and non-structural components of the subject bridge are concrete (i.e. deck sections/spans, curbing, guardrails, drilled shafts, and beams and diaphragms). Piping is located on the underside of the bridge and is suspended by pipe hanger steel. The bridge has a total of five (5) bents, with two (2) end bents and three (3) interior bents. Each bent has a concrete cap, and each interior bent cap is supported by two (2) concrete drilled shafts. The end bent cap supports are covered with soil.

IV. INVESTIGATION RESULTS

During the investigation, it was noted that only three (3) metal components associated with the bridge had a suspect paint/ coating. These components were the pipe hanger steel on the underside of the bridge; beam seat plates and beam tie-rod assemblies. While all three components had a suspect silver paint/ coating, the XRF revealed that only the beam seat plates and beam tie-rod assemblies have lead at a concentration $\geq 0.7 \text{ mg/cm}^2$. See Appendix A for the XRF Data (Table I) and photographs of the items that tested positive for lead content.

V. RECOMMENDATIONS

All lead-based paint covered bridge components that will be affected by the planned demolition/ renovation activities must be carefully removed and properly disposed of by certified personnel experienced in handling and removing lead-based painted materials. All lead waste must be deposited in a SCDHEC-approved landfill. Removal, handling, transportation, storage and disposal shall be in accordance with 40 CFR 260 through 40 CFR 265, and shall also comply with land disposal restriction notification requirements as required by 40 CFR 268. Metal components painted with lead based paint may be recycled if they are taken to a recycling facility that accepts lead-based painted materials.

Lead-based paint solid waste such as paint chips, blasting debris, dust, soil or sludge with a TCLP greater than 5mg/l are to be disposed of in compliance with applicable guidelines for hazardous waste disposal.

During demolition activities where lead-based paint may be affected by cutting, grinding or torching, it will be necessary to implement controls to ensure airborne emissions are maintained below OSHA's Action Level of 30 $\mu\text{g}/\text{m}^3$ according to restrictions in 29 CFR 1926.62.

If any hidden and/or inaccessible materials suspected or known to contain lead-based paint are encountered during any demolition activities, the persons involved are advised to stop work, follow proper regulatory precautions and procedures and notify F&ME Consultants for an immediate response action.

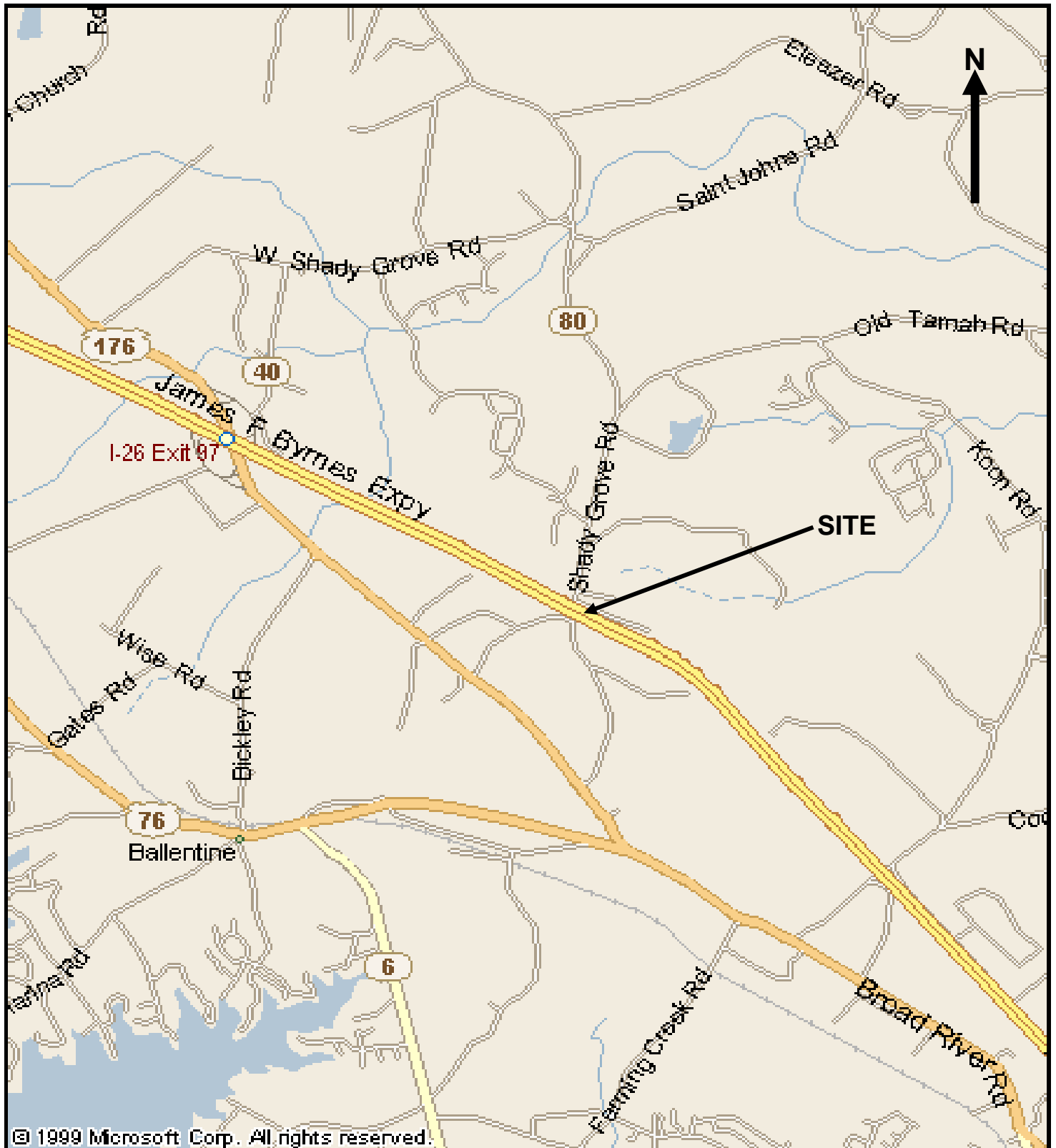
If you have any questions or require additional information concerning this investigative report, please do not hesitate to contact us at (803)254-4540. We appreciate the opportunity to be of service in this matter.

APPENDIX A

Site Vicinity Map (Figure 1)

XRF Data (Table I)

Photographs of Bridge Components



<div><div></div><div>F&ME</div><div>CONSULTANTS</div></div>	SITE VICINITY MAP	
	SCDOT Bridge #407008000100 (S-40-80 over I-26)	
	Richland County, South Carolina	
SC DEPARTMENT OF TRANSPORTATION	Prepared By:	JSL
	Checked By:	JLS
	Approved By:	GME
	Scale:	N.T.S.
	Project:	E5350.02
	Figure:	1

Table I. XRF Data
SCDOT Bridge #407008000100
S-40-80 over I-26
Date Analyzed: 02/21/2013

READING NO.	COMPONENT	SUBSTRATE	SIDE	CONDITION	COLOR	SITE	RESULTS	ACTION LEVEL	PbC mg/cm ²
1		Shutter Calibrate						mg/cm ²	NA
2			Calibrate				Positive	0.7	0.7
3			Calibrate				Positive	0.7	0.8
4			Calibrate				Positive	0.7	0.7
5	Tie rod assembly	Metal	D	FAIR	Silver	Bridge# 407008000100	Positive	0.7	3.9
6	Tie rod assembly	Metal	D	FAIR	Silver	Bridge# 407008000100	Positive	0.7	2.8
8	Tie rod assembly	Metal	B	FAIR	Silver	Bridge# 407008000100	Positive	0.7	1.6
9	Tie rod assembly	Metal	B	FAIR	Silver	Bridge# 407008000100	Positive	0.7	2.2
10	Pipe hanger	Metal	B	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
11	Pipe hanger	Metal	B	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
12	Pipe hanger	Metal	B	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
13	Pipe hanger	Metal	B	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
14	Beam seat plate	Metal	C	PEELING	Silver	Bridge# 407008000100	Positive	0.7	8.4
15	Beam seat plate	Metal	C	PEELING	Silver	Bridge# 407008000100	Positive	0.7	0.9
16	Beam seat plate	Metal	C	PEELING	Silver	Bridge# 407008000100	Positive	0.7	4.4
19	Beam seat plate	Metal	A	PEELING	Silver	Bridge# 407008000100	Positive	0.7	3.5
20	Beam seat plate	Metal	A	PEELING	Silver	Bridge# 407008000100	Positive	0.7	2
21	Pipe hanger	Metal	A	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
22	Pipe hanger	Metal	A	PEELING	Silver	Bridge# 407008000100	Negative	0.7	< LOD
23	Beam seat plate	Metal	Interior	PEELING	Silver	Bridge# 407008000100	Positive	0.7	3
32		Shutter Calibrate							NA
33			Calibrate				Positive	0.7	0.8
34			Calibrate				Positive	0.7	0.7
35			Calibrate				Positive	0.7	0.7



Beam Seat Plates





Beam Tie-Rod Assemblies



APPENDIX B

Personnel Certification

United States Environmental Protection Agency

This is to certify that

Jeffrey Steve Leary

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as a:

Inspector

In the Jurisdiction of:

South Carolina

This certification is valid from the date of issuance and expires July 29, 2015

SC-I-18721-2

Certification #

JUN - 6 2012

Issued On



Jeanne M. Gettle, Chief

Pesticides and Toxic Substances Branch

APPENDIX C

SCDHEC Lead-Based Paint Disposal Fact Sheets

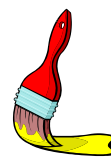


Lead-based Paint Disposal Fact Sheet

Terms You Should Know:

- ≡ **LEAD-BASED PAINT** - paint containing $>0.06\%$ (>600 ppm) **total lead**; or ≥ 0.7 mg/cm² **XRF**.
- ≡ **MUNICIPAL SOLID WASTE LANDFILL (MSWLF)** - A lined landfill with a leachate collection system & ground water monitoring that accepts municipal solid waste (garbage.) These landfills can accept waste painted with lead-based paint.
- ≡ **CONSTRUCTION, DEMOLITION, & LAND-CLEARING DEBRIS LANDFILL, a.k.a., "C&D Landfill"** - A landfill that accepts certain construction & demolition debris and land-clearing debris & yard trash. These landfills can NOT accept waste painted with lead-based paint.
- ≡ **"Total lead" analysis** - reveals the total amount of lead contained in the media being tested and is expressed in "ppm for Total lead"; used to determine acceptability of lead-based painted C&D waste for disposal at C&D landfills; when the total lead level on painted waste exceeds 0.06% by weight (>600 ppm) - the waste is NOT acceptable for disposal at a C&D landfill.
- ≡ **"TCLP" analysis** - (Toxicity characteristic leaching procedure) is used to determine whether or not a waste is a characteristic hazardous waste due to leachability and is expressed in mg/l; ≥ 5.0 mg/l is considered hazardous under the SC Hazardous Waste Management Regulation.
- ≡ **"XRF" analysis** - (X-ray Fluorescence Spectrum Analyzer) is used in-situ to determine the presence of lead-based paint; a reading of ≥ 0.7 mg/cm² means lead-based paint is present and, therefore, the painted waste is NOT acceptable at a C&D landfill. (The XRF analyzer must be licensed with DHEC.)

Facts You Should Know:



- ≡ C&D Landfills **CAN NOT** accept wastes painted with lead-based paint.
- ≡ All wastes painted with lead-based paint may be disposed in a Municipal Solid Waste Landfill.
- ≡ When determining proper disposal (C&D vs. MSWLF) for painted waste, one of the following methods must be used to test for the presence of lead-based paint. Analyze paint:
 - γ For total lead, *not* TCLP (All chemical analyses must be done by a laboratory certified by either DHEC or EPA's NLLAP (National Lead Laboratory Accreditation Program.); **OR**,
 - γ Using a X-ray Fluorescence (XRF) Spectrum Analyzer (S.C. licensed.)

≡ When paint is chemically removed, scraped, or sandblasted from a structure, the paint residue - after removal from the substrate - must ALWAYS be tested for lead using **TCLP** to determine if it is a “hazardous waste.” This requirement does NOT apply to paint residue removed from a home or residence. (Paint residue generated from a home or residence is considered household hazardous waste.)

≡ Generators that meet the requirements of a “conditionally exempt small quantity generator” pursuant to R.61-79.261.5, may dispose of hazardous waste in a Subtitle D landfill with approval from the landfill in lieu of disposal in a Subtitle C landfill.

≡ With regard to disposal, all non-hazardous wastes painted with “lead-based paint” are still considered “solid waste” NOT “hazardous wastes.”

TYPES OF LANDFILLS	DESCRIPTION OF LANDFILL	ACCEPTABLE WASTE	DETERMINATION OF LEAD LEVEL
C&D	Construction, Demolition, & Land-Clearing Debris Landfill; Least protected type landfill; no liners, & no groundwater monitoring	See Regulation 61-107.11, Appendix I (NO waste painted with lead-based paint)	Analyze paint using <i>Total Lead analysis, or XRF analyzer</i> . [Total Pb levels >600 ppm & XRF levels ≥ 0.7 mg/cm ² are NOT acceptable for disposal.]
MSWLF (Subtitle D)	Municipal Solid Waste Landfill; Synthetic liner & leachate collection system	- Can accept C&D waste painted with lead-based paint. - May accept hazardous wastes from “conditionally exempt small quantity generators” if acceptable under their Special Waste Plan.	- No testing required by DHEC - TCLP
Subtitle C §	Hazardous waste landfill	Paint residue with >5.0 mg/l lead	TCLP

§ Disposal in a Subtitle C landfill does NOT apply to waste generated by construction or demolition activities conducted on a household or residence.

Recycling C&D Waste Paint with Lead-based Paint:



≡ Metals painted with lead-based paint **CAN** be recycled - without removing the paint.

≡ Unless otherwise approved by the Department, C&D debris painted with lead-based paint can **NOT** be used as:

- γ mulch,
- γ fill material, or
- γ roadbed

Ω EXCEPTION: Crushed brick and block can be used for road bed **IF** it will be encapsulated in asphalt or cement.

Best Management Practices Recommended by EPA:

EPA encourages residents and contractors managing waste painted with lead-based paint from households to take common sense measures to minimize the generation of lead dust, limit access to stored wastes painted with lead-based paint and maintain the integrity of waste packaging material during transfer of the waste. The following actions are recommended:

- Collect paint chips and dust, and dirt and rubble in plastic trash bags for disposal;
- Store larger lead-base painted architectural debris pieces in containers until ready for disposal;
- Consider using a covered mobile dumpster (such as a roll-off container for storage of debris until the job is done;
- Follow the guide lines contained in this Fact Sheet for proper disposal of waste painted with lead-based paint.

NOTE:

Contractors working in residential dwellings are subject to either one or both of the following:

— The HUD Guidance for contractors doing publicly funded rehabilitation/renovation projects in public housing 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.)

[The above-mentioned BMPs for households are similar to those included in the HUD Guidelines for individuals controlling lead-based paint (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.]