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# LEAD BASED PAINT SURVEY REPORT

## TRANSPORTATION STORAGE FACILITY (ID: Building 111)

NASA-AMES

Moffett Field, CA 94035

*PREPARED FOR*

NASA AMES PAI CORPORATION  
NASA Ames Research Center  
Moffett Field, CA 94035-1000

*PREPARED BY*

Benchmark Environmental Engineering  
August 1, 2001  
Project Number: E01-448w-L-SU

Prepared By:

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DHS Inspector/Assessor  
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Reviewed By:

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Bryan K. Buller  
COO, UPIN, Inc  
14946

BUILDING INSPECTIONS

ENVIRONMENTAL ENGINEERING

SPECIALIZED TRAINING

CONTRACT MANAGEMENT

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## EXECUTIVE SUMMARY

Benchmark Environmental Engineering was retained by PAI Corporation, to conduct a lead-based paint survey at Transportation Storage Facility, Building 111 located at Moffett Field, California.

In order to determine if lead based paint was present, 32 assays were taken using an X-RAY FLUORESCENCE (XRF) instrument. The results indicated that the following building components were above the EPA and DHS level of 1.0 mg/cm<sup>2</sup> or 5000 PPM.

### **Lead-based Paint was identified on the following building components:**

**Exterior:** Corrugated Walls, Sliding Door, Door Frame, Window Frames, Sills, Mullions and Flashing Over Window.

**Interior:** Corrugated Walls Gray and Yellow.

# INTRODUCTION

Benchmark Environmental Engineering was retained by Mr. Kris McGlothlin, to conduct a lead-based paint survey at NASA Ames-PAI Corporation, Moffett Field, California.

Authorization to perform this survey was received via signed agreement to BENCHMARK from Mr. Kris McGlothlin, on or about May 1, 2001, as referenced by BENCHMARK'S proposal E01-448.

## BACKGROUND

This facility is a Quonset hut developed for MEPS-USMC storage. Approximately 4,141 square feet in size, it is a metal building built on a concrete slab. The South storage is military and there was no access to it.

## WARRANTY

Benchmark Environmental Engineering warrants that the findings contained herein have been prepared with the level of care and skill exercised by experienced and knowledgeable environmental consultants who are appropriately licensed or otherwise trained to perform lead-related construction risk assessments and inspections pursuant to the scope of work required on this Project.

The survey included inspection of accessible materials. BENCHMARK did not inspect or sample inaccessible areas such as behind walls or within ductwork, and did not dismantle any part of the structure to survey inaccessible areas. For the purpose of this warranty, inaccessible is defined as areas of the building that could not be tested (sampled) without destruction of the structure or a portion of the structure. Inaccessible materials that are not visible to Benchmark's inspectors are assumed to be lead containing.

Authorization to perform this survey was received by BENCHMARK from Mr. Kris McGlothlin, of The PAI Corporation, on May 1, 2001, as referenced by Benchmark's Proposal E01-488.

The survey was conducted on August 1, 2001. A comprehensive site survey was performed based on the building plan. All building components identified in the specifications that may contain lead-based paint/coating were targeted for testing. (Exterior and interior walls, exterior and interior windows, doors and numerous associated components).

Sampling protocol for identification of lead-based paint was in accordance with The U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Chapter 7.

All suspect lead-coated surfaces were identified by building, wall, and building component, as such each component had a unique identification number.

The report establishes lead concentrations in painted surfaces as a general guidance tool for the purpose of conducting demolition activities for Building 111.

A total of 32 XRF assays were collected within this building.

## SCOPE OF SERVICES

Benchmark recognized the scope of work for the NASA Ames-PAI Corporation, to be composed of a Lead Based Paint Inspection for the Transportation Storage Facility (ID: Building 111). The survey consisted of testing for lead-base paint in general accordance with the U.S Department of Housing and Urban Development (HUD) guidelines for the evaluation and control of Lead-Based Paint Hazards in Housing, Chapter 7.

Certain building components that are adjacent to each other and not likely to have different painting histories have been grouped together into a single testing combination, as follows: Window Casings/Stops/Jambs/Aprons -Or- Door Jambs/Stops/Transoms/Casings and other door frame parts.

The following building components were inspected when applicable:

- Exterior Areas:

Walls	Windows
Windowsills	Stair Handrails
Doors	Door Molding
Downspouts	Window Screen
Building Trim	Skylight
Balusters	Stair Handrail
Stair Risers	Support Pillar

- Interior Areas:

Walls	Windows
Windowsills	Stair Treads
Balusters	Doors
Door Molding	Stair Stringer
Ceilings	Ceiling Molding
Skylight	Floors
Ceiling Molding	Grates
Baseboards	Support Beams
Electrical Box	Book Shelf
Chair Rail	Wainscot

There were no paint chip samples collected from building components in this facility.

# METHODOLOGY

## GENERAL REFERENCES

Inspection, sampling, and assessment procedures were performed in general accordance with the guidelines published by The Department of Housing and Urban Development's (HUD) 1995 Guidelines, Chapter 7. The survey consisted of three major activities: visual inspection, sampling, and analysis. Although these activities are listed separately, they are integrated tasks.

## VISUAL INSPECTION

An inspector that is a Department of Health Services Certified Lead Inspector/Risk Assessor performed the inspection. An initial building walkthrough was conducted to determine the presence of suspect materials that were accessible or exposed.

## SAMPLING PROCEDURES

Following the walkthrough, the inspector selected samples areas of exposed or accessible materials identified as suspect LBP. EPA and HUD guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material.

## X-RAY FLUORESCENCE (XRF) ANALYSIS

XRF instruments measure lead in paint by directing high energy X-rays and gamma rays into the paint, causing the lead atoms in the paint to emit X-rays which are detected by the instrument and converted to a measurement of the amount of lead in the paint. The EPA approved technology allows for measurement of X-rays without scraping or samples preparation to characterize substrate or matrix effects. The Spectrum Analyzer, Metals Analysis Probe (MAP 4) is combined with a microprocessor system that enables field-testing with a high degree of quality control and speed. Sample locations, descriptions, conditions, and measurement results are automatically recorded by the instrument and easily downloaded to a PC or laptop.



## **QUALITY CONTROL PROGRAM**

Benchmark Environmental Engineering utilizes only DHS approved inspectors, which are certified to use radioactive instruments. The MAP 4 Spectrum Analyzer has on-board calibration routines, which continuously operate, and self-correct to minimize sampling error. This is known as substrate correcting software.

## **PAINT CHIP SAMPLE COLLECTION**

There were no paint chip samples collected in this facility.

## **LEAD**

Laboratory analysis was performed by Schneider Laboratories, Inc. Their AIHA Accredited Laboratory Identification Number is AIHA/ELLAP #100527, and CA ELAP #2078. Samples are analyzed by Flame Atomic Absorption in accordance with EPA's "Standard Operating Procedures for Lead in Paint by Hotplate or Microwave based Acid digestions and Atomic Absorption or Inductively Coupled Plasma Emission Spectrometry" (1991), EPA/600/8-91/213, NTIS Document No. PB92-114172. Samples are prepared by hotplate digestion with nitric acid and hydrogen peroxide, and analyzed by Flame AA.

## **LABORATORY QUALITY CONTROL PROGRAM**

Schneider Laboratories, Inc. maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.



# FINDINGS AND OBSERVATIONS

## LEAD

A total of 32 assays were taken. The results indicated that 22 assays contained lead above the EPA and DHS level of 1.0 mg/ cm<sup>2</sup> or greater. The components, which contain lead-based paint, are:

**Exterior:** Corrugated Walls, Sliding Door, Door Frame, Window Frames, Sills, Mullions and Flashing Over Window.

**Interior:** Corrugated Walls Gray and Yellow.

Cal/OSHA's Lead in Construction Standard, Title 8, CCR section 1532.1, is primarily concerned with worker protection when disturbing any detectable level of lead in paint or surface coatings.

Assays with results **less than** 1.0 mg/cm<sup>2</sup> and paint chip samples with results less than 5000 ppm may create hazardous conditions if subjected to poor and/or prohibited work practices. Refer to Work Activities on the following page.

## OSHA LEAD REGULATION SUMMARY

The Federal Occupational Safety and Health Administration (OSHA) has enacted an interim lead standard, which was adopted by Cal/OSHA as 8 CCR 1532.1. The purpose of both standards is to protect construction workers from exposure to lead. OSHA is primarily concerned with activities that disturb lead-containing material. Lead was used in most paints until the mid 1950's and was banned in amounts in excess of 0.06% by weight in 1978 for most non-industrial paints by the Consumer Product Safety Commission (CPSC).

The new standard requires contractors and employers who perform activities that would disturb lead, must monitor their employees to determine whether they are being exposed in excess of the Action Level (AL) of 30 micrograms per cubic meter of air (ug/m<sup>3</sup>) over an eight-hour time weighted average (TWA) or the Permissible Exposure Limit (PEL) of 50 ug/m<sup>3</sup> TWA. Monitoring is performed by personal exposure air sampling.

Even when concentrations are below the AL, an employer must provide employees with High Efficiency Particulate Air (HEPA) filtered vacuums, wetting agents and hand-washing facilities. If the exposure exceeds the AL or the PEL, other procedures such as containing the area, decontamination facilities and medical monitoring are required.

OSHA has identified several activities that pose varying levels of potential lead exposure to laborers disturbing lead-containing paint. Estimated exposure levels

of lead are founded on the activity itself, rather than the concentrations of lead present in paint. Therefore, as an example, paints that contain 0.5% versus 15% of lead by weight or 0.8 mg/cm<sup>2</sup> versus 3.5 mg/cm<sup>2</sup> of lead in paint could present the same levels of potential exposure to workers depending on the activities that cause the disturbance and the administrative and engineering controls that are followed.

The following is a summary of work activities that disturb paint, the expected exposures and the respiratory protection requirements as outlined in the OSHA standards:

**Class I Activities:**

Class I activities include: Manual demolition, manual scraping, manual sanding, heat gun application, general cleanup, power tool cleaning with dust collection systems and spray painting activities.

Potential Exposure: 50 ug/m<sup>3</sup> to 500 ug/m<sup>3</sup>  
Minimum Respiratory Protection: Half mask air purifying respirator equipped with HEPA filters having a protection factor of 10.

**Class II Activities:**

Class II activities include: Using lead-containing mortars, lead burning, lead riveting, rivet busting, power tool cleaning without dust collection systems, cleanup of dry expendable abrasives and abrasive blasting.

Potential Exposure: 500 ug/m<sup>3</sup> to 2,500 ug/m<sup>3</sup>  
Minimum Respiratory Protection: Full face powered air-purifying respirators equipped with HEPA filters having a protection Factor of 100.

**Class III Activities:**

Class II activities include: Abrasive blasting, welding, cutting and torch burning on steel structures.

Potential Exposure: Greater than 2,500 ug/m<sup>3</sup>.  
Minimum Respiratory Protection: Full face supplied - air respirator operated in pressure demand mode or - the positive pressure mode.

DOSH 8 CCR 1532.1 requires that an initial exposure assessment be performed if workers will be performing any of the trigger tasks found in 1532.1. It should be

noted that the California Department of Health Services (DHS) has issued emergency work procedures for lead paint materials that in the absence of any other procedures are recommendations.

The following recommendations are general site specific work practice specifications.

- You must use "containment" when you sand, scrape, or disturb any detectable level of lead in paint or surface coatings.
- Containment is required for abatement and/or any activity that or disturb any detectable level of lead in paint or surface coatings.
- You must be DHS-certified (workers, supervisors, monitors, and inspectors) if you are conducting abatement.
- You must follow an abatement plan.
- A DHS -certified supervisor, monitor, and/or project designer must design an abatement project.
- A clearance inspection by dust wipe sampling is required for abatement.

## **LEAD WASTE DISPOSAL**

The visual determination indicated that all building components that tested positive were in intact to poor condition (minor cracking to flaking and peeling). As such, these components need to be considered a lead hazard if flaking paint is not stabilized. All small debris (paint chips, rags, filters, and components smaller than 2"x2") that may be generated during the paint stabilization process (paint preparation) should be considered Class I, lead hazardous waste. The debris generated from paint stabilization of LBP building components should be segregated from all other dust and debris. Building components, which tested positive, should be stabilized by a DHS-accredited Contractor.

Power washing may be conducted on the building. Run off water must be collected and analyzed by an accredited laboratory to meet the criteria established by the Clean Water Act, Resource Conservation and Recovery Act (RCRA 1972). Lead levels must not exceed 5mg/L.

## **CODES AND REGULATIONS - LEAD-BASED PAINT**

Federal and state regulations, which govern lead-based, paint work or hauling and disposal of lead-based paint waste materials include but are not limited to the following:

### FEDERAL

Housing and Urban Development (HUD) 1995 Guidelines For The Evaluation and Control of Lead-Based Paint in Housing

OSHA

Lead In Construction  
29 CFR 1926.62

NESHAP

Emissions Standards  
40 CFR 50.12

Lead-Based Paint Poisoning Prevention Act (LBPPPA), 1970.

Title 10 - Residential LBP Hazard Reduction Act, 1992, (amendment for LBPPPA, 1970)

Resource Conservation Recovery Act (RCRA)

STATE

Cal/OSHA

Lead In Construction  
Title 8 CCR 1532.1

Department of Health Services (DHS)

Emergency Work Practice Regulations  
Title 17 CCR, Division 1, Chp.

**APPENDIX A**  
**XRF - DATA RESULTS TABLE**

Bldg.	Floor	Room	Result	Shot Sequence	Location	Wall	Description	XRF Result	AA Analysis in PPM
111	0001		Negative	29847	N. Storage	1	Corrugated wall	0.413	
111	0001		Negative	29848	N. Storage	1	Wall Support	0.812	
111	0001		Negative	29849	N. Storage	2	Door Frame	-0.001	
111	0001		Negative	29850	N. Storage	2	Door	-0.592	
111	0001		Negative	29851	N. Storage	2	Window Frame	0.243	
111	0001		Negative	29852	N. Storage	2	Window Molding	0.817	
111	0001		Negative	29853	N. Storage	2	Sliding door	0.834	
111	0001		XRF Positive	29854	N. Storage	3	Corrugated wall	2.45	
111	0001		XRF Positive	29855	N. Storage	3	Corrugated wall	2.395	
111	0001		Negative	29856	N. Storage	3	Wall Support	0.411	
111	0001		Negative	29857	N. Storage	1	Corrugated wall	0.549	
111	0001		XRF Positive	29858	N. Storage	1	Corrugated wall	1.811	
111	0001		XRF Positive	29859	Exterior	1	Corrugated wall	3.504	
111	0001		XRF Positive	29860	Exterior	4	Corrugated wall	6.566	
111	0001		XRF Positive	29861	Exterior	4	Sliding door	1.538	
111	0001		XRF Positive	29862	Exterior	4	Door Frame	1.617	
111	0001		XRF Positive	29863	Exterior	4	Window Frame	1.878	
111	0001		XRF Positive	29864	Exterior	4	Window Sill	5.272	
111	0001		XRF Positive	29865	Exterior	4	Window Molding	6.041	
111	0001		XRF Positive	29866	Exterior	3	Corrugated wall	3.775	
111	0001		XRF Positive	29867	Exterior	3	Window Frame	3.259	
111	0001		XRF Positive	29868	Exterior	3	Window Molding	2.862	
111	0001		XRF Positive	29869	Exterior	3	Flashing window	2.377	
111	0001		Negative	29870	Exterior	3	Door	-0.11	
111	0001		XRF Positive	29871	Exterior	3	Door Frame	1.468	
111	0001		XRF Positive	29872	Exterior	2	Corrugated wall	4.23	
111	0001		XRF Positive	29873	Exterior	2	Sliding door	1.257	
111	0001		XRF Positive	29874	Exterior	2	Door Frame	1.822	
111	0001		XRF Positive	29875	Exterior	2	Window Frame	1.94	
111	0001		XRF Positive	29876	Exterior	2	Window Sill	2.511	
111	0001		XRF Positive	29877	Exterior	2	Window Molding	5.001	
111	0001		XRF Positive	29878	Exterior	1	Corrugated wall	8.745	

**APPENDIX B**  
**CERTIFICATION(S)**



Lead-Plumbed Contractor  
Interim Certificate

Richard E. MacFarlane

Inspector/Assessor  
I-2241 (Exp. 1/93/01)

