# Surface Lead Monitoring Survey Report

at

Missouri Army National Guard
Armory
475 South Davis
Marshall, Missouri

Survey Date: June 13, 2012


for

Department of the Army
National Guard Bureau
Region West Industrial Hygiene Office
NGB-AVN-S1

Performed by
U.S. Public Health Service
Federal Occupational Health

August 31, 2012

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## Appendices

## I. Executive Summary

At the request of the National Guard Bureau (NGB) Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Federal Occupational Health conducted surface lead monitoring at the Missouri Army National Guard Armory located in Marshall, Missouri. This survey was conducted in order to identify lead levels on surfaces within the facility.

The Marshall Armory is adjacent to Field Maintenance Shop 7 and is the home of the 1128$^{th}$ Forward Support Company. A firing range was contained inside this building, but the space has been renovated into locker rooms. Weapons are reportedly cleaned on the drill floor. The assembly spaces in this facility are accessed by the public for community activities approximately four times per year.

Eight surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead. For purposes of this report, any surface lead level that exceeds 40 micrograms per square foot (µg/ft$^2$) in a potentially child occupied area is considered significant. Any surface lead level that exceeds 200 µg/ft$^2$ in any other area of the armory is considered significant.

None of the eight samples collected contained levels of lead above NGB Industrial Hygiene Surface Levels. When weapons are cleaned, special attention should be given to cleaning up the work area, by wet mopping surfaces or vacuuming with high-efficiency particulate air (HEPA) filter vacuums, to prevent potential lead contamination from ammunition that may spread to other areas of the building. (RAC 2)

## II. Introduction

At the request of the National Guard Bureau (NGB) Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Federal Occupational Health conducted surface lead monitoring at the Missouri Army National Guard Armory located in Marshall, Missouri. This work was conducted under the Interagency Agreement between the USPHS, FOH and the West Region of the Army National Guard. This survey was conducted in order to identify lead levels on surfaces within the facility. Non-Responsive , both Certified Industrial Hygienists (CIHs), conducted this survey on June 13, 2012.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

## III. Site Description

The Marshall Armory is adjacent to Field Maintenance Shop 7 and is the home of the 1128th Forward Support Company. A firing range was contained inside this building, but the space has been renovated into locker rooms. Weapons are reportedly cleaned on the drill floor. The assembly spaces in this facility are accessed by the public for community activities approximately four times per year.

## IV. Scope of Work

The purpose of the site visit was to collect surface wipe samples in the building for evaluation of lead contamination. The survey included a walkthrough of the facility and interviews with employees. The survey also included collecting surface wipe samples to evaluate lead contamination levels.

## V. Findings, Discussion, and Recommendations

### Surface Wipe Sampling

#### *Assessment Criteria*

At present, there are no Occupational Safety and Health Administration (OSHA) regulated levels for these toxic metals on surfaces. National Guard Bureau (NGB) Industrial Hygiene has adopted the sampling procedures and allowable limits for lead dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges*, November 3, 2006.

For purposes of this report, any surface lead level that exceeds 40 micrograms per square foot (µg/ft$^2$) in a potentially child occupied area is considered significant. Any surface lead level that exceeds 200 µg/ft$^2$ in any other area of the facility is considered

significant. NGB Industrial Hygiene considers facilities with public access to be potentially child occupied facilities. NG Pam 420-15 may be found at: http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf. The assessment criteria are based on the Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) 40 CFR 745 and the Housing and Urban Development (HUD) 24 CFR 35 definitions for dust-lead hazards for interior window sills and floors.

DoD has instituted a new policy (DTM 12-003, *Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, April 18, 2012) to minimize surface contamination levels of toxic metals.

### *Wipe Sampling Method*

Surface samples were collected using Environmental Express Ghost™ Wipes. Surface wipe templates that encompassed either 1 square foot (child occupied areas) or 0.11 square foot (other work areas) of surface area were used to collect samples. For each surface sample collected, a new set of gloves and a new numbered template was used. The entire template area was wiped using and "S" configured motion. The wipe was then folded in half and the template area was wiped using an "S" motion in a direction perpendicular to the first. The wipe was folded again and the perimeter of the area was wiped. The wipe was placed into a plastic centrifuge tube, capped, and the samples were sent to the FOH Laboratory in Chicago, Illinois. Samples were hot plate digested and analyzed for lead with a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

### *Results*

Eight surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead. The results are contained in Table 1 and photos of the sample locations are included in Figure 1. None of the eight samples collected contained levels of lead above NGB Industrial Hygiene Surface Level for lead. Samples W-1 through W-4 were assessed at the 40 µg/ft$^2$ level (child occupied) and Samples W-5 through W-8 were evaluated at the 200 µg/ft$^2$ level (other work areas).

### **Recommendation:**

When weapons are cleaned in the facility, special attention should be given to cleaning up the work area, by wet mopping surfaces, or vacuuming with high-efficiency particulate air (HEPA) filter vacuums, to prevent potential lead contamination from ammunition that may spread to other areas of the building. (RAC 2)

Table 1
Surface Wipe Sampling Results for Lead
Missouri Army National Guard
Armory, Marshall, Missouri
June 13, 2012

| Sample # | Location | Wipe Area ($ft^2$) | Lead ($\mu g/ft^2$) | NGB Surface Level ($\mu g/ft^2$) |
|---|---|---|---|---|
| W-1 | Drill floor, southwest corner | 1.0 | <10 | **40** |
| W-2 | Electrical room on ice machine, southwest end of building | 1.0 | 21 | **40** |
| W-3 | Drill floor on top of beverage vending machine | 1.0 | 13 | **40** |
| W-4 | Kitchen counter top | 1.0 | <10 | **40** |
| W-5 | Conference room on table | 0.11 | <91 | **200** |
| W-6 | Locker room (northeast) on top of Locker #56 at target end of former firing range | 0.11 | <91 | **200** |
| W-7 | Locker room (northwest) on top of Locker #23 | 0.11 | <91 | **200** |
| W-8 | Locker room (northeast) on floor at target end of former firing range | 0.11 | <91 | **200** |
| Blank | | | ND | **N/A** |

Notes: 1) µg / $ft^2$ = micrograms per square foot of surface area. 2) ND = none detected.
3) "<" means less than the reporting limit for the analytical method.

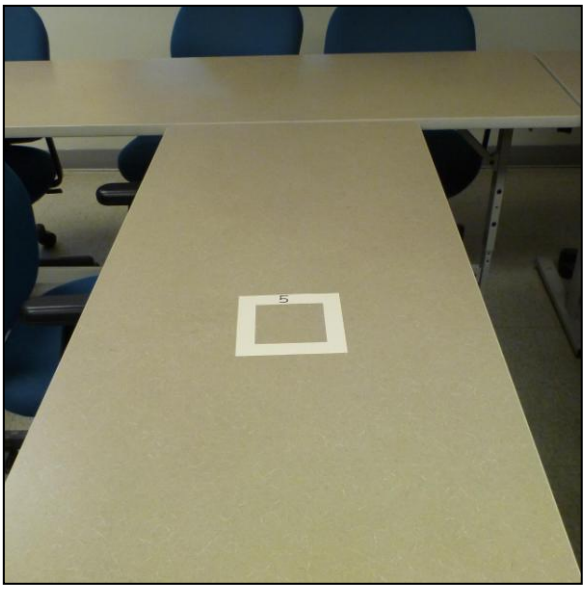
**Figure 1 - Surface Wipe Sample Locations (below).**

Sample W-1

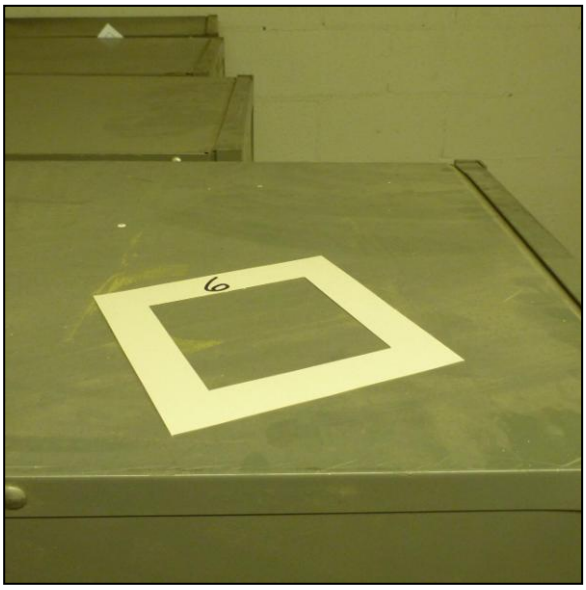
Sample W-2


Sample W-3

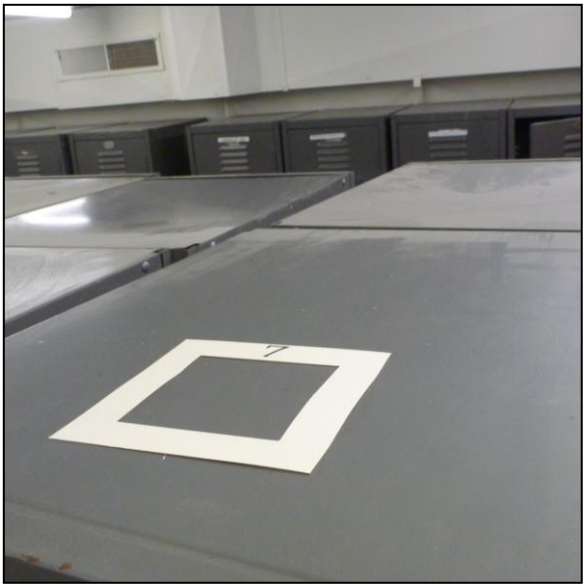
Sample W-4



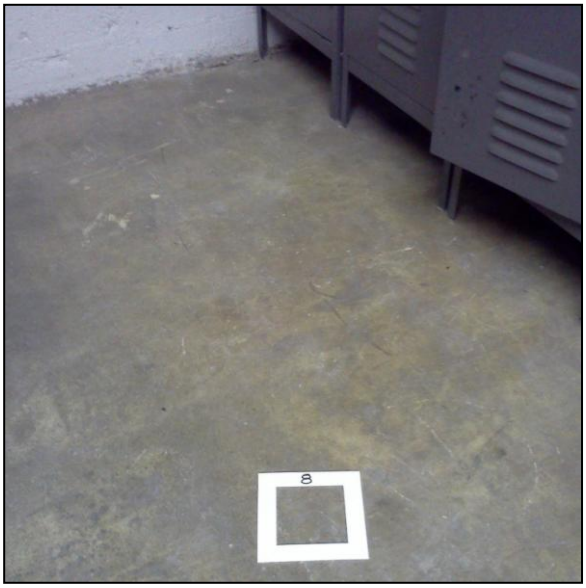

Sample W-5




Sample W-6




Sample W-7




Sample W-8

**Technical Assistance:** This report was written by Non-Responsive as a representative of FOH. Non-Responsive , Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office, reviewed and approved this report. For technical assistance regarding information found in this report or the performed survey please contact the Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

# Appendix A

## Point of Contact (POC) List

### Missouri Army National Guard State POC

Non-Responsive

### Armory POC

Non-Responsive

# Appendix B

## Laboratory Result Report and Chain of Custody Sheet

FOH ENVIRONMENTAL LABORATORY
538 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## ANALYTICAL REPORT

Submitted To: USPHS / Federal Occupational Health
Denver Federal Center
Denver, CO 80225

Attention: Non-Responsive

Submitted By:

**Reference Data:** Lead

| | |
|---|---|
| Sampling Site: | NGB: Marshall, MO |
| Sample Media: | Ghost Wipe(s)® |
| Method Reference: | OSHA ID-121 |
| Project ID: | Project 10563R |
| DFOH Lab Nos.: | TM-12-55590 through TM-12-55598 |
| Date Received: | 06/19/12 |
| Data Analyzed: | 06/22/12 – 07/02/12 |
| Date Issued: | 07/19/12 |

The wipe samples were hot plate digested. The samples were run on a Perkin Elmer 200 flame atomic absorption spectrophotometer (AA).

General Lab Comments:
All quality control criteria have been met.
* All samples received in condition acceptable for analysis unless otherwise noted.
** Sample results have not been corrected for contamination based on the field blank or other analytical blank unless otherwise noted.

Analytical results are given on the enclosed tables. Results relate only to items tested. If you have any questions about these results, feel free to phone the Laboratory at (312) 886-0413.

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

**Project 10563R**
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**FOH ENVIRONMENTAL LABORATORY**

536 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## LEAD on WIPE RESULTS

| SAMPLE NUMBER* | LABORATORY NUMBER | CONCENTRATION (µg) | CONCENTRATION (µg/ft²) |
|---|---|---|---|
| W-1 | TM-12-55590 | <10 | <10 |
| W-2 | TM-12-55591 | 21 | 21 |
| W-3 | TM-12-55592 | 13 | 13 |
| W-4 | TM-12-55593 | <10 | <10 |
| W-5 | TM-12-55594 | <10 | <91 |
| W-6 | TM-12-55595 | <10 | <91 |
| W-7 | TM-12-55596 | <10 | <91 |
| W-8 | TM-12-55597 | <10 | <91 |
| Blank** | TM-12-55598 | <10 | None Detected |

## Surface Wipe Sampling Criteria

| Metal | Acceptable Surface Level µg/ft | Basis for Criteria |
|---|---|---|
| Lead | 250 | EPA TSCA 40 CFR 745 and HUD Window Sills |

## Metals in Wipe Limits
(based on one ft² sampled area)

| Analyte | Analytical Method | Method Detection Limit | Minimum Reporting Limit |
|---|---|---|---|
| Lead | OSHA ID-121 | 5.0 µg/ft² | 10 µg/ft² |

Non-Responsive

AIHA LAP, LLC
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**Project 10563R**
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US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET

Environmental Laboratory
536 S. Clark Street South, Suite 714
Chicago, IL 60605-1521
Non-Responsive (312)-886-0434
Contact Information
Non-Responsive

PROJECT REFERENCE
Agreement No.: A 106644
Statement of Work No.: S 163833
Project No: P 165224
Agency: ARNG
Proj. Manager: Armory
Location (City, State): Marshall MO

For Lab Use Only
Project /Report #: 10563
Due Date: 6/20/12
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date
Rev. 07/2010

Water Sample Codes[3]
Container Types: P-Plastic, G-Glass, V-VOC
Preservatives: A-None, B-$H_2SO_4$, C-$HNO_3$, D-NaOH

Turn Around Time Codes[4]
STD- Standard
3D- Three Day Rush*
WH Weekend/Holiday*

Analysis Requested: Lead

| Sample ID # | Type[1] | Media[2] | Collected Date | Collected Time | Sample Location / Description | Air Flow (LPM) | Air Time (Min.) | Air Volume (Liters) | Wipe Area ($ft^2$) | Water Volume (Liters) | Water Code[3] | Turn Around Time[4] | Lab ID # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-1 | 7 | 5 | June | 13 | | | | | 1.0 | | | STD | TH255590 |
| W-2 | 7 | 5 | | | | | | | 1.0 | | | | 55591 |
| W-3 | 7 | 5 | | | | | | | 1.0 | | | | 55592 |
| W-4 | 7 | 5 | | | | | | | 1.0 | | | | 55593 |
| W-5 | 7 | 5 | | | | | | | 0.11 | | | | 55594 |
| W-6 | 7 | 5 | | | | | | | 0.11 | | | | 55595 |
| W-7 | 7 | 5 | | | | | | | 0.11 | | | | 55596 |
| W-8 | 7 | 5 | ↓ | ↓ | | | | | 0.11 | | | ↓ | 55597 |
| Blank | | | | | | | | | | | | | X 55598 |

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8 - Other

Sample Media Codes[2]
1-Charcoal 2-Matched Weight, 0.8um 3-PVC filter 4-M CE 0.8 um , 37 mm 5 -Ghost Wipes™ 6. Passive badge 7. Other

Non-Responsive

COMMENTS: Please email results to Non-Responsive

* Applied to organic and inorganic analysis in cases of an emergency only. * Applied to inorganic and organic samples, SD: Applied to organic and inorganic samples 7-10 business days.

## Appendix C
## Occupational Health Risk Assessment Codes
**(Reference: DOD Letter of Instructions 6055.1)**

Occupational health risk assessment codes (RACs) are included in this report to quantify health risks to personnel. risk assessment is an expression of health hazard severity and mishap probability, described in terms of route of exposure, actual exposure, exposure limit standards, potential health effects, duration of exposure, and number of exposed personnel. The following procedure is used to determine the RACs:

**STEP 1:** This step assesses points to determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

A. Exposure Points Assessed.

| Alternate Route of Exposure | | Exposure Conditions | | | |
|---|---|---|---|---|---|
| | | <CT | Occasionally >CT Always ≤STD | >CT <STD | >STD |
| AER Possible | NO | 0 | 3 | 5 | 7 |
| | YES | 1-2 | 4 | 6 | 8 |

Notes: 1) AER = Alternate exposure route, such as skin absorption or ingestion. 2) CT = DoD component threshold that triggers surveillance actions, such as action level. 3) STD = DoD exposure limit, such as TLV or PEL. 4) > = Greater than. 5) < = Less than. 6) ≤ = Less than or equal to.

B. Medical Effects Points Assessed.

| Condition | Points |
|---|---|
| No medical effects, such as nuisance noise and nuisance odor | 0 |
| Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat | 1-2 |
| Temporary reversible illness with a variable but limited period of disability, such as metal fume fever | 3-4 |
| Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss | 5-6 |
| Permanent, severe, disabling, irreversible illness or death, such as asbestosis or lung cancer | 7-8 |

C. The HHSC is determined by totaling the points assessed and using the following guide.

| Total Points* | HHSC |
|---|---|
| 13-16 | I |
| 9-12 | II |
| 5-8 | III |
| 0-4 | IV |

* Sum of A and B above.

**STEP 2:** This step uses the following guidelines to assess points to determine the mishap probability category (MPC) for health hazards. The probability of mishap reflects the duration of exposure and the number of exposed personnel.

A. Duration of Exposure Points Assessed.

| Type of Exposure | Length of Exposure | | |
|---|---|---|---|
| | 1-8 hr/wk | >8 hr/wk/not continuous | Continuous |
| Irregular/ Intermittent | 1-2 | 4-6 | NA |
| Regular/Periodic | 2-3 | 5-7 | 8 |

B. Number of Exposed personnel Points Assessed.

| Number of Exposed Personnel | Points |
|---|---|
| <5 | 1-2 |
| 5-9 | 3-4 |
| 10-49 | 5-6 |
| >49 | 7-8 |

C. The MPC for health hazards is determined by totaling the points assessed and using the following guide:

| Total Points* | MPC |
|---|---|
| 14-16 | A |
| 10-13 | B |
| 5-9 | C |
| <5 | D |

* Sum of A and B above.

**STEP 3:** The RAC is determined using the following matrix:

| HHSC | MPC | | | |
|---|---|---|---|---|
| | A | B | C | D |
| I | 1 | 1 | 2 | 3 |
| II | 1 | 2 | 3 | 4 |
| III | 2 | 3 | 4 | 5 |
| IV | 3 | 4 | 5 | 5 |

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Notes: 1) µg / $ft^2$ = micrograms per square foot of surface area. 2) ND = none detected.
3) "<" means less than the reporting limit for the analytical method.

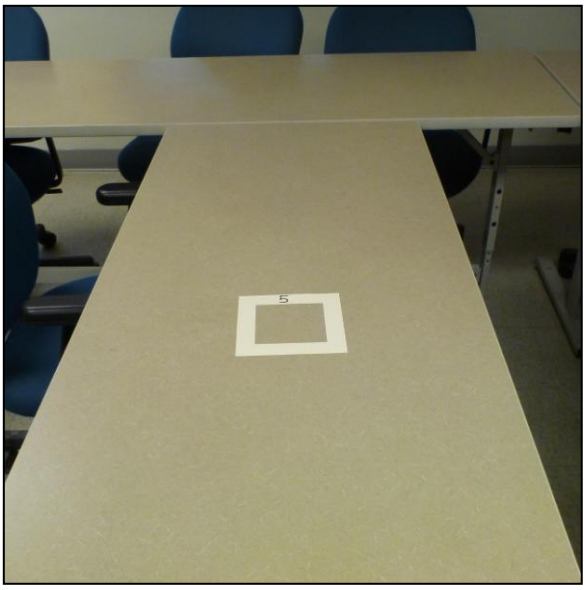
**Figure 1 - Surface Wipe Sample Locations (below).**

Sample W-1

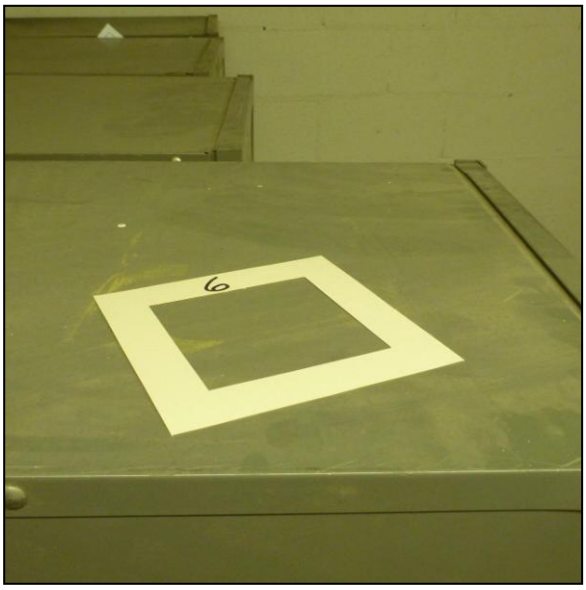
Sample W-2


Sample W-3

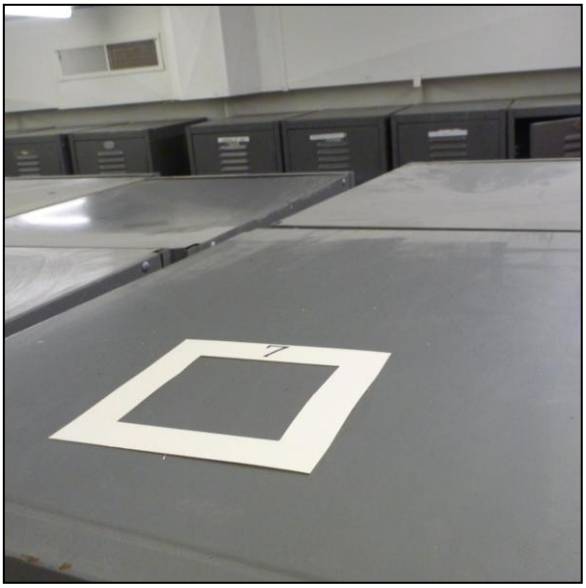
Sample W-4



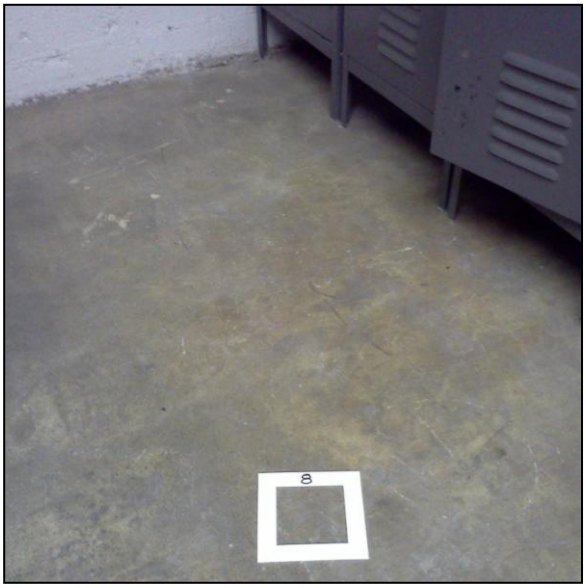

Sample W-5




Sample W-6




Sample W-7

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Non-Responsive

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538 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## ANALYTICAL REPORT

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Denver Federal Center
Denver, CO 80225

Attention: Non-Responsive

Submitted By:

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| | |
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**FOH ENVIRONMENTAL LABORATORY**

536 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## LEAD on WIPE RESULTS

| SAMPLE NUMBER* | LABORATORY NUMBER | CONCENTRATION (µg) | CONCENTRATION (µg/ft²) |
|---|---|---|---|
| W-1 | TM-12-55590 | <10 | <10 |
| W-2 | TM-12-55591 | 21 | 21 |
| W-3 | TM-12-55592 | 13 | 13 |
| W-4 | TM-12-55593 | <10 | <10 |
| W-5 | TM-12-55594 | <10 | <91 |
| W-6 | TM-12-55595 | <10 | <91 |
| W-7 | TM-12-55596 | <10 | <91 |
| W-8 | TM-12-55597 | <10 | <91 |
| Blank** | TM-12-55598 | <10 | None Detected |

## Surface Wipe Sampling Criteria

| Metal | Acceptable Surface Level µg/ft | Basis for Criteria |
|---|---|---|
| Lead | 250 | EPA TSCA 40 CFR 745 and HUD Window Sills |

## Metals in Wipe Limits
(based on one ft² sampled area)

| Analyte | Analytical Method | Method Detection Limit | Minimum Reporting Limit |
|---|---|---|---|
| Lead | OSHA ID-121 | 5.0 µg/ft² | 10 µg/ft² |

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**Project 10563R**
**Page 2 of 2**

US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET

Environmental Laboratory
536 S. Clark Street South, Suite 714
Chicago, IL 60605-1521
Tel: (312) 886-0442 Fax: (312)-886-0434

Non-Responsive

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PROJECT REFERENCE

| | |
|---|---|
| Agreement No.: | A 106644 |
| Statement of Work No.: | S 163833 |
| Project No: | P 165224 |
| Agency | ARNG |
| Proj. Manager | Armory |
| Location (City, State): | Marshall MO |

For Lab Use Only
Project /Report #: 10563
Due Date: 6/20/12
Samples Received Chilled? YES NO (circle one)

Conditions on Receipt with Name & Date

Rev. 07/2010

Water Sample Codes[3]
Container Types: P-Plastic, G-Glass, V-VOC
Preservatives: A-None, B-$H_2SO_4$, C-$HNO_3$, D-NaOH

Turn Around Time Codes[4]
STD- Standard
3D- Three Day Rush*
WH Weekend/Holiday*

Analysis Requested: Lead

| Sample ID # | Type[1] | Media[2] | Collected Date | Collected Time | Sample Location / Description | Air Flow (LPM) | Air Time (Min.) | Air Volume (Liters) | Wipe Area ($ft^2$) | Water Volume (Liters) | Water Code[3] | Turn Around Time[4] | Lab ID # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-1 | 7 | 5 | June | 13 | | | | | 1.0 | | | STD | TH255590 |
| W-2 | 7 | 5 | | | | | | | 1.0 | | | | 55591 |
| W-3 | 7 | 5 | | | | | | | 1.0 | | | | 55592 |
| W-4 | 7 | 5 | | | | | | | 1.0 | | | | 55593 |
| W-5 | 7 | 5 | | | | | | | 0.11 | | | | 55594 |
| W-6 | 7 | 5 | | | | | | | 0.11 | | | | 55595 |
| W-7 | 7 | 5 | | | | | | | 0.11 | | | | 55596 |
| W-8 | 7 | 5 | ↓ | ↓ | | | | | 0.11 | | | ↓ | 55597 |
| Blank | | | | | | | | | | | | | X 55598 |

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8 - Other

Sample Media Codes[2]
1-Charcoal 2-Matched Weight, 0.8um 3-PVC filter 4-M CE 0.8 um , 37 mm 5 -Ghost Wipes™ 6. Passive badge 7. Other

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COMMENTS: Please email results to Non-Responsive

* Applied to organic and inorganic analysis in cases of an emergency only. * Applied to inorganic and organic samples, SD: Applied to organic and inorganic samples 7-10 business days.

## Appendix C
## Occupational Health Risk Assessment Codes
**(Reference: DOD Letter of Instructions 6055.1)**

Occupational health risk assessment codes (RACs) are included in this report to quantify health risks to personnel. risk assessment is an expression of health hazard severity and mishap probability, described in terms of route of exposure, actual exposure, exposure limit standards, potential health effects, duration of exposure, and number of exposed personnel. The following procedure is used to determine the RACs:

**STEP 1:** This step assesses points to determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

A. Exposure Points Assessed.

| Alternate Route of Exposure | | Exposure Conditions | | | |
|---|---|---|---|---|---|
| | | <CT | Occasionally >CT Always ≤STD | >CT <STD | >STD |
| AER Possible | NO | 0 | 3 | 5 | 7 |
| | YES | 1-2 | 4 | 6 | 8 |

Notes: 1) AER = Alternate exposure route, such as skin absorption or ingestion. 2) CT = DoD component threshold that triggers surveillance actions, such as action level. 3) STD = DoD exposure limit, such as TLV or PEL. 4) > = Greater than. 5) < = Less than. 6) ≤ = Less than or equal to.

B. Medical Effects Points Assessed.

| Condition | Points |
|---|---|
| No medical effects, such as nuisance noise and nuisance odor | 0 |
| Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat | 1-2 |
| Temporary reversible illness with a variable but limited period of disability, such as metal fume fever | 3-4 |
| Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss | 5-6 |
| Permanent, severe, disabling, irreversible illness or death, such as asbestosis or lung cancer | 7-8 |

C. The HHSC is determined by totaling the points assessed and using the following guide.

| Total Points* | HHSC |
|---|---|
| 13-16 | I |
| 9-12 | II |
| 5-8 | III |
| 0-4 | IV |

* Sum of A and B above.

**STEP 2:** This step uses the following guidelines to assess points to determine the mishap probability category (MPC) for health hazards. The probability of mishap reflects the duration of exposure and the number of exposed personnel.

A. Duration of Exposure Points Assessed.

| Type of Exposure | Length of Exposure | | |
|---|---|---|---|
| | 1-8 hr/wk | >8 hr/wk/not continuous | Continuous |
| Irregular/ Intermittent | 1-2 | 4-6 | NA |
| Regular/Periodic | 2-3 | 5-7 | 8 |

B. Number of Exposed personnel Points Assessed.

| Number of Exposed Personnel | Points |
|---|---|
| <5 | 1-2 |
| 5-9 | 3-4 |
| 10-49 | 5-6 |
| >49 | 7-8 |

C. The MPC for health hazards is determined by totaling the points assessed and using the following guide:

| Total Points* | MPC |
|---|---|
| 14-16 | A |
| 10-13 | B |
| 5-9 | C |
| <5 | D |

* Sum of A and B above.

**STEP 3:** The RAC is determined using the following matrix:

| HHSC | MPC | | | |
|---|---|---|---|---|
| | A | B | C | D |
| I | 1 | 1 | 2 | 3 |
| II | 1 | 2 | 3 | 4 |
| III | 2 | 3 | 4 | 5 |
| IV | 3 | 4 | 5 | 5 |

# St. Clair Armory - Surface Lead Sampling Report

| State: | Facility: | Address: |
|---|---|---|
| MO | St Clair Armory and IFR | 375 Commercial Ave., St. Clair, MO 63077 |
| **Date:** 2/26/2015 | **IH:** Non-Responsive [redacted] | **POCs:** Non-Responsive [redacted] |

**Facility Description:** This armory was constructed in 1963. The old firing range was converted to supply cages and a storage area in the late 1990's. The old firing range is neat and orderly. The backstop, soundproofing, and baffles were not present and the range exhaust fan behind the backstop was removed. A new furnace was installed approximately 10 year ago in the old backstop area and the old exhaust fan penetration in the block wall is used for the furnace duct work. There is a transfer air louver at floor level along the wall shared with the drill floor that was blanked off. Range light fixtures were recently removed per CPT Wolf. The partial drywall ceiling extends over the COMMO to the mess cage under the angle iron on the roof deck (Figure 1). There is what appears to be ventilation equipment (possibly the range supply/make-up air a heating unit) above COMMO cage on the old firing line side (Figure 1).

| | | |
|---|---|---|
| **Community Use/Children** | N | **Description:** Not frequent; DARE Program on drill floor once per year. Family Christmas party is held elsewhere. |
| **Weapons Cleaning** | Y | **Locations:** Drill floor near supply area. |

*Partial Ceiling above Cages.*


*Ventilation Equipment above COMMO Cage.*

**Figure 1. Old Firing Range Components.**

**Summary:** The focus of this sampling effort was to conduct a baseline lead dust survey of the armory including the old firing range. Table 1 contains the sampling results, Figure 2 is a floor plan showing the sampling locations, and the analytical report is provided in Figure 3. Surface wipe sampling locations were biased toward visible settled dust (worst case) to identify contamination levels.

**Results:** The NG Pam 420-15 guideline for lead surface contamination is 200 µg/ft$^2$. Moderate contamination (above 200 but less than 1000 µg/ft$^2$) was found in the old range area on the floors, on a metal shelf in the 1st platoon cage, and on a storage cabinet in the mess cage. Gross contamination (>100,000 µg/ft$^2$) was found on the back side of the partial gypsum board ceiling above the mess cage and this contaminated space is open to the cage area below. There was also some moderate contamination found on top of the flammable cabinet on the drill floor.

**Recommendations:**

1. In the old range, HEPA vacuum/wet wipe visible dust from the floor, shelving, and storage cabinets IAW *OHARNG Occupational Health Office Guide to Cleaning Up Lead Dust on Equipment/Area* and store items in a clean area. This procedure was originally developed for Ohio and is provided as guidance for use in Missouri (see attached).

2. Due to the high contamination levels on range structural components, secure a qualified range remediation contractor experienced and licensed in lead dust abatement to clean the area above the gypsum ceiling including removing/decontaminating any original range components IAW NG Pam 420-15.

3. Thoroughly clean all food service equipment stored in the old range; dispose of any unwrapped serving items.

4. Increase housekeeping on the drill floor to include all horizontal surfaces such as the top of the flammable cabinet.

**Table 1. St. Clair IFR Surface Wipe Sampling Results for Lead.**

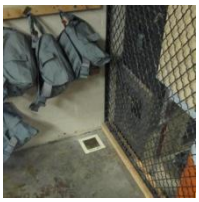
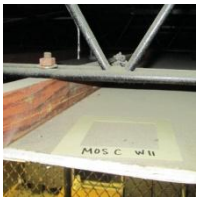
| Sample # | Location | Photo | Lead (µg/ft$^2$) |
|---|---|---|---|
| MOSC-W1 | COMMO cage on top of black storage cage |  | <91 |
| MOSC-W2 | COMMO cage on floor |  | **321** |
| MOSC-W3 | Medic cage on metal storage shelf |  | <91 |
| MOSC-W4 | CBRN cage on metal shelf |  | <91 |
| MOSC-W5 | CBRN cage on floor |  | **598** |
| MOSC-W6 | 2nd Platoon cage on locker |  | 144 |
| MOSC-W7 | 2nd Platoon cage on floor |  | **250** |
| MOSC-W8 | 1st Platoon cage on metal shelf |  | **241** |
| MOSC-W9 | Mess cage inside grey storage cabinet |  | <91 |
| MOSC-W10 | Mess cage on top of storage cabinet |  | **823** |
| MOSC-W11 | Mess cage on back side of gypsum board ceiling |  | **193,182** |
| MOSC-W12 | Old backstop area on shelf |  | <91 |
| MOSC-W13 | Old backstop area on blue mats |  | <91 |
| MOSC-W14 | Old range on floor near wall grille |  | **650** |

**Table 2. St. Clair Balance of Armory Surface Wipe Sampling Results for Lead.**

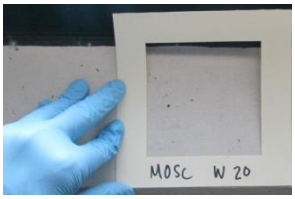
| Sample # | Location | Photo | Lead ($\mu g/ft^2$) |
|---|---|---|---|
| MOSC-W15 | Conference room on shelf |  | <91 |
| MOSC-W16 | Supply room entry way on floor |  | <91 |
| MOSC-W17 | Drill floor on flammable cabinet |   | **501** |
| MOSC-W18 | Kitchen next to microwave |  | <91 |
| MOSC-W19 | Drill floor on ice machine |  | <91 |
| MOSC-W20 | Weight room on window sill |   | <91 |

**Figure 2. St. Clair Armory Floor Plan with Sampling Locations.**

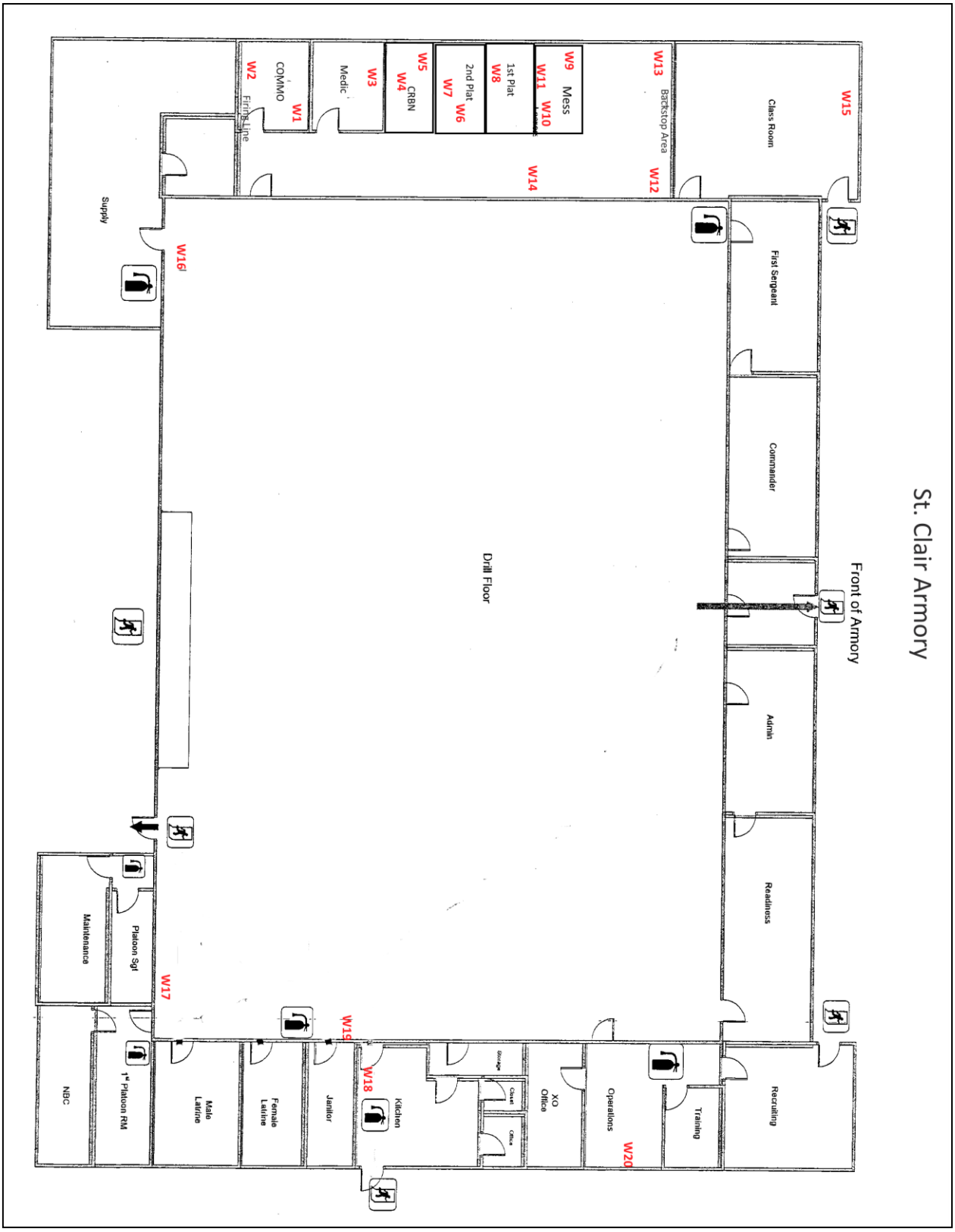


**Figure 3. Analytical Laboratory Report.**

**FOH ENVIRONMENTAL LABORATORY**

536 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## ANALYTICAL REPORT

Submitted To: USPHS / Federal Occupational Health
Denver Federal Center
Denver, CO 80225

Attention: Non-Responsive

Submitted By:

**Reference Data:** Lead

| | |
|---|---|
| Sampling Site: | NGB: St. Clair, MO (Armory) |
| Sample Media: | Ghost Wipe(s)® |
| Method Reference: | OSHA ID-121 |
| Project ID: | Project 12692 |
| DFOH Lab Nos.: | TM-15-78930 through TM-15-78951 |
| Date Received: | 02/27/15 |
| Data Analyzed: | 03/02/15 |
| Date Issued: | 03/03/15 |

The wipe samples were hot plate digested. The samples were run on a Perkin Elmer 200 flame atomic absorption spectrophotometer (AA).

General Lab Comments:
All quality control criteria have been met.
* All samples received in condition acceptable for analysis unless otherwise noted.
** Sample results have not been corrected for contamination based on the field blank or other analytical blank unless otherwise noted.

Analytical results are given on the enclosed tables. Results relate only to items tested. If you have any questions about these results, feel free to phone the Laboratory at (312) 886-0413.

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**Project 12692**
**Page 1 of 2**

**FOH ENVIRONMENTAL LABORATORY**
536 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

## LEAD on WIPE RESULTS

| SAMPLE NUMBER* | LABORATORY NUMBER | CONCENTRATION (µg) | CONCENTRATION (µg/ft²) |
|---|---|---|---|
| MOSC-W1 | TM-15-78930 | <10 | <91 |
| MOSC-W2 | TM-15-78931 | 35 | 321 |
| MOSC-W3 | TM-15-78932 | <10 | <91 |
| MOSC-W4 | TM-15-78933 | <10 | <91 |
| MOSC-W5 | TM-15-78934 | 66 | 598 |
| MOSC-W6 | TM-15-78935 | 16 | 144 |
| MOSC-W7 | TM-15-78936 | 28 | 250 |
| MOSC-W8 | TM-15-78937 | 27 | 241 |
| MOSC-W9 | TM-15-78938 | <10 | <91 |
| MOSC-W10 | TM-15-78939 | 91 | 823 |
| MOSC-W11 | TM-15-78940 | 21250 | 193182 |
| MOSC-W12 | TM-15-78941 | <10 | <91 |
| MOSC-W13 | TM-15-78942 | <10 | <91 |
| MOSC-W14 | TM-15-78943 | 71 | 650 |
| MOSC-W15 | TM-15-78944 | <10 | <91 |
| MOSC-W16 | TM-15-78945 | <10 | <91 |
| MOSC-W17 | TM-15-78946 | 55 | 501 |
| MOSC-W18 | TM-15-78947 | <10 | <91 |
| MOSC-W19 | TM-15-78948 | <10 | <91 |
| MOSC-W20 | TM-15-78949 | <10 | <91 |
| MOSC-W21 | TM-15-78950 | <10 | <91 |
| MOSC-W22** | TM-15-78951 | <10 | |

## Surface Wipe Sampling Criteria

| Metal | Acceptable Surface Level µg/ft² | Basis for Criteria |
|---|---|---|
| Lead | 200 for facilities (all surfaces) | NG Pam 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006, http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf |
| Lead | 40 for any potentially child occupied areas of facility (all surfaces); used for armories with public access, family services offices, or other routine use by children | NG Pam 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006, http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf |

## Metals in Wipe Limits
(based on one ft² sampled area)

| Analyte | Analytical Method | Method Detection Limit | Minimum Reporting Limit |
|---|---|---|---|
| Lead – Flame AA | OSHA ID-121 | 5.0 µg/ft² | 10 µg/ft² |

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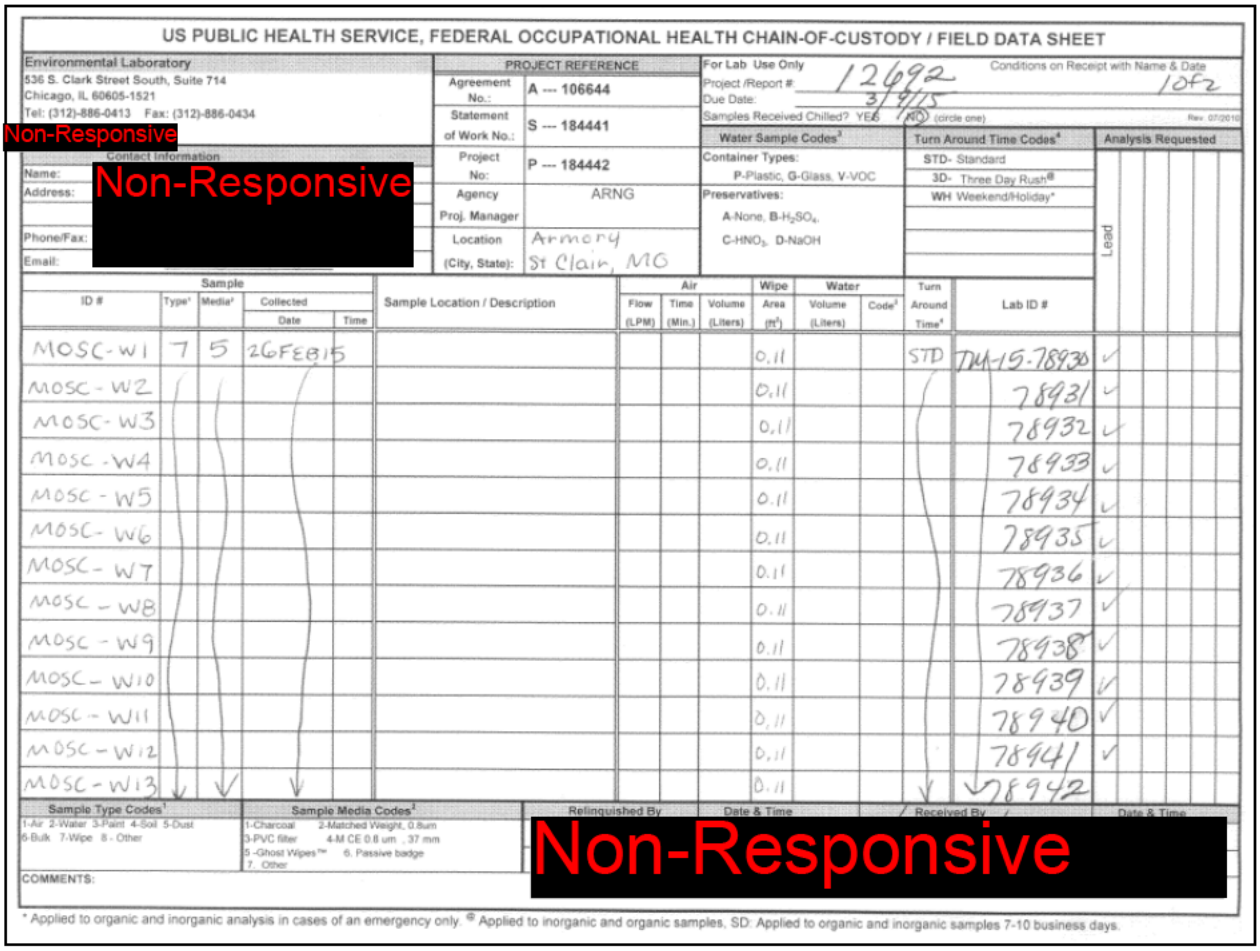
**Project 12692**
**Page 2 of 2**

# St. Clair Armory - Surface Lead Sampling Report



US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET

Environmental Laboratory
536 S. Clark Street South, Suite 714
Chicago, IL 60605-1521
Tel: (312)-886-0413 Fax: (312)-886-0434

Non-Responsive

Contact Information
Name: Non-Responsive
Address:
Phone/Fax:
Email:

PROJECT REFERENCE
Agreement No.: A --- 106644
Statement of Work No.: S --- 184441
Project No: P --- 184442
Agency Proj. Manager: ARNG
Location (City, State): Armory St Clair, MO

For Lab Use Only
Project /Report #: 12692
Due Date: 3/9/15
Samples Received Chilled? YES / NO (circle one)
Conditions on Receipt with Name & Date
1 of 2
Rev. 07/2010

Water Sample Codes[3]
Container Types:
P-Plastic, G-Glass, V-VOC
Preservatives:
A-None, B-$H_2SO_4$,
C-$HNO_3$, D-NaOH

Turn Around Time Codes[4]
STD- Standard
3D- Three Day Rush[@]
WH Weekend/Holiday*

Analysis Requested: Lead

| Sample ID # | Type[1] | Media[2] | Collected Date | Collected Time | Sample Location / Description | Air Flow (LPM) | Air Time (Min.) | Air Volume (Liters) | Wipe Area ($ft^2$) | Water Volume (Liters) | Water Code[3] | Turn Around Time[4] | Lab ID # | Lead |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MOSC-W1 | 7 | 5 | 26FEB15 | | | | | | 0.11 | | | STD | TM-15-78930 | ✓ |
| MOSC-W2 | | | | | | | | | 0.11 | | | | 78931 | ✓ |
| MOSC-W3 | | | | | | | | | 0.11 | | | | 78932 | ✓ |
| MOSC-W4 | | | | | | | | | 0.11 | | | | 78933 | ✓ |
| MOSC-W5 | | | | | | | | | 0.11 | | | | 78934 | ✓ |
| MOSC-W6 | | | | | | | | | 0.11 | | | | 78935 | ✓ |
| MOSC-W7 | | | | | | | | | 0.11 | | | | 78936 | ✓ |
| MOSC-W8 | | | | | | | | | 0.11 | | | | 78937 | ✓ |
| MOSC-W9 | | | | | | | | | 0.11 | | | | 78938 | ✓ |
| MOSC-W10 | | | | | | | | | 0.11 | | | | 78939 | ✓ |
| MOSC-W11 | | | | | | | | | 0.11 | | | | 78940 | ✓ |
| MOSC-W12 | | | | | | | | | 0.11 | | | | 78941 | ✓ |
| MOSC-W13 | | | | | | | | | 0.11 | | | | 78942 | |

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust
6-Bulk 7-Wipe 8 - Other

Sample Media Codes[2]
1-Charcoal 2-Matched Weight, 0.8um
3-PVC filter 4-M CE 0.8 um , 37 mm
5 -Ghost Wipes™ 6. Passive badge
7. Other

Relinquished By: Non-Responsive
Date & Time:
Received By:
Date & Time:

COMMENTS:

* Applied to organic and inorganic analysis in cases of an emergency only. @ Applied to inorganic and organic samples, SD: Applied to organic and inorganic samples 7-10 business days.

Updated 3/16/2015

## OHARNG's Guide to Cleaning Up Lead Dust on Equipment / Local Area

This handout provides guidance for clean up by in-house personnel. *Note: pregnant women must not clean up lead dust. Lead dust can harm a developing fetus.*

**Work Wet, Work Smart, and Work Clean. DO NOT GENERATE DUST. Do not permit other's in the work area, especially children.**

Eating, drinking, and smoking are prohibited in the work area and workers must wash their hands and face before eating, drinking, or smoking. If items to be retrieved are in an area where floor lead dust is over 200 micrograms per square foot, then ensure use of foot protection or begin with Steps 5 and 6, then go to Step 1.

Ensure employees do not leave the workplace wearing any contaminated clothing or equipment and proper hygiene is taken when leaving the work place.

### Step 1—Supplies


- Gloves
- Absorbent throw-away wipes or paper towels
- Garbage bags
- Spray bottle
- Liquid detergent
- Mop
- HEPA filter vacuum
- Water
- Bucket

Cleaning mixture: approximately 3 table-spoons of detergent in a bucket of water.

### PPE

Lead dust is very fine. Recommend use of a NIOSH approved n- or p-100 respirator*.

Recommend use of a disposable coverall suit or similar to keep dust off of regular work clothes, gloves, and foot coverings or booties. Use eye protection if there is great amount of visible dust.

If PPE is not damaged or degraded, it may be reused with the exception of booties and gloves. Don and Doff PPE per manufacturer's instructions. *Note: do not shake PPE after doffing or use compressed air to clean PPE.*

*Must be medically cleared to wear a respirator, fit tested, and trained (29 CFR 1910.134).

## OHARNG's Guide to Cleaning Up Lead Dust on Equipment / Local

### Step 2—HEPA Vacuum


Gross debris should be removed by use of a HEPA filter* vacuum. Vacuum all surface areas until no dust or residue is visible. *Note: A regular vacuum is NOT recommended. CAUTION:* do not open, change bag, or empty contents inside the armory (see manufacturer's instructions for filter change out).

### Step 3—Wet Surface or Item

After use of the HEPA vacuum, use the spray bottle with soap solution to apply a light mist to the area or item to be cleaned. If a HEPA vacuum is not available, carefully remove dirt, particles, or dust with a wet towel. Replace towels until the surface is visibly clean.

### Step 4—Clean Surface or Item

Wipe surfaces clean by applying pressure, folding the towel after each pass to ensure clean area of towel is used. Hand item to person on clean side to place cleaned item(s) on clean tarp outside room.

### Step 5—Wipe Floors

For small areas, misting the floor with the soap solution then wiping with towels is the best way to remove lead dust. If unable to wipe with towels go to Step 6 and use the mop method to clean floors.

* A HEPA vacuum has a high-efficiency particulate air filter built in that catches fine lead dust. This filter catches up to 99.97% of dust particles that are less than 0.3 microns in size. Check the vacuum or owner's manual to ensure the vacuum meets this requirement.

## OHARNG's Guide to Cleaning Up Lead Dust on Equipment / Local Area

### Step 6—Wipe Floors

Damp mop floors with the soap solution. Start at the back or dirtiest part of the room and work toward the exit door.

Prepare three (3) buckets. The first bucket will have the cleaning mixture in it. The second bucket will have only plain water. The third bucket will be empty so you can squeeze dirty water from the rag (or towel) into it after you wipe down surfaces. Change dirty water as required*.

**A)** Wet a rag or mop with the cleaning mixture (approximately 3 tablespoons of detergent in a bucket of water).

**B)** Wipe the surface with the damp rag or mop.

**C)** Rinse the used rag or mop in the bucket with the plain water.

**D)** Squeeze extra water out of the rag or mop into the empty bucket.

**E)** Repeat **Steps A** to **E** until the surfaces have been completely cleaned in one room.

**F)** Empty all buckets and fill one with clean water. Wipe down **all** of the cleaned surfaces using a clean rag and the plain water. Squeeze out extra water into one of the empty buckets.

**Repeat Steps A through F. Continue until area has been cleaned.**

### Step 7—Bag Waste

Put all of your dirty PPE, wipes, rags, paper towels, sponges, and mop heads into plastic bags for removal.

**For proper disposal contact your Environmental Office.**

### Step 8—Maintain Good Housekeeping Practices!


* Rule of thumb: 5 gallons should be used to clean no more than 1,000 square feet.