Surface Metal Monitoring Survey Report

at

Kansas Army National Guard
Lawrence Armory
200 Iowa Street
Lawrence, Kansas

Survey Date: July 23, 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

September 5, 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 (USPHS), Division of Federal Occupational Health (FOH) conducted surface metal monitoring at the Kansas Army National Guard (KSARNG) Armory located in Lawrence, Kansas. This survey was conducted in order to identify toxic metal levels on surfaces within the facility.

The Lawrence Armory was built in 1961 and is the base of operations for the 2nd Battalion 137th Infantry. The facility has about 13,624 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room, and a weapons vault. During the week, most of the activities at the armory are administrative. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the facility. The Lawrence Armory does not have a firing range. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor or in the maintenance bay. No community activities are held in the facility on a regular basis according to site personnel.

Six surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead, cadmium, and chromium. One of the six samples contained levels of cadmium equal to the surface limit adopted by NGB Industrial Hygiene. This sample was collected on the drill floor on top on an electrical box. All other sample results were less than the detection limit of the analytical method. 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 a high-efficiency particulate air (HEPA) filter vacuum, to prevent potential toxic metal contamination from ammunition that may spread to other areas of the building (RAC 2).

There is visible mold on the gypsum board walls and floor in the server room located in the maintenance bay area. The drain for the air conditioning wall unit appears to be leaking and should be repaired (RAC 2). Ensure all visible mold is removed and remediate water-damaged areas to prevent mold growth (RAC 2).

Possible termite damage was observed in the platoon office area. Based on the visual observations, the KSARNG environmental health personnel or a licensed exterminator should be consulted to identify and address any potential infestation issues (RAC2).

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 (USPHS), Division of Federal Occupational Health (FOH) conducted surface metal monitoring at the Kansas Army National Guard (KSARNG) Armory located in Lawrence, Kansas. This work was performed in accordance with the Interagency Agreement between the USPHS, FOH and the West Region of the Army National Guard. This survey was performed in order to identify toxic metal levels on surfaces within the facility. Ms. Non-Responsive, Certified Industrial Hygienist (CIH), conducted this survey on July 23, 2012.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Lawrence Armory was built in 1961 and is the base of operations for the 2nd Battalion 137th Infantry. The facility has about 13,624 square feet of floor space that encompasses a drill floor (Figure 1), maintenance bay, offices, classrooms, kitchen, latrines, supply room, and a weapons vault. During the week, most of the activities at the armory are administrative. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the facility. The Lawrence Armory does not have a firing range. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor and maintenance bay. No community activities are held in the facility on a regular basis according to site personnel.

Figure 1 – Drill Floor.

IV. Scope of Work

The purpose of the site visit was to collect surface wipe samples in the building for evaluation of toxic metal contamination. The survey included a walkthrough of the facility and interviews with employees. The survey also included a visual inspection of mold in the server room and possible termite damage in the platoon office area.

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. NGB Industrial Hygiene has adopted the sampling procedures and 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 200 micrograms per square foot (µg/ft^2) in the facility is considered significant. NG Pam 420-15 may be found at: http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf. The lead 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.

For cadmium and chromium, NGB Industrial Hygiene has adopted surface limits of 28 µg/ft^2 for cadmium and 6,970 µg/ft^2 for total chromium based on the recommendations of the Brookhaven National Laboratory, *Surface Wipe Sampling Procedure*, IH75190 Rev 18, 5/10/11. In addition, 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. The main exposure routes are through inhalation of dust and fumes and the incidental ingestion of dust from contaminated hands, food, or cigarettes.

Wipe Sampling Method

Surface samples were collected using Environmental Express Ghost™ Wipes. Surface wipe templates that encompassed 0.11 square foot (100 square centimeters) 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 with a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Results

Six surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead, cadmium, and chromium. The results are contained in Table 1 and photos of the sample locations are included in Figure 2. One of the six samples contained levels of cadmium equal to the NGB Industrial Hygiene surface limit of 28 µg/ft^2. This sample was collected on the drill floor on top of the wall-mounted electrical box adjacent to the overhead bay door. Potential adverse effects of long-term exposure to cadmium include kidney dysfunction, lung cancer, and prostate cancer. All other sample results were less than the detection limit of the analytical method. These results are consistent with the findings in the previous Industrial Hygiene survey conducted on April 14, 2009.

Table 1
Surface Wipe Sampling Results for Metals
Kansas Army National Guard
Lawrence Armory
Lawrence, Kansas
July 23, 2012

Sample #	Location	Lead (µg/ft^2)	Cadmium (µg/ft^2)	Chromium (µg/ft^2)
NGB Industrial Hygiene Surface Limit		**200**	**28**	**6,970**
W1-LAW	Supply room on electrical box mounted on wall near vault door	<91	<9.1	<91
W2-LAW	Supply room on file cabinet inside caged area	<91	<9.1	<91
W3-LAW	Drill floor on electrical box mounted on wall next to overhead bay door	<91	**28**	<91
W4-LAW	Kitchen on top of refrigerator	<91	<9.1	<91
W5-LAW	Maintenance bay on top of flammable storage cabinet	<91	11	<91
W6-LAW	Classroom on top of grey cabinet next to door	<91	<9.1	<91
Blank		ND	ND	ND

Notes: 1) µg / ft^2 = micrograms per square foot of surface area. 2) ND = none detected.
3) **Bold** indicates the concentration was "significant." 4) "<" means less than the reporting limit for the analytical method.

Figure 2 - Surface Wipe Sample Locations (below).

Sample W1-LAW

Sample W2-LAW

Sample W3-LAW

Sample W4-LAW

Sample W5-LAW

Sample W6-LAW

Recommendations:

1. 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 a high-efficiency particulate air (HEPA) filter vacuum, to prevent potential toxic metal contamination from ammunition that may spread to other areas of the building (RAC 2).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 2).

3. Continue to clean the horizontal surfaces in work and storage areas (RAC 3).

Mold and Pest Control

There is visible mold on the gypsum board walls and floor in the server room located in the maintenance bay area (Figure 3). The drain for the air conditioning wall unit appears to be leaking and should be repaired. All visible mold should be cleaned up. An airborne mold survey was conducted for this facility in April 2009; the indoor levels of mold were lower than the outdoor levels indicating there was no additional risk of exposure to those employees who worked inside the facility.

Possible termite damage was observed in the platoon office area (Figure 4). Based on the visual observations, the KSARNG environmental health personnel or a licensed exterminator should be consulted to identify and address any potential infestation issues.

Recommendations:

1. Repair all water leaks to prevent additional water damage and potential mold growth (RAC2).

2. Areas of water damage and visible mold growth should be remediated (RAC 2).

Figure 3 - Mold in the Server Room.

Figure 4 - Possible Termite Damage in the Platoon Office Area.

Technical Assistance: This report was written by Non-Responsive as a representative of FOH. Dr. Non-Responsive, Regional Industrial Hygienist at the NGB 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 Region West Industrial Hygiene Office.

Appendix A

Point of Contact (POC) List

Kansas Army National Guard State POCs

CPT Non-Responsive, Occupational Health Manager
TSgt Non-Responsive, Occupational/Industrial Hygiene Health Technician

Armory POCs

SFC Non-Responsive
SGT Non-Respons

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:

Submitted By: Non-Responsive

Reference Data: Lead, Cadmium and Chromium
Sampling Site: NGB: Lawrence, KS (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 10623
DFOH Lab Nos.: TM-12-56504 through TM-12-56510
Date Received: 07/30/12
Data Analyzed: 08/02/12 – 08/07/12
Date Issued: 08/09/12

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

FOH ENVIRONMENTAL LABORATORY
538 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)
W1 – LAW	TM-12-56504	<10	<91
W2 – LAW	TM-12-56505	<10	<91
W3 – LAW	TM-12-56506	<10	<91
W4 – LAW	TM-12-56507	<10	<91
W5 – LAW	TM-12-56508	<10	<91
W6 – LAW	TM-12-56509	<10	<91
Field Blank**	TM-12-56510	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
W1 – LAW	TM-12-56504	<1.0	<9.1
W2 – LAW	TM-12-56505	<1.0	<9.1
W3 – LAW	TM-12-56506	3.1	28
W4 – LAW	TM-12-56507	<1.0	<9.1
W5 – LAW	TM-12-56508	1.2	11
W6 – LAW	TM-12-56509	<1.0	<9.1
Field Blank**	TM-12-56510	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
W1 – LAW	TM-12-56504	<10	<91
W2 – LAW	TM-12-56505	<10	<91
W3 – LAW	TM-12-56506	<10	<91
W4 – LAW	TM-12-56507	<10	<91
W5 – LAW	TM-12-56508	<10	<91
W6 – LAW	TM-12-56509	<10	<91
Field Blank**	TM-12-56510	<10	None Detected

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft	Basis for Criteria
Cadmium	28	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Chromium	6,970	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

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ACCREDITED LABORATORY

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

Metals in Wipe Limits
(based on one ft^2 sampled area)

Analyte	Analytical Method	Method Detection Limit	Minimum Reporting Limit
Lead	OSHA ID-121	5.0 µg/ft^2	10 µg/ft^2
Cadmium	OSHA ID-121	0.5 µg/ft^2	1.0 µg/ft^2
Chromium	OSHA ID-121	5.0 µg/ft^2	10 µg/ft^2

Non-Responsive

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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
Tel: (312)-886-0413 Fax: (312)-886-0434
Non-Responsive

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

For Lab Use Only: 10623
Project /Report #:
Due Date: 8/9/12
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date
Rev. 07/2010

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

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

Analysis Requested
Lead
Cadmium
Chromium

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

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*	Lab ID #
W1-LAW	7	5	23JUL12						0.11			STD	TM-12-56504
W2-LAW													56505
W3-LAW													56506
W4-LAW													56507
W5-LAW													56508
W6-LAW													56509
Field Blank									—				56510

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

Sample Media Codes
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 / Date & Time / Received By / Date & Time
Non-Responsive

COMMENTS:
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

Surface Metal Monitoring Survey Report

at

Kansas Army National Guard
Mission Training Complex
2 Sherman Avenue
Leavenworth, Kansas

Survey Date: July 23, 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

September 5, 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 (USPHS), Division of Federal Occupational Health (FOH) conducted surface metal monitoring at the Kansas Army National Guard (KSARNG), Mission Training Complex (MTC) located in Leavenworth, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to in order to identify toxic metal levels on surfaces within the facility.

The MTC in Leavenworth Kansas, formerly known as the Battle Command Training Center, is the 35th Infantry Division Headquarters. The MTC supports battle command and staff training and includes indoor training space and two field training sites. Tasks at the MTC are primarily administrative and types of spaces include office, conference room, classroom, dining and break room, supply, weapons vault, and support space. There was a firing range at this location, but site personnel reported that the range had never been used, and that it was decommissioned in 2005. Weapons are cleaned in several locations at the facility. No community activities are held in the MTC on a regular basis. The maintenance bays are used by the State of Kansas employees only.

Seven surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead, cadmium, and chromium. One of the seven samples collected contained levels of lead and cadmium above NGB Industrial Hygiene surface limits. This sample was collected on a worktable in the weapons vault in Building 1951. All other sample results were less than the detection limit of the analytical method. 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 a high-efficiency particulate air (HEPA) filter vacuum, to prevent potential toxic metal contamination from ammunition that may spread to other areas of the building (RAC 2).

An office noise concern was identified in Building 1952, Room 111, a location that experiences noise and vibration from heating ventilating and air conditioning (HVAC) equipment and ductwork routed near the space. This room was originally designed as a storage area, but has since been converted to office space for six workers for at least a six-month period. A noise survey to assess speech interference levels is recommended to determine if room noise criteria are met. Ensure a room noise survey is conducted for the workers assigned to Building 1952, Room 111, and relocate these employees if results reveal a move is necessary (RAC 2).

II. Introduction

A surface metal monitoring survey was conducted by the U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) at the Kansas Army National Guard (KSARNG), Mission Training Complex (MTC) located in Leavenworth, Kansas. This work was performed in accordance with the Interagency Agreement between the USPHS, FOH and the West Region of the Army National Guard. This survey was performed in order to identify toxic metal levels on surfaces within the facility. Ms. Non-Respon [redacted], Certified Industrial Hygienist (CIH), conducted this survey on July 23, 2012.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The MTC in Leavenworth Kansas, formerly known as the Battle Command Training Center, is the 35th Infantry Division Headquarters. The MTC mission is to provide battle command and staff training, training support, and publications to ARNG soldiers and units prior to mobilization.

The MTC supports battle command and staff training with a 42-acre, 16 building facility that provides an indoor training space of 140,000 square feet and two field training sites that have a 2.9-acre footprint. Main buildings include: Tice Hall (Building 1951) also called the "Armory," Greenlief Hall (Building 1952), 35th Logistics Building, Facility Support Center (Building 1969), Buildings 1963 and 1964, the Tactical Operations Center (TOC) Buildings 1 through 10 (Figure 1), and the TOC Break Room (Building 1970). The buildings were constructed in phases from 1989 through 2010.

Tasks at the MTC are primarily administrative and types of spaces include office, conference room, classroom, dining and break room, supply, weapons vault, and support space. There was a firing range at this location, but site personnel reported that the range had never been used, and that it was decommissioned in 2005. Weapons reportedly are cleaned in Vault 7B (Building 1951), Classroom 24 (Building 1951), Training Room 133 (Building 1952), and occasionally in Multipurpose Room 114 (Building 152). No community activities are held in the MTC on a regular basis according to site personnel. The maintenance bays are used by the State of Kansas employees only; no vehicle maintenance is performed by KSARNG personnel.

IV. Scope of Work

The purpose of the site visit was to collect surface wipe samples in the building for evaluation of toxic metal contamination. The survey included a walkthrough of the facility and interviews with employees. The survey also included a preliminary assessment of an office noise concern.

Figure 1 - TOC Building

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. NGB Industrial Hygiene has adopted the sampling procedures and 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 200 micrograms per square foot (µg/ft^2) in the facility is considered significant. NG Pam 420-15 may be found at: http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf. The lead 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.

For cadmium and chromium, NGB Industrial Hygiene has adopted surface levels of 28 µg/ft^2 for cadmium and 6,970 µg/ft^2 for total chromium based on the recommendations of the Brookhaven National Laboratory, *Surface Wipe Sampling Procedure*, IH75190 Rev 18, 5/10/11. In addition, 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. The main exposure routes are through inhalation of dust and fumes and the incidental ingestion of dust from contaminated hands, food, or cigarettes.

Wipe Sampling Method

Surface samples were collected using Environmental Express Ghost™ Wipes. Surface wipe templates that encompassed 0.11 square foot (100 square centimeters) 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 with a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Results

Seven surface wipe samples were collected on representative surfaces throughout the facility and analyzed for lead, cadmium, and chromium. The results are contained in Table 1 and photos of the sample locations are included in Figure 2. One of the seven samples contained levels of lead and cadmium above NGB Industrial Hygiene surface Limits. This sample was collected on a worktable in Weapons Vault 7B located in Building 1951. Lead can cause damage to the nervous system, kidneys, blood forming organs, and reproductive system if inhaled or ingested in dangerous quantities. Potential adverse effects of long-term exposure to cadmium include kidney dysfunction, lung cancer, and prostate cancer. All other sample results were less than the detection limit of the analytical method. These results are consistent with the findings in the previous Industrial Hygiene survey conducted on May 26, 2009.

Recommendations:

1. 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 a high-efficiency particulate air (HEPA) filter vacuum, to prevent potential toxic metal contamination from ammunition that may spread to other areas of the building (RAC 2).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 2).

3. Continue to clean the horizontal surfaces in work and storage areas (RAC 3).

Table 1
Surface Wipe Sampling Results for Metals
Kansas Army National Guard
Mission Training Complex
Leavenworth, Kansas
July 23, 2012

Sample #	Location	Lead ($\mu g/ft^2$)	Cadmium ($\mu g/ft^2$)	Chromium ($\mu g/ft^2$)
NGB Industrial Hygiene Surface Limit		**200**	**28**	**6,970**
W1-LTH	Building 1951 Dining Area (Rooms 16 & 18) on countertop	<91	<9.1	<91
W2-LTH	Building 1951 Weapons Vault (Room 7B) on worktable	**4,264**	**55**	<91
W3-LTH	Building 1951 Classroom 24 on server boxes	<91	<9.1	<91
W4-LTH	Building 1952 Multipurpose Room 114 on table top	<91	<9.1	<91
W5-LTH	Building 1952 Training Room 133 on security system box	<91	<9.1	<91
W6-LTH	Building 1970 TOC Area Break Room on window sill	<91	<9.1	<91
W7-LTH	Building 1969 Facility Support Center Break Rooms on file cabinet	<91	<9.1	<91
Blank		ND	ND	ND

Notes: 1) µg / ft^2 = micrograms per square foot of surface area. 2) ND = none detected.
3) **Bold** indicates the concentration was "significant." 5) "<" means less than the reporting limit for the analytical method.

Figure 2 - Surface Wipe Sample Locations (below).

Sample W1-LTH

Sample W2-LTH

Sample W3-LTH

Sample W4-LTH

Sample W5-LTH

Sample W6-LTH

Sample W7-LTH

Office Noise

An office noise concern was identified in Building 1952, Room 111, a location that experiences noise and vibration from heating ventilating and air conditioning (HVAC) equipment and ductwork routed near the space. This room was originally designed as a storage area, but has since been converted to office space for six workers for at least a six-month period. Facility personnel stated an engineering consultant quoted an estimate of $370,000 for noise control ("sound masking") and the consultant reported that there is no economical way to reduce the noise.

American National Standard (ANSI) S12.2, *Criteria for Evaluating Room Noise* and NGB Industrial Hygiene recommend a balanced noise criterion curve of 35 to 40 for open-plan offices. This assessment requires the use of an octave band analyzer to collect sound level measurements at various frequencies. Speech intelligibility can be evaluated using the preferred speech interference level (PSIL). Sound level readings are collected at 500, 1000, and 2000 hertz and the average value is used to determine how difficult verbal communication is likely to be in the noise environment in terms of the distance between the speakers. The PSIL has been used to characterize office communication and the effect of noise on telephone use. For a PSIL value of greater than 60 decibels, it is difficult to use a telephone and above 76 decibels it is impossible to converse on the phone. If these recommended levels cannot be met, these workers should be relocated to another office space without disruptive noise.

Recommendation:

Ensure a room noise survey is conducted for the workers assigned to Building 1952, Room 111 and relocate these employees if results reveal a move is necessary (RAC 2).

Technical Assistance: This report was written by Non-Responsive as a representative of FOH. Dr. Non-Responsive, Regional Industrial Hygienist at the NGB 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 Region West Industrial Hygiene Office.

Appendix A

Point of Contact (POC) List

Kansas Army National Guard State POCs

CPT Non-Responsive, Occupational Health Manager
TSgt Non-Responsive, Occupational/Industrial Hygiene Health Technician

MTC POCs

CPT Non-Responsive
Non-Responsive, Maintenance

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: CDR [redacted]H

Submitted By: Ms. [redacted]

Reference Data: Lead, Cadmium and Chromium
Sampling Site: NGB: Leavenworth, KS (BCTC Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 10622
DFOH Lab Nos.: TM-12-56496 through TM-12-56503
Date Received: 07/30/12
Data Analyzed: 08/02/12 – 08/07/12
Date Issued: 08/09/12

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.

[redacted]

AIHA LAP, LLC
ACCREDITED LABORATORY

Project 10622
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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)
W1 – LTH	TM-12-56496	<10	<91
W2 – LTH	TM-12-56497	469	4264
W3 – LTH	TM-12-56498	<10	<91
W4 – LTH	TM-12-56499	<10	<91
W5 – LTH	TM-12-56500	<10	<91
W6 – LTH	TM-12-56501	<10	<91
W7 – LTH	TM-12-56502	<10	<91
Field Blank**	TM-12-56503	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
W1 – LTH	TM-12-56496	<1.0	<9.1
W2 – LTH	TM-12-56497	6.0	55
W3 – LTH	TM-12-56498	<1.0	<9.1
W4 – LTH	TM-12-56499	<1.0	<9.1
W5 – LTH	TM-12-56500	<1.0	<9.1
W6 – LTH	TM-12-56501	<1.0	<9.1
W7 – LTH	TM-12-56502	<1.0	<9.1
Field Blank**	TM-12-56503	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
W1 – LTH	TM-12-56496	<10	<91
W2 – LTH	TM-12-56497	<10	<91
W3 – LTH	TM-12-56498	<10	<91
W4 – LTH	TM-12-56499	<10	<91
W5 – LTH	TM-12-56500	<10	<91
W6 – LTH	TM-12-56501	<10	<91
W7 – LTH	TM-12-56502	<10	<91
Field Blank**	TM-12-56503	<10	None Detected

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft	Basis for Criteria
Cadmium	28	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Chromium	6,970	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

AIHA LAP, LLC ACCREDITED LABORATORY

Project 10622
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FOH ENVIRONMENTAL LABORATORY
538 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

Metals in Wipe Limits
(based on one ft^2 sampled area)

Analyte	Analytical Method	Method Detection Limit	Minimum Reporting Limit
Lead	OSHA ID-121	5.0 $\mu g/ft^2$	10 $\mu g/ft^2$
Cadmium	OSHA ID-121	0.5 $\mu g/ft^2$	1.0 $\mu g/ft^2$
Chromium	OSHA ID-121	5.0 $\mu g/ft^2$	10 $\mu g/ft^2$

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

Project 10622
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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
Tel: (312)-886-0413 Fax: (312)-886-0434
Attn: Non-Responsive

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

PROJECT REFERENCE

Agreement No.:	A 106644
Statement of Work No.:	S 163833
Project No:	P 165224
Agency Proj. Manager	ARNG
Location (City, State):	BCTC Armory Leavenworth, K

For Lab Use Only
Project /Report #: 10622
Due Date: 8/9/12
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date
Rev. 07/2010

Water Sample Codes[1]
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, Cadmium, Chromium

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 #
W1-LTH	7	5	23JUL	12					0.11			STD	TM-12-66496
W2-LTH	↓	↓	↓						↓			↓	56497
W3-LTH													56498
W4-LTH													56499
W5-LTH													56500
W6-LTH													56501
W7-LTH													56502
Field Blank	↓	↓	↓						–			↓	56503

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 OE 0.8 um , 37 mm
5 -Ghost Wipes™ 6. Passive badge
7 Other

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

COMMENTS: Please forward 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

National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P January 3, 2015

MEMORANDUM FOR: The Adjutant General for Kansas

SUBJECT: Industrial Hygiene Survey at Emporia Armory, Emporia, Kansas

At the request of the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office, Non-Responsive, Certified Industrial Hygienist (CIH), conducted a survey on November 17, 2014 at the Kansas Army National Guard Emporia Armory, 1809 Merchant St., Emporia, Kansas. The site point of contact was SGT Non-Responsive.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided by site personnel, field measurements, and conditions observed during the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel in accordance with DOD Letter of Instruction 6055.1, *DOD Safety and Occupational Health Program*. 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. RAC descriptors are as follows: 1 = Critical, 2 = Serious, 3 = Moderate, 4 = Minor, and 5 = Negligible.

The Emporia Armory was built in 1955. The facility has about 14,188 square feet of floor space. The armory is the base of operations for Delta Company 2nd 137th Combined Arms Battalion. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Site personnel reported that the Emporia Armory used the drill floor as an indoor firing range (IFR) prior to 1990. They indicated that a portable bullet trap was placed against the west wall when the drill floor was used as an IFR. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: Civil Air Patrol meetings and family holiday parties. The industrial hygiene survey included a walkthrough of the facility and interviews with employees.

Wipe samples were collected on representative surfaces in the facility and analyzed for lead. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. One of the surface wipe sample results exceeded the guideline for lead. Sample KEMW17, which was collected on a shelf in the maintenance bay, had a lead concentration of 971 $\mu g/ft^2$. <u>The following actions are required:</u>

- **Clean the horizontal surfaces where lead may be present using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).**
- **Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).**
- **When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).**

A lighting survey was conducted in the shops and offices in the Emporia Armory. Seven of the areas surveyed did not meet minimum illumination requirements. The following actions are required:

- **Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).**

For any further questions, please contact Non-Responsive .

Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Wipe Sampling	Attached
B.	Lighting	Attached

Appendix A
Lead – Wipe Sampling

Surface Area Wipe Samples

Site personnel reported that the Emporia Armory used the drill floor as an indoor firing range (IFR) prior to 1990. They indicated that a portable bullet trap was placed against the west wall when the drill floor was used as an IFR.

Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration of lead into food handling spaces. The samples were analyzed for lead by OSHA Method ID-121. The results and photos are contained in Table A-1.

The Occupational Safety and Health Administration (OSHA) requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts (29 CFR 1910). In addition, DOD has instituted a policy to minimize surface contamination levels of heavy metals (*Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, DTM 12-003, 18 April 2012).

The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table A-1, are considered significant. One of the surface wipe sample results exceeded the guideline for lead. Sample KEMW17, which was collected on a shelf in the maintenance bay, had a lead concentration of 971 $\mu g/ft^2$.

Recommendations:

1. Clean the horizontal surfaces where lead may be present by using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).

Table A-1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Emporia Armory
Emporia, Kansas
November 17, 2014

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KEMW11	Drill floor, former IFR, west wall at former bullet trap area, on floor		40
KEMW12	Drill floor, former IFR, center on floor		<10
KEMW13	Drill floor, former IFR, south wall on floor		26
KEMW14	Drill floor, former IFR, north wall on floor		<10
KEMW15	Supply room, outside of vault on floor		37
KEMW16	Field blank	N/A	ND

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KEMW17	Maintenance bay, on shelf		**971**
KEMW18	Classroom 2, on table top		<10

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

Laboratory Result Reports and Chain of Custody Sheets

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: Non-Responsive

Reference Data: Lead
Sampling Site: NGB: Emporia,KS (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 12496
DFOH Lab Nos.: TM-15-75548 through TM-15-75555
Date Received: 11/21/14
Data Analyzed: 11/24/24
Date Issued: 11/25/14

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 12496
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY

636 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)
KEMW11	TM-15-75548	40	40
KEMW12	TM-15-75549	<10	<10
KEMW13	TM-15-75550	26	26
KEMW14	TM-15-75551	<10	<10
KEMW15	TM-15-75552	37	37
KEMW16**	TM-15-75553	<10	
KEMW17	TM-15-75554	971	971
KEMW18	TM-15-75555	<10	<10

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	≥50	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
ACCREDITED LABORATORY

Project 12496
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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
Tel: (312)-886-0413 Fax: (312)-886-0434
[redacted]

Contact Information
Name: [redacted]
Address:
Phone/F
Email:

PROJECT REFERENCE

Agreement No.:	A 106641
Statement of Work No.:	S 184441
Project No:	P 184442
Agency	KSARNG
Proj. Manager	
Location (City, State):	Emporia Armory Emporia, KS

For Lab Use Only
Project /Report #: 12496
Due Date: 12/2/14
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 (ft²)	Water Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested
KEMW11	7	5	11/17/14						1				TM-15-75548	
12													75549	
13													75550	
14													75551	
15													75552	
16					Field blank				–				75553	
17									1				75554	
18													75555	

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: [redacted] Date & Time: 11-20-14 18:00 Received By: Date & Time: 11/21/14

COMMENTS: Wipes are 1 square foot

* 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 B
Lighting

Illumination levels were measured with an Extech Instruments Model 407026 Light Meter calibrated according to the manufacturer's specifications. The results were compared with the recommendations in the National Guard Bureau Facility Design Guides and the American National Standards Institute/Illuminating Engineering Society of North America RP-1 (Offices) and RP-7 (Industrial Facilities) guidelines. The results and the lighting criteria are contained in Table B-1. Seven spaces in the facility did not meet the minimum lighting level.

Table B-1
Lighting Measurements
Kansas Army National Guard
Emporia Armory
Emporia, Kansas
November 17, 2014

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
Drill floor	63-95	50	Yes
Storage	19-23	30	No
Platoon common area office	31-48	50	No
Supply room	31-36	30	Yes
Classroom 2	53-76	50	Yes
Fitness room	17-36	50	No
North classroom	23-36	50	No
Maintenance bay	9-22	50	No
Recruiter office	52-76	50	Yes
Women's latrine	38-56	30	Yes
Women's showers	3-4	30	No
Kitchen	22-56	50	Partially

Recommendations:

1. Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).

National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P May 30, 2014

MEMORANDUM FOR: The Adjutant General for Kansas

SUBJECT: Industrial Hygiene Survey at Hiawatha Armory, Hiawatha, Kansas

At the request of the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office, Non-Responsive, Certified Industrial Hygienist (CIH), conducted a survey on March 24, 2014 at the Kansas Army National Guard Hiawatha Armory, 108 North 1st Street, Hiawatha, Kansas. The site point of contact was SGT Non-Responsive.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided by site personnel, field measurements, and conditions observed during the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel in accordance with DOD Letter of Instruction 6055.1, *DOD Safety and Occupational Health Program*. 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. RAC descriptors are as follows: 1 = Critical, 2 = Serious, 3 = Moderate, 4 = Minor, and 5 = Negligible.

The Hiawatha Armory was built in 1940. The facility has about 26,768 square feet of floor space that encompasses a basement, garage, drill floor, offices on the first and second floor, classrooms, kitchen, latrines, supply room and weapons vault. The armory is the base of operations for HHB 2130th Field Artillery and Detachment 1 250th Forward Support Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to preventive maintenance checks and services on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Hiawatha Armory had an indoor firing range that has been closed and converted to a FATS simulator room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: auctions, middle school basketball practice, veterans' dinners, and karate classes. The industrial hygiene survey included a walkthrough of the facility and interviews with employees.

Wipe samples were collected on representative surfaces in the facility and analyzed for lead. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. One of the surface wipe sample results exceeded the guideline for lead. A sample collected on the floor in a storage area (which was formerly a weapons vault), had a lead concentration of 720 µg/ft^2. <u>The following actions are required:</u>

- **Clean the horizontal surfaces where lead may be present using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).**
- **Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).**
- **When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).**

A lighting survey was conducted in the shops and offices in the Hiawatha Armory. Nineteen of the areas surveyed did not meet minimum illumination requirements. The following actions are required:

- **Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).**

For any further questions, please contact Mr. Non-Responsive .

Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Wipe Sampling	Attached
B.	Lighting	Attached

Appendix A
Lead – Wipe Sampling

Surface Area Wipe Samples

Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration of lead into food handling spaces. The samples were analyzed for lead by OSHA Method ID-121. The results and photos are contained in Table A-1.

The Occupational Safety and Health Administration (OSHA) requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts (29 CFR 1910). In addition, DOD has instituted a new policy to minimize surface contamination levels of heavy metals (*Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, DTM 12-003, 18 April 2012).

The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table A-1, are considered significant. One of the surface wipe sample results exceeded the guideline for lead. Sample KHIW11, which was collected on the floor in a storage area (which was formerly a weapons vault), had a lead concentration of 720 µg/ft^2.

Table A-1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Hiawatha Armory
Hiawatha, Kansas
March 24, 2014

Sample #	Location	Photo	Lead (µg/ft^2)
Surface Guideline			**200**
KHIW11	Storage, former vault, on floor		**720**
KHIW12	Simulator room, former indoor firing range, at firing line, on floor		<91

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KHIW13	Simulator room, former indoor firing range, at bullet trap, on floor		<91
KHIW14	Supply room, outside vault, on safe		175
KHIW15	Kitchen, on counter		<91
KHIW16	Field blank	N/A	ND

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

Recommendations:

1. Clean the horizontal surfaces where lead may be present by using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).

Laboratory Result Reports and Chain of Custody Sheets

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: Hiawatha, KS (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 11672
DFOH Lab Nos.: TM-14-66821 through TM-14-66826
Date Received: 03/31/14
Data Analyzed: 03/31/14 – 04/02/14
Date Issued: 04/03/14

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 11672
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY

636 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 888-0413 FAX: (312) 888-0434

LEAD on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KHIW11	TM-14-66821	79	720
KHIW12	TM-14-66822	<10	<91
KHIW13	TM-14-66823	<10	<91
KHIW14	TM-14-66824	19	175
KHIW15	TM-14-66825	<10	<91
KHIW16**	TM-14-66826	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	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

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AIHA LAP, LLC
ACCREDITED LABORATORY

Project 11672
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)-886-0413 Fax: (312)-886-0434

Non-Responsive

PROJECT REFERENCE

Agreement No.:	A	106644
Statement Work No.:	S	180648
Project No:	P	189649
Agency		KSARNG
Proj. Manager		
Location		Hiawatha Armory
City, State):		Hiawatha, KS

For Lab Use Only
Project /Report #: 116772
Due Date: 4/7/14
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

ID #	Sample Type*	Sample Media*	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[2]	Turn Around Time*	Lab ID #
KHIW11	7	5	3/24	14					100 cm^2				TM-14-06821
12													06822
13													06823
14													06824
15													06825
16	↓	↓	↓		Field Blank				-				06826

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

Sample Media Codes
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

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.

Appendix B
Lighting

Illumination levels were measured with an Extech Instruments Model 407026 Light Meter calibrated according to the manufacturer's specifications. The results were compared with the recommendations in the National Guard Bureau Facility Design Guides and the American National Standards Institute/Illuminating Engineering Society of North America RP-1 (Offices) and RP-7 (Industrial Facilities) guidelines. The results and the lighting criteria are contained in Table B-1. Nineteen spaces in the facility did not meet the minimum lighting level.

Table B-1
Lighting Measurements
Kansas Army National Guard
Hiawatha Armory
Hiawatha, Kansas
March 24, 2014

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
Basement, Storage, former vault	38-45	30	Yes
Basement, room 4, Custodial storage	21-23	30	No
Basement, Boiler room	20-37	30	Partially
Basement, Utility storage	2-16	30	No
Basement, Female locker room	26-39	30	Partially
Basement, Male locker room	29-33	30	Partially
Basement, Supply room	52-55	30	Yes
Basement, Kitchen	13-57	50	Partially
Basement, FATS Simulator	14-46	30	Partially
First floor, room 23, HHB readiness room	68-76	50	Yes
First floor, room 24, Office	26-29	50	No
First floor, room 26, Family assistance office	33-46	50	No
First floor, room 27, Office	36-73	50	Partially
First floor, east Garage and storage	3-10	30	No
First floor, center Garage	1-7	30	No
First floor, west Garage	1-6	30	No
First floor, Drill floor	30-36	50	No
First floor, Men's latrine	32-65	30	Yes
First floor, room 22, Handicapped latrine	39-53	30	Yes
First floor, Storage	53-61	30	Yes
First floor, Female latrine	39-75	30	Yes
Second floor, Regimental room	29-38	50	No
Second floor, S1 shop office	66-94	50	Yes
Second floor, Classroom	24-62	50	Partially
Second floor, room 37, FDC office	52-66	50	Yes
Second floor, room 35, Battalion commander's	38-56	50	Partially

office			
Second floor, Men's latrine	54-60	30	Yes
Second floor, room 39, Storage	29-54	30	Partially
Second floor, room 34, Training room office	36-122	50	Partially
Second floor, room 30, Administrative officer's office	53-119	50	Yes
Copy room	90-96	50	Yes

Recommendations:

1. Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).

National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P June 24, 2014

MEMORANDUM FOR: The Adjutant General for Kansas

SUBJECT: Industrial Hygiene Survey at Kansas City Armory, Kansas City, Kansas

At the request of the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office, Non-Responsive, Certified Industrial Hygienist (CIH), conducted a survey on May 8, 2014 at the Kansas Army National Guard Kansas City Armory, 100 S. 20th St, Kansas City, Kansas. The site points of contact were MAJ Non-Responsive and SFC Non-Responsive.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided by site personnel, field measurements, and conditions observed during the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel in accordance with DOD Letter of Instruction 6055.1, *DOD Safety and Occupational Health Program*. 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. RAC descriptors are as follows: 1 = Critical, 2 = Serious, 3 = Moderate, 4 = Minor, and 5 = Negligible.

The Kansas City Armory was built in 1956. The facility has 54,324 square feet of floor space. The armory is the base of operations for HHQ 137th Infantry, Detachment 1-778, and 369th Signal Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Kansas City Armory had an indoor firing range (IFR) that was closed in 1984 and converted to a supply room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: Starbase, dances, birthdays parties, auctions, fundraisers, and wedding receptions. The industrial hygiene survey included a walkthrough of the facility and interviews with employees.

Wipe samples were collected on representative surfaces in the facility and analyzed for lead. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. Two of the surface wipe sample results exceeded the guideline for lead. A sample collected on the floor in the supply room (at the bullet trap area in the former IFR) had a lead concentration of 341 $\mu g/ft^2$. A sample collected on the floor in the supply room (midrange in the former IFR) had a lead concentration of 4,907 $\mu g/ft^2$. The following actions are required:

- **The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2 (RAC 2). This is a repeat of a finding identified in an industrial hygiene survey that was performed on April 15, 2013.**

- **Clean the horizontal surfaces where lead may be present using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).**

- **Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).**

- **When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).**

A lighting survey was conducted in the shops and offices in the Kansas City Armory. Twenty-five of the areas surveyed did not meet minimum illumination requirements. The following actions are required:

- **Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).**

At the request of site personnel a walk through and visual inspection for water damage and mold was performed. Water damage and mold growth were observed on ceiling tiles in the west end of the John W. Briedenthal Hall, in the first floor kitchen area and in the basement kitchen and dining area. The following actions are required:

- **Repair roofs and walls to prevent additional water leakage (RAC 2).**

- **Repair the leaking cast iron waste pipe in the basement kitchen and dining area (RAC 2).**

- **Perform mold abatement. Engage a licensed mold abatement contractor to perform the mold abatement. Mold damaged materials should be removed and discarded or cleaned up to remove mold (RAC 2).**

- **Perform periodic inspections to identify sources of water damage. Conduct repairs of water damaged areas as soon as they are identified (RAC 2).**

During the walkthrough of the facility, several individuals raised concerns regarding the quality of the drinking water provided in the armory. The following actions are required:

- **Test the drinking water in the armory to ensure that it meets applicable EPA drinking water criteria (RAC 2).**

For any further questions, please contact Mr. Non-Responsive [redacted].

Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Wipe Sampling	Attached
B.	Lighting	Attached
C.	Water Damage and Mold	Attached

Appendix A
Lead – Wipe Sampling

Surface Area Wipe Samples

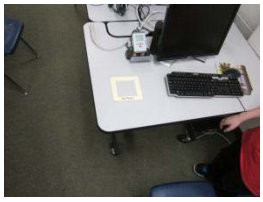
Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration of lead into food handling spaces. The samples were analyzed for lead by OSHA Method ID-121. The results and photos are contained in Table A-1.

The Occupational Safety and Health Administration (OSHA) requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts (29 CFR 1910). In addition, DOD has instituted a new policy to minimize surface contamination levels of heavy metals (*Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, DTM 12-003, 18 April 2012).

The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table A-1, are considered significant. Two of the surface wipe sample results exceeded the guideline for lead. Sample KA7W24, which was collected on the floor in the supply room (at the bullet trap area in the former IFR) had a lead concentration of 341 µg/ft^2. Sample KA7W25, which was collected on the floor in the supply room (midrange in the former IFR) had a lead concentration of 4,907 µg/ft^2.

The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2. This is a repeat of a finding identified in an industrial hygiene survey that was performed on April 15, 2013.

Table A-1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Kansas City Armory
Kansas City, Kansas
May 8, 2014

Sample #	Location	Photo	Lead (µg/ft^2)
Surface Guideline			**200**
KA7W21	Starbase classroom, on desktop		<91

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KA7W22	Kitchen, center island shelf, on lower shelf		<91
KA7W23	Drill floor, next to stage, on floor		<91
KA7W24	Supply room (bullet trap area in former IFR) on floor		**341**
KA7W25	Supply room (midrange in former IFR) on floor		**4,907**
KA7W26	Field blank	N/A	ND

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

Recommendations:

1. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2 (RAC 2). This is a repeat of a finding identified in an industrial hygiene survey that was performed on April 15, 2013.

2. Clean the horizontal surfaces where lead may be present by using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).

3. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).

4. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).

Laboratory Result Reports and Chain of Custody Sheets

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:

Submitted By: Non-Responsive

Reference Data: Lead
Sampling Site: NGB: Kansas City, KS (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 11781
DFOH Lab Nos.: TM-14-67732 through TM-14-67737
Date Received: 05/09/14
Data Analyzed: 05/12/14 – 05/13/14
Date Issued: 05/13/14

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

FOH ENVIRONMENTAL LABORATORY

636 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 888-0413 FAX: (312) 888-0434

LEAD on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KA7W21	TM-14-67732	<10	<91
KA7W22	TM-14-67733	<10	<91
KA7W23	TM-14-67734	<10	<91
KA7W24	TM-14-67735	38	341
KA7W25	TM-14-67736	540	4907
KA7W26**	TM-14-67737	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	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 ACCREDITED LABORATORY

Project 11781
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)-886-0413 Fax: (312)-886-0434

Non-Responsive

PROJECT REFERENCE
Agreement No.: A 1066644
Statement of Work No.: S 180648
Project No: P 189649
Agency Contract Manager: KSARNG
Location (City, State): Kansas City Armory, Kansas City, KS

For Lab Use Only
Project /Report #: 11781
Due Date: 5/16/14
Samples Received Chilled? YES / NO (circle one)
Conditions on Receipt with Name & Date

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

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

Analysis Requested: LEAD

			Date	Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (ft^2)	Water Volume (Liters)	Code*	Turn Around Time*	Lab ID #
KA7W21	7	5	5/8/14						100 cm^2				TM-14-67732
22													67733
23													67734
24													67735
25													67736
26					Field blank				-				67737

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

Sample Media Codes: 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.

Appendix B
Lighting

Illumination levels were measured with an Extech Instruments Model 407026 Light Meter calibrated according to the manufacturer's specifications. The results were compared with the recommendations in the National Guard Bureau Facility Design Guides and the American National Standards Institute/Illuminating Engineering Society of North America RP-1 (Offices) and RP-7 (Industrial Facilities) guidelines. The results and the lighting criteria are contained in Table B-1. Twenty-five spaces in the facility did not meet the minimum lighting level.

Table B-1
Lighting Measurements
Kansas Army National Guard
Kansas City Armory
Kansas City, Kansas
May 8, 2014

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
Starbase office	45-84	50	Partially
Starbase classroom	46-60	50	Partially
Storage utility room	11-25	30	No
Briedenthal hall classroom	53-57	50	Yes
CMC rental office	42-61	50	Partially
Kitchen	14-43	50	No
Janitor closet	10-12	30	No
Women's restroom	26-29	30	No
Men's restroom	42-46	30	Yes
Room 8, Office	35-58	50	Partially
Room 7, Office	53-58	50	Yes
Room 6, Office	50-65	50	Yes
Small conference area	64-72	50	Yes
Room 5C, Office	55-82	50	Yes
Basement kitchen dining area	41-51	30	Yes
Basement kitchen	23-57	50	Partially
Behind west drill floor storage	13-15	30	No
Drill Floor	40-61	50	Partially
Room 10, Office	55-82	50	Yes
Room 9, Office	52-63	50	Yes
SGT High Office	92-94	50	Yes
Northside conference room	32-68	50	Partially
Recruiting office	13-16	50	No
Foyer janitor closet	31-35	30	Yes
Foyer women's restroom	40-56	30	Yes
Foyer men's restroom	16-58	30	Partially

Foyer	17-26	30	No
Basement classroom	18-24	50	No
Basement HHC supply room	31-36	30	Yes
Basement 369 supply room	16-25	30	No*
Basement SM office	60-71	50	Yes
Weight room	23-31	50	No
Vault 3, HHC	3-4	30	No
Vault 4	14-32	30	No
Vault 5	15-32	30	Partially
Boiler room	5-13	30	No
Basement women's restroom	30-52	30	Yes
Basement 778 locker room	12-20	30	No
Upstairs area in 778 locker room	0-20	30	No*
Garage basement	7-33	30	Partially

* = burned out light bulbs should be replaced

Recommendations:

1. Increase the illumination levels in the facility areas that did not meet minimum illumination requirements. Task lighting may be provided in office areas to meet lighting requirements (RAC 4).

Appendix C
Water Damage and Mold

At the request of site personnel a walk through and visual inspection for water damage and mold was performed. Water damage and mold growth were observed on ceiling tiles in the west end of the John W. Briedenthal Hall, in the first floor kitchen area, and in the basement kitchen and dining area (Figures C-1 to C-4).

Recommendations:

1. Repair roofs and walls to prevent additional water leakage (RAC 2).

2. Repair the leaking cast iron waste pipe in the basement kitchen and dining area (RAC 2).

3. Perform mold abatement. Engage a licensed mold abatement contractor to perform the mold abatement. Mold damaged materials should be removed and discarded or cleaned up to remove mold (RAC 2).

4. Perform periodic inspections to identify sources of water damage. Conduct repairs of water damaged areas as soon as they are identified (RAC 2).

Figure C–1 Water Damage and Mold on Ceiling Tiles in the West End of the John W. Briedenthal Hall

Figure C-2 Water Damage and Mold on Ceiling Tiles in First Floor Kitchen Area

Figure C-3 Water Damage and Mold on Ceiling Tiles in Basement Kitchen and Dining Area - Beneath Leaking Cast Iron Waste Pipe

Figure C-4 Water Damage and Mold on Ceiling Tiles in Basement Kitchen and Dining Area

National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P June 24, 2014

MEMORANDUM FOR: The Adjutant General for Kansas

SUBJECT: Industrial Hygiene Survey at Lenexa Armory, Lenexa, Kansas

At the request of the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office, Non-Responsive, Certified Industrial Hygienist (CIH), conducted a survey on May 9, 2014 at the Kansas Army National Guard Lenexa Armory, 18200 87th Street, Lenexa, Kansas. The site point of contact was SFC Non-Responsive.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided by site personnel, field measurements, and conditions observed during the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel in accordance with DOD Letter of Instruction 6055.1, *DOD Safety and Occupational Health Program*. 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. RAC descriptors are as follows: 1 = Critical, 2 = Serious, 3 = Moderate, 4 = Minor, and 5 = Negligible.

The Lenexa Armory was built in 1988 and it has about 32,059 square feet of floor space. The armory is the base of operations for the 161st Field Artillery; Charlie Company 2137th Infantry; the Medical Detachment Center; RSP Recruiting; and a family assistance office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The Lenexa Armory has an indoor firing range that is leased to the city of Lenexa and is not used by the National Guard. The firing range has an outside access door for the city of Lenexa personnel who use the range.

The armory is available for rental for community activities that include: middle school and high school volleyball practice, children's karate classes, baseball tryouts, and banquets. The industrial hygiene survey included a walkthrough of the facility and interviews with employees.

Wipe samples were collected on representative surfaces in the facility and analyzed for lead. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. None of the surface wipe sample results exceeded the guideline for lead. The following actions are required:

- **Clean the horizontal surfaces where lead may be present using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 3).**
- **Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).**
- **When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).**

A lighting survey was conducted in the shops and offices in the Lenexa Armory. Thirty-two of the areas surveyed did not meet minimum illumination requirements. The following actions are required:

- **Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).**

At the request of site personnel a walk through and visual inspection for water damage and mold was performed. Water damage, mold and peeling paint were observed in the 1-161 orderly room and the RSP storage area. The following actions are required:

- **Repair roofs and walls to prevent additional water leakage (RAC 2).**
- **Perform mold abatement. Engage a licensed mold abatement contractor to perform the mold abatement. Mold damaged materials should be removed and discarded or cleaned up to remove mold (RAC 2).**
- **Perform periodic inspections to identify sources of water damage. Conduct repairs of water damaged areas as soon as they are identified (RAC 2).**

For any further questions, please contact Mr. Non-Responsive .

Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Wipe Sampling	Attached
B.	Lighting	Attached
C.	Water Damage and Mold	Attached

Appendix A
Lead – Wipe Sampling

Surface Area Wipe Samples

Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration of lead into food handling spaces. The samples were analyzed for lead by OSHA Method ID-121. The results and photos are contained in Table A-1.

The Occupational Safety and Health Administration (OSHA) requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts (29 CFR 1910). In addition, DOD has instituted a new policy to minimize surface contamination levels of heavy metals (*Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, DTM 12-003, 18 April 2012).

The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table A-1, are considered significant. None of the surface wipe sample results exceeded the guideline for lead.

Table A-1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Lenexa Armory
Lenexa, Kansas
May 9, 2014

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KLAW21	Room 131, Weight room, on treadmill		<91
KLAW22	Family assistance office, on shelf		<91

Sample #	Location	Photo	Lead (µg/ft^2)
Surface Guideline			**200**
KLAW23	Kitchen, on bottom shelf of warming table		<91
KLAW24	Gym floor, opposite of kitchen area, along center wall		<91
KLAW25	Vault, on table		<91
KLAW26	Field blank	N/A	ND

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.

Recommendations:

1. Clean the horizontal surfaces where lead may be present by using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 3).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).

Laboratory Result Reports and Chain of Custody Sheets

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: Lenexa, KS (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 11785
DFOH Lab Nos.: TM-14-67756 through TM-14-677561
Date Received: 05/12/14
Data Analyzed: 05/13/14 – 05/14/14
Date Issued: 05/14/14

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

FOH ENVIRONMENTAL LABORATORY

636 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 888-0413 FAX: (312) 888-0434

LEAD on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KLAW21	TM-14-67756	<10	<91
KLAW22	TM-14-67757	<10	<91
KLAW23	TM-14-67758	<10	<91
KLAW24	TM-14-67759	<10	<91
KLAW25	TM-14-67760	<10	<91
KLAW26**	TM-14-67761	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	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 ACCREDITED LABORATORY

Project 11785
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)-886-0413 Fax: (312)-886-6434

Non-Responsive

PROJECT REFERENCE

Agreement No.:	A 106641
Statement of Work No.:	S 180648
Project No:	P 189649
Agency Proj. Manager	KSARNG
Location (City, State):	LENEXA ARMORY/ LENEXA, KS

For Lab Use Only
Project /Report #: 11785
Due Date: 5/14/14
Samples Received Chilled? YES / NO (circle one)
Conditions on Receipt with Name & Date
Rev. 07/2010

Water Sample Codes

Container Types:
P-Plastic, G-Glass, V-VOC

Preservatives:
A-None, B-H_2SO_4,
C-HNO_3, D-NaOH

Turn Around Time Codes*

STD- Standard
3D- Three Day Rush@
WH Weekend/Holiday*

Analysis Requested

LEAD

ID #	Type¹	Media²	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (ft²)	Water Volume (Liters)	Water Code³	Turn Around Time*	Lab ID #
KLAW 21	7	5	9 MAY 14						100cm²				TM-14-607758
22													607757
23													607758
24													607759
25													607760
26					FIELD BLANK				—				607761

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

Sample Media Codes
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 / Date & Time / Received By / Date & Time

Non-Responsive

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.

Appendix B
Lighting

Illumination levels were measured with an Extech Instruments Model 407026 Light Meter calibrated according to the manufacturer's specifications. The results were compared with the recommendations in the National Guard Bureau Facility Design Guides and the American National Standards Institute/Illuminating Engineering Society of North America RP-1 (Offices) and RP-7 (Industrial Facilities) guidelines. The results and the lighting criteria are contained in Table B-1. Thirty-two spaces in the facility did not meet the minimum lighting level.

Table B-1
Lighting Measurements
Kansas Army National Guard
Lenexa Armory
Lenexa, Kansas
May 9, 2014

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
Men's latrine	22-55	30	Partially
Men's shower	1-2	30	No*
Women's latrine	39-42	30	Yes
Women's shower	0	30	No*
Foyer	5-10	30	No*
Room 126, Classroom A	51-63	50	Yes
Room 128, Classroom B	18-21	50	No
Room 131, Weight room	23-38	50	No
Charlie company locker room	0-8	30	No*
Room 133, Family assistance	31-42	50	No
Room 134, 1-61 Orderly room	28-31	50	No
1-61 Locker room	7-9	30	No*
Room 101, Recruiting office	45-66	50	Partially
Room 101, Recruiting office	24-32	50	No
Room 102, RSP office	40-63	50	Partially
Room 103, Charlie company orderly room	46-84	50	Partially
Room 103, Charlie company office	84-88	50	Yes
Mail room	60-68	50	Yes
Room 106, Distance learning center	34-55	50	Partially*
Room 106, Storage area	34-37	30	Yes
Room 108, Facility maintenance	8-16	30	No
Room 108, Facility electrical room	27-29	30	No
Room 108, Boiler room	19-21	30	No
Facility storage	11-27	30	No
Kitchen, wash area	41-46	50	No
Kitchen, pantry storage	20-32	30	Partially

Room 109, Park and Rec storage	14-25	30	No
Drill floor	56-61	50	Yes
Maintenance bay	19-23	50	No
Charlie company maintenance tool room	23-25	30	No
North cold storage	0	30	No
UC 1-635 Ammo supply room	13-22	30	No
Vault	8-91	30	Partially
Supply office	55-59	50	Yes
Maintenance bay, 1st platoon office/storage	19-25	50	No
Maintenance bay, latrine	32-51	30	Yes
3rd PLT office	45-49	50	No
RSP storage office	15-21	50	No
AFIST storage building	20-52	30	Partially
AFIST office/storage	43-54	50	Partially

Notes: 1) * = Burned out light bulbs should be replaced

Recommendations:

1. Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).

Appendix C
Water Damage and Mold

At the request of site personnel a walk through and visual inspection for water damage and mold was performed. Water damage, mold and peeling paint were observed in the 1-161 orderly room and the RSP storage area (Figures C-1 and C-2).

Recommendations:

1. Repair roofs and walls to prevent additional water leakage (RAC 2).

2. Perform mold abatement. Engage a licensed mold abatement contractor to perform the mold abatement. Mold damaged materials should be removed and discarded or cleaned up to remove mold (RAC 2).

3. Perform periodic inspections to identify sources of water damage. Conduct repairs of water damaged areas as soon as they are identified (RAC 2).

Figure C-1 – Water Damage and Mold on Ceiling Tile in 1-161 Orderly Room

Figure C-2 – Water Damage and Efflorescence on Cement Block Wall in RSP Storage Room

National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P January 3, 2015

MEMORANDUM FOR: The Adjutant General for Kansas

SUBJECT: Industrial Hygiene Survey at Wichita South Armory, Wichita, Kansas

At the request of the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office, Non-Responsive, Certified Industrial Hygienist (CIH), conducted a survey on November 18, 2014 at the Kansas Army National Guard Wichita South Armory, 3617 S. Seneca, Wichita, Kansas. The site points of contact were Non-Responsive.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided by site personnel, field measurements, and conditions observed during the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel in accordance with DOD Letter of Instruction 6055.1, *DOD Safety and Occupational Health Program*. 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. RAC descriptors are as follows: 1 = Critical, 2 = Serious, 3 = Moderate, 4 = Minor, and 5 = Negligible.

The Wichita South Armory was built in 1958 and it has about 24,261 square feet of floor space. The armory is the base of operations for Detachment 1 HQ, HHC, 2nd Battalion 137th Infantry, 218th Heavy Separate Brigade, 24th Infantry Division, and Detachment 2 731st Medium Truck Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Wichita South Armory had an indoor firing range that was closed in the late 1980s and converted to a locker room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: birthdays, family reunions, elementary and high school basketball practice, Junior ROTC, and an elementary school children's summer camp. The industrial hygiene survey included a walkthrough of the facility and interviews with employees.

Wipe samples were collected on representative surfaces in the facility and analyzed for lead. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. One of the surface wipe sample results exceeded the guideline for lead. Sample KWSW25, which was collected on the floor in vault 1, had a lead concentration of 240 $\mu g/ft^2$. <u>The following actions are required:</u>

- **Clean the horizontal surfaces where lead may be present using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).**
- **Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).**
- **When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).**

A lighting survey was conducted in the shops and offices in the Wichita South Armory. Nineteen of the areas surveyed did not meet minimum illumination requirements. The following actions are required:

- **Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).**

For any further questions, please contact Mr. Non-Responsive .

Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Wipe Sampling	Attached
B.	Lighting	Attached

Appendix A
Lead – Wipe Sampling

Surface Area Wipe Samples

The Wichita South Armory had an indoor firing range (IFR) that was closed in the late 1980s and converted to a locker room.

Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration of lead into food handling spaces. The samples were analyzed for lead by OSHA Method ID-121. The results and photos are contained in Table A-1.

The Occupational Safety and Health Administration (OSHA) requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts (29 CFR 1910). In addition, DOD has instituted a policy to minimize surface contamination levels of heavy metals (*Control and Management of Surface Accumulations from Lead, Hexavalent Chromium, and Cadmium Operations*, DTM 12-003, 18 April 2012).

The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table A-1, are considered significant. One of the surface wipe sample results exceeded the guideline for lead. Sample KWSW25, which was collected on the floor in vault 1, had a lead concentration of 240 $\mu g/ft^2$.

Recommendations:

1. Clean the horizontal surfaces where lead may be present by using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items (RAC 3).

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition (RAC 2).

Table A-1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Wichita South Armory
Wichita, Kansas
November 18, 2014

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KWSW21	Locker room, former IFR, at bullet trap, NW corner on floor		48
KWSW22	Locker room, former IFR, at bullet trap, SW corner on floor		177
KWSW23	Locker room, former IFR, midrange on floor		13
KWSW24	Locker room, former IFR, at firing line on floor		<10
KWSW25	Vault 1, on floor		**240**
KWSW26	Vault 3, on floor		<10

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
KWSW27	Kitchen, on counter top		<10
KWSW28	Drill floor, center on floor		<10
KWSW29	Classroom, on desktop		<10
KWSW30	Field blank	N/A	ND

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

Laboratory Result Reports and Chain of Custody Sheets

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: Wichita, KS (South Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 12494
DFOH Lab Nos.:	TM-15-75528 through TM-15-75537
Date Received:	11/21/14
Data Analyzed:	11/24/24
Date Issued:	11/25/14

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

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY
LEAD

Project 12494
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY

636 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)
KWSW21	TM-15-75528	48	48
KWSW22	TM-15-75529	177	177
KWSW23	TM-15-75530	13	13
KWSW24	TM-15-75531	<10	<10
KWSW25	TM-15-75532	240	240
KWSW26	TM-15-75533	<10	<10
KWSW27	TM-15-75534	<10	<10
KWSW28	TM-15-75535	<10	<10
KWSW29	TM-15-75536	<10	<10
KWSW30**	TM-15-75537	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	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 ACCREDITED LABORATORY

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 [redacted]

PROJECT REFERENCE

Agreement No.:	A 106644
Statement of Work No.:	S 184441
Project No:	P 184442
Agency Proj. Manager	KSARNG
Location (City, State):	Wichita South Armory Wichita, KS

For Lab Use Only
Project /Report #: 12494
Due Date: 12/2/14
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*

ID #	Sample Type[1]	Sample Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (ft²)	Water Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested: Lead
KWSW21	7	5	11/18/14						1				TH15 75528	↓
22													75529	
23													75530	
24													75531	
25													75532	
26													75533	
27													75534	
28													75535	
29													75536	
✓ 30	✓	✓	✓		Field blank				–				✓ 75537	✓

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	Date & Time	Received By	Date & Time
Non-Responsive [redacted]			

COMMENTS: wipes are 1 square foot

* 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 B
Lighting

Illumination levels were measured with an Extech Instruments Model 407026 Light Meter calibrated according to the manufacturer's specifications. The results were compared with the recommendations in the National Guard Bureau Facility Design Guides and the American National Standards Institute/Illuminating Engineering Society of North America RP-1 (Offices) and RP-7 (Industrial Facilities) guidelines. The results and the lighting criteria are contained in Table B-1. Nineteen spaces in the facility did not meet the minimum lighting level.

Table B-1
Lighting Measurements
Kansas Army National Guard
Wichita South Armory
Wichita, Kansas
November 18, 2014

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
BCO Supply	18-36	30	Partially
Vault	46-48	30	Yes
Storage	33-35	30	Yes
Garage	27-37	30	Partially
Front office 4	30-39	50	No
Front office 3	35-37	50	No
Recruiter office	15-30	50	No
Office 1	54-61	50	Yes
Office 1 storage	26-27	30	No
Classroom	26-28	50	No
Bunk Room	88-90	50	Yes
Men's latrine	12-70	30	Partially
Women's latrine	84-93	30	Yes
Kitchen	73-84	50	Yes
Kitchen dishwashing area	50-58	50	Yes
Men's locker room*	0	30	No
BCO orderly room	51-76	50	Yes
Training NCO office	41-55	50	Partially
Storage	30-49	30	Yes
Company Commander Office	50-56	50	Yes
Library	59-83	50	Yes
1SGT office	53-55	50	Yes
Recruiter NCIC office	58-62	50	Yes
FSC office	19-51	50	Partially
Room 1	42-62	50	Partially
Room 3	34-36	50	No

Room 4	50-64	50	Yes
Room 5	82-87	50	Yes
Vault	17-23	30	No
Mail room	36-44	50	No
Distance learning room	28-46	50	No
Simulation Room	26-32	30	Partially
Classroom in Emergency Management Building*	40-70	50	Partially
Det Storage	22-53	30	Partially
Latrine in Emergency Management Building	36-39	30	Yes

Notes: 1) * = burned out light bulbs should be replaced

Recommendations:

1. Increase the illumination levels in the facility areas that did not meet minimum illumination requirements (RAC 4).

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Emporia Armory
1809 Merchant Street
Emporia, Kansas

Survey date: July 2, 2009

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

September 6, 2009

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Emporia Armory, located in Emporia Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Emporia Armory was built in 1955. The facility has about 14,188 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor, brick walls that are 20 feet high and a sloped roof that is supported by exposed metal trusses. The maintenance bay area has a concrete floor, concrete block or brick walls that are 16 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpet or tile floors, gypsum walls and suspended ceilings. The exterior of the building is brick veneer.

The Emporia Armory is the base of operations for 2nd Battalion 137th Delta Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Emporia Armory does not have a firing range. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that may include: a Civil Air Patrol office, basketball practice, private sales, and food depositories.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KSEMW3 which was collected on a storage rack in the vault had a lead concentration of 486 ug/ft^2. The Emporia Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Emporia Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KSEMW3 which was collected on a storage rack in the vault had a lead concentration of 486 ug/ft^2.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Emporia Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Emporia Armory, located in Emporia, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Mr. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on July 2, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Emporia Armory was built in 1955. The facility has about 14,188 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor, brick walls that are 20 feet high and a sloped roof that is supported by exposed metal trusses. The maintenance bay area has a concrete floor, concrete block or brick walls that are 16 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpet or tile floors, gypsum walls and suspended ceilings. The exterior of the building is brick veneer.

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The armory is available for rental for community activities that may include: a Civil Air Patrol office, basketball practice, private sales, and food depositories.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Emporia Armory

VI. Findings, Discussion, and Recommendations

The Emporia Armory is the base of operations for 2nd Battalion 137th Delta Company. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KSEMW3 which was collected on a storage rack in the vault had a lead concentration of 486 ug/ft^2. The Emporia Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Emporia Armory
Emporia, Kansas
July 2, 2009

Analyte	KSEMW1 (ug/ft^2) Recruiter's Office – on Desktop	KSEMW2 (ug/ft^2) Kitchen – on Countertop	KSEMW3 (ug/ft^2) Vault – on Storage Rack
Lead	<91	<91	**486**
Cadmium	<9.1	<9.1	28
Chromium	<91	<91	<91

Analyte	KSEMW4 (ug/ft^2) Drill Floor – on Floor – Center of Room	KSEMW5 (ug/ft^2) Maintenance Bay – on Floor in Center of Room	KSEMW6 (ug/ft^2) Field Blank
Lead	<91	<91	ND
Cadmium	<9.1	38	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area.
2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)


Sample KSEMW1


Sample KSEMW2

Sample KSEMW3

Sample KSEMW4

Sample KSEMW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Emporia Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Emporia Armory
Emporia, Kansas
July 2, 2009

Location	Illumination (foot candles)
Drill Floor	25
Weight Room	38
Kitchen	32
Maintenance Bay	20
Homeland Defense Office	66
State LOD Office	62
Orderly Room	32
Readiness Office	64
Recruiter's Office	85
Supply Room	18
Vault	3
Classroom 2	53
Latrine	51

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Emporia Armory Point of Contact

Non-Responsive – POC

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

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, Cadmium and Chromium

Sampling Site:	NGB: Emporia, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8974
DFOH Lab Nos.:	TM-09-39056 through TM-09-39061
Date Received:	07/13/09
Data Analyzed:	07/15/09
Date Issued:	07/17/09

The samples were microwave digested using a CEM MDS-2000. 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

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)
KSEMW1	TM-09-39056	<10	<91
KSEMW2	TM-09-39057	<10	<91
KSEMW3	TM-09-39058	54	486
KSEMW4	TM-09-39059	<10	<91
KSEMW5	TM-09-39060	<10	<91
KSEMW6**	TM-09-39061	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSEMW1	TM-09-39056	<1.0	<9.1
KSEMW2	TM-09-39057	<1.0	<9.1
KSEMW3	TM-09-39058	3.0	28
KSEMW4	TM-09-39059	<1.0	<9.1
KSEMW5	TM-09-39060	4.2	38
KSEMW6**	TM-09-39061	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSEMW1	TM-09-39056	<10	<91
KSEMW2	TM-09-39057	<10	<91
KSEMW3	TM-09-39058	<10	<91
KSEMW4	TM-09-39059	<10	<91
KSEMW5	TM-09-39060	<10	<91
KSEMW6**	TM-09-39061	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihalqap.org for details

Project 8974
Page 2 of 2

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

Non-Responsive

PROJECT REFERENCE

Agreement No.: A 106644
Statement of Work No.: S 136934
Project No: P 136935
Agency/Project Name: KANSAS ARMY NATIONAL GUARD
Location (City, State): EMPORIA, KS

For Lab Use Only
Project /Report #: 8974
Due Date: 7/22/09
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date

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
R- Rush®
2D- Two Day Rush*
ND- Next Day Rush*®
SD- Same Day Rush*®
WH- Weekend/Holiday*

Analysis Requested

Sample ID #	Type[1]	Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in^2)	Wipe Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested
KSEMW17	12		7-2-09		FIELD BLANK					100cm2		TM	09-39056	LEAD
KSEMW2													39057	CADMIUM
KSEMW3													39058	CHROMIUM
KSEMW4													39059	
KSEMW5													39060	
KSEMW6													39061	

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8-Contact Plate 9-Tape 10-Spore Trap (Zefon & others) 11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight 4-Preweighted 5-MEA 6-COA 7-AA2A/TSA 8-Air-O-Cell Cassette 9-MCE Cassette (0.45) 10-MCE Cassette (0.8) 11-MCE Filter 12-Other

Non-Responsive

Relinquished By	Date & Time	Received By	Date & Time

COMMENTS:

* Applied to non-viable microbiological samples only. ® Applied to asbestos samples. SD: 2-hour PLM/PCM; 6-hour TEM; ND: 24-hour; R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Goodland Armory
720 Armory Road
Goodland, Kansas

Survey date: December 2, 2009

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

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The Goodland Armory was built in 1988. The facility has 23,713 square feet of floor space that encompasses a drill floor, two maintenance bays, offices, classrooms, kitchen, latrines, supply room and weapons vault. The armory had a firing range that was closed in 2004. Armory personnel reported that the firing range was cleaned up and decontaminated in 2005.

The drill floor and maintenance bays have a concrete floor, concrete block walls that are 20 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpeted or tile floors, concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Goodland Armory is the base of operations for DET 1 of the 170th Maintenance Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor. The armory is available for rental for community activities. Community activities may include: 6-8th grade basketball and volleyball games, tool sales, auctions, and law enforcement classes.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination, a ventilation survey and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. Two of the surface wipe sample results exceeded the above criteria. Sample KGOW3 which was collected on the floor in the former firing range, near the bullet trap area, had a lead concentration of 7,200 ug/ft^2. Sample KGOW2 which was collected on a storage rack in the vault had a lead concentration of 250 ug/ft^2. Additional surface wipe sampling should be performed to identify the extent of lead contamination in the former firing range area. After the additional sampling has been performed, the elevated surface lead levels in the former firing range area should be abated.

The Goodland Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Goodland Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

The Goodland Armory is equipped with 3 tailpipe local exhaust ventilation (LEV) systems. Each of the tailpipe LEV systems had a 4.5 inch diameter flexible metal duct. Tailpipe local exhaust ventilation systems in maintenance bays were tested. None of the tailpipe LEV systems had sufficient exhaust air flow to exhaust a 300 Hp diesel engine. The Corps of Engineers Guide Specifications for tailpipe exhaust ventilation should be followed if engines are operated and tested in the maintenance bays.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
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	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items.	4
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The Goodland Armory is the base of operations for DET 1 of the 170th Maintenance Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

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Figure 1 – Goodland Armory

VI. Findings, Discussion, and Recommendations

The Goodland Armory is the base of operations for DET 1 of 170th Maintenance Company. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. Two of the surface wipe sample results exceeded the above criteria. Sample KGOW3 which was collected on the floor in the former firing range, near the bullet trap, had a lead concentration of 7,200 ug/ft^2. Sample KGOW2 which was collected on a storage rack in the vault had a lead concentration of 250 ug/ft^2. Additional surface wipe sampling should be performed to identify the extent of lead contamination in the former firing range area. After the additional sampling has been performed, the elevated surface lead levels in the former firing range area should be abated.

The Goodland Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Goodland Armory
Goodland, Kansas
December 2, 2009

Analyte	KGOW1 (ug/ft^2) Kitchen – on Countertop	KGOW2 (ug/ft^2) Vault – on Storage Rack	KGOW3 (ug/ft^2) Former Firing Range – on Floor – End of Range
Lead	<91	**250**	**7200**
Cadmium	<9.1	18	16
Chromium	<91	<91	<91

Analyte	KGOW4 (ug/ft^2) Drill Floor – on Floor – Center of Floor	KGOW5 (ug/ft^2) Classroom – on Desktop	KGOW6 (ug/ft^2) Field Blank
Lead	<91	180	ND
Cadmium	<9.1	<9.1	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Additional surface wipe sampling should be performed to identify the extent of lead contamination in the former firing range area. After the additional sampling has been performed, the elevated surface lead levels in the former firing range area should be abated. (**RAC 2**)

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

3. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

4. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)

Sample KGOW1

Sample KGOW2

Sample KGOW3

Sample KGOW4

Sample KGOW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Goodland Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Goodland Armory
Goodland, Kansas
December 2, 2009

Location	Illumination (foot candles)
Training NCO Office	57
Retention Room 110	54
Drill Floor	29
Men's Latrine	15
Kitchen	19
Supply Room	18
Maintenance Bay	16
S&E and Engineer Office	23
Ground Support Office	23
DET 1st SGT Office	16
Library	29
Classroom	14
Commanders Office	41

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Tailpipe Local Exhaust Ventilation (LEV) Systems

The Goodland Armory is equipped with 3 tailpipe LEV systems. Each of the tailpipe LEV systems had a 4.5 inch diameter flexible metal duct. Tailpipe local exhaust ventilation systems (Figure 3) in maintenance bays were tested. Each system was tested with all of its hoods on at the same time. The results are contained in Table 4.

Table 4
Tailpipe Local Exhaust Ventilation Measurements
Goodland Armory
Goodland, Kansas
December 2, 2009

Duct location	Duct diameter (inches)	Exhaust flow rate (cfm)
North	4.5	362
Center	4.5	394
South	4.5	367

The Corps of Engineers Guide Specifications (CEGS) as well as the ACGIH ventilation manual recommends exhaust levels of at least 1400 cubic feet per minute (cfm) for turbocharged diesel engines up to 500 Hp. ACGIH recommends a vehicle local exhaust system that exhausts 400-1200 cfm for diesel-powered trucks and 1400-2200 cfm for turbocharged vehicles. See Table 5 below for the Corps of Engineers (COE) recommended exhaust flow rates.

Table 5
COE Recommended LEV Exhaust Flow Rates

Diesel Engines Hp Rating	Exhaust Flow Rate (cfm)
300	400
500	600
700	1000
Turbocharged Diesel Engines Up To: 500 Hp	1400

Notes: 1) Hp = horsepower 2) cfm = cubic feet per minute of exhaust airflow

None of the tailpipe LEV systems had sufficient exhaust air flow to exhaust a 300 Hp diesel engine. COE guidelines should be followed if engines are operated and tested in the maintenance bays.

Recommendation:

Observe COE recommended LEV exhaust flow rates when operating or testing engines in maintenance bays. **(RAC 2)**

Figure 3 Tailpipe LEV

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Goodland Armory Point of Contact

Non-Responsive

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Local Exhaust Ventilation Measurements

A TSI Velocicalc was used to measure general exhaust ventilation flow rates and the tailpipe exhaust systems. Local exhaust ventilation findings were evaluated based on criteria established by the ACGIH in its publication *Industrial Ventilation, A Manual of Recommended Practices,* 22nd Edition, by OSHA 29 CFR 1910.94, 106, and 252 ventilation requirements and recommendations made by the Corps of Engineers Guide Specifications.

Appendix C

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, Cadmium, and Chromium

Sampling Site:	NGB: Goodland, KS
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 9265
DFOH Lab Nos.:	TM-10-42204 through TM-10-42209
Date Received:	12/10/09
Data Analyzed:	12/15/09 through 12/16/09
Date Issued:	12/17/09

The samples were microwave digested using a CEM MDS-2000. The samples were run on a Perkin Elmer 200 flame atomic absorption spectrophotometer (AA).

Total Particulate is nonspecific and determines the total dust concentration to which a worker is exposed. Samples are allowed to equilibrate in the laboratory for a minimum of two hours then the filters are weighed with a microbalance. Before the sample is taken, the filter must be either pre-weighed or matched-weight so that the difference can be taken.

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

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)
KGOW1	TM-10-42204	<10	<91
KGOW2	TM-10-42205	27	250
KGOW3	TM-10-42206	790	7200
KGOW4	TM-10-42207	<10	<91
KGOW5	TM-10-42208	<10	180
KGOW6**	TM-10-42209	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KGOW1	TM-10-42204	<1.0	<9.1
KGOW2	TM-10-42205	2.0	18
KGOW3	TM-10-42206	1.8	16
KGOW4	TM-10-42207	<1.0	<9.1
KGOW5	TM-10-42208	<1.0	<9.1
KGOW6**	TM-10-42209	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KGOW1	TM-10-42204	<10	<91
KGOW2	TM-10-42205	<10	<91
KGOW3	TM-10-42206	<10	<91
KGOW4	TM-10-42207	<10	<91
KGOW5	TM-10-42208	<10	<91
KGOW6**	TM-10-42209	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihalap.org for details

Project 9265
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)-886-0413 Fax: (312)-886-0434

Attn:
Name:
Address:
Phone:
Email:

[redacted] Non-Responsive

PROJECT REFERENCE

Agreement No.: A 106644
Statement of Work No.: S 13693-54
Project No: P 136935
Agency/Project Name: KANSAS ARMY NATIONAL GUARD
Location (City, State): GOODLAND, KS

For Lab Use Only
Project/Report #: 42265
Due Date: 12/16/09
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date

Water Sample Codes[1]
Container Types: P-Plastic, G-Glass, V-VOC
Preservatives: A-None, B-H_2SO_4, C-HNO_3, D-NaOH

Turn Around Time Codes[1]
STD- Standard
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

Analysis Requested
LEAD
CADMIUM
CHROMIUM

ID #	Sample Type[1]	Sample Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in²)	Wipe Volume (Liters)	Water Code[3]	Turn Around Time*	Lab ID #
KGO W1	P	W	12-2-09		FIELD BLANK				100 cm		2	TM-5	42204
KGOW 2													42205
KGOW 3													42206
KGOW 4													42207
KGOW 5													42208
KGOW 6													42209

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust
6-Bulk 7-Wipe 8-Contact Plate
9-Tape 10-Spore Trap (Zefon & others)
11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight
4-Preweighted 5-MEA 6-GGA 7-R2A/TSA
8-Air-O-Cell Cassette 9-MCE Cassette (0.45)
10-MCE Cassette (0.8) 11-MCE Filter 12-Other

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

COMMENTS:

*Applies to non-viable microbiological samples only. @ Applies to asbestos samples. SD: 24-hour PLM/PCM, 8-hour TEM; ND: 24-hour; R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Hiawatha Armory
108 N. 1st Street
Hiawatha, Kansas

Survey date: May 28, 2009

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

September 4, 2009

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Hiawatha Armory, located in Hiawatha, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Hiawatha Armory was built in 1940. The facility has about 26,768 square feet of floor space that encompasses a basement, garage, drill floor, offices on the first and second floor, classrooms, kitchen, latrines, supply room and weapons vault. The basement has a concrete floor, concrete block or brick walls, a poured concrete ceiling, and a 144 square foot vault. The drill floor has a wood floor, concrete block walls that are 20 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas on the first floor have carpeted or tile floors, concrete block or gypsum walls and suspended ceilings. The office and classroom areas on the second floor have carpeted floors, concrete block or gypsum walls and suspended ceilings. The exterior of the building is masonry.

The Hiawatha Armory is the base of operations for Headquarters 2^{nd} Battalion 130^{th} Field Artillery. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Hiawatha Armory has a firing range that was decommissioned in 1987. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities may include: auctions, wedding receptions, dances, graduation parties, basketball practices, and karate classes.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAHIW2 which was collected on a storage cabinet in the vault had a lead concentration of 1,623 ug/ft^2. The Hiawatha Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the

horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Hiawatha Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAHIW2 which was collected on a storage cabinet in the vault had a lead concentration of 1,623 ug/ft^2.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Hiawatha Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Hiawatha Armory, located in Hiawatha, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on May 28, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Hiawatha Armory was built in 1940. The facility has about 26,768 square feet of floor space that encompasses a basement, garage, drill floor, offices on the first and second floor, classrooms, kitchen, latrines, supply room and weapons vault. The basement has a concrete floor, concrete block or brick walls, a poured concrete ceiling, and a 144 square foot vault. The drill floor has a wood floor, concrete block walls that are 20 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas on the first floor have carpeted or tile floors, concrete block or gypsum walls and suspended ceilings. The office and classroom areas on the second floor have carpeted floors, concrete block or gypsum walls and suspended ceilings. The exterior of the building is masonry.

The Hiawatha Armory is the base of operations for Headquarters 2nd Battalion 130th Field Artillery. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Hiawatha Armory has a firing range that was decommissioned in 1987. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities may include: auctions, wedding receptions, dances, graduation parties, basketball practices, and karate classes.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Hiawatha Armory

VI. Findings, Discussion, and Recommendations

The Hiawatha Armory is the base of operations for Headquarters 2nd Battalion 130th Field Artillery. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAHIW2 which was collected on a storage cabinet in the vault had a lead concentration of 1,623 ug/ft^2. The Hiawatha Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Hiawatha Armory
Hiawatha, Kansas
May 28, 2009

Analyte	KAHIW1 (ug/ft^2) Vault – on Storage Cabinet	KAHIW2 (ug/ft^2) Supply Room – on File Cabinet	KAHIW3 (ug/ft^2) Drill Floor – Center of Room – on Floor
Lead	<91	**1623**	<91
Cadmium	<9.1	<9.1	<9.1
Chromium	<91	<91	<91

Analyte	KAHIW4 (ug/ft^2) Regimental Conference Room – on Table	KAHIW5 (ug/ft^2) Weight Room – on Floor	KAHIW6 (ug/ft^2) Field Blank
Lead	<91	109	ND
Cadmium	<9.1	<9.1	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area.
2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)


Sample KAHIW1


Sample KAHIW2

Sample KAHIW3

Sample KAHIW4

Sample KAHIW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Hiawatha Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Hiawatha Armory
Hiawatha, Kansas
May 28, 2009

Location -1ST Floor	Illumination (foot candles)
East Garage	18
Kitchen	64
Orderly Room	64
Family Assistance Center	102
Drill Floor	24
Center Garage	19
West Garage	6

Location -2nd Floor	Illumination (foot candles)
Regimental Conference Room	56
Digital Training Room	40
Classroom	28
Battalion HQ Office	96

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Hiawatha Armory Point of Contact

Non-Responsive

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

[redacted]

FOH ENVIRONMENTAL LABORATORY

535 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, Cadmium and Chromium

Sampling Site:	NGB: Hiawatha, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8930
DFOH Lab Nos.:	TM-09-38826 through TM-09-38831
Date Received:	06/05/09
Data Analyzed:	06/11/09
Date Issued:	06/12/09

The samples were microwave digested using a CEM MDS-2000. 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

[redacted]

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)
KAHIW1	TM-09-38826	<10	<91
KAHIW2	TM-09-38827	179	1623
KAHIW3	TM-09-38828	<10	<91
KAHIW4	TM-09-38829	<10	<91
KAHIW5	TM-09-38830	12	109
KAHIW6**	TM-09-38831	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KAHIW1	TM-09-38826	<1.0	<9.1
KAHIW2	TM-09-38827	<1.0	<9.1
KAHIW3	TM-09-38828	<1.0	<9.1
KAHIW4	TM-09-38829	<1.0	<9.1
KAHIW5	TM-09-38830	<1.0	<9.1
KAHIW6**	TM-09-38831	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KAHIW1	TM-09-38826	<10	<91
KAHIW2	TM-09-38827	<10	<91
KAHIW3	TM-09-38828	<10	<91
KAHIW4	TM-09-38829	<10	<91
KAHIW5	TM-09-38830	<10	<91
KAHIW6**	TM-09-38831	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive [redacted]

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihaiqap.org for details

[redacted]

Non-Responsive

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

PROJECT REFERENCE

Agreement No.: A 106644
Statement of Work No.: S 136934
Project No: P 136935
Agency/Project Name: KANSAS ARMY NATIONAL GUARD
Location (City, State): HIAWATHA ARMORY, KS

For Lab Use Only
Project /Report #: 8930
Due Date: 6/19/09
Samples Received Chilled? YES (NO) (circle one)

Conditions on Receipt with Name & Date

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

ID #	Sample Type[1]	Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in^2)	Wipe Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested
KAHIW1	T	12	5-28-09					1100cm		2		TAT04-38826	38827	LEAD
KAHIW2													38828	CADMIUM
KAHIW3													38829	CHROMIUM
KAHIW4													38830	
KAHIW5													38831	
KAHIW6					FIELD BLANK									

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight 4-Preweighted 5-MEA 6-COA 7-RZ/ATBA 8-Al-O-Cell Cassette 9-MCE Cassette (0.45) 10-MCE Cassette (0.8) 11-MCE Filter 12-Other

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8-Contact Plate 9-Tape 10-Spore Trap (Zefon & others) 11-Other

Relinquished By / Date & Time / Received By / Date & Time

COMMENTS:

*Applied to non-viable microbiological samples only. @ Applied to asbestos samples. SD: 2-hour PLM/PCM. 6-hour TEM: ND: 24-hour; R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Hutchinson Armory
1111 N. Severance Street
Hutchinson, Kansas

Survey date: January 7, 2010

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

April 16, 2010

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Hutchinson Armory, located in Hutchinson, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Hutchinson Armory was built in 1958. The facility has 30,643 square feet of floor space that encompasses a drill floor, offices, classrooms, kitchen, latrines, supply room and three weapons vaults. The Hutchinson Armory is the base of operations for the 1161st Forward Support Company 1st Battalion 161st Field Artillery. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Site personnel reported that the Hutchinson Armory had a firing range that was closed about 10 years ago. Weapons may be cleaned in a hallway, in vaults, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities may include: wedding receptions, dog shows, flower shows, and birthday parties.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria. The Hutchinson Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Hutchinson Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Hutchinson Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Hutchinson Armory, located in Hutchinson, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Mr. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on January 7, 2010.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Hutchinson Armory was built in 1958. The facility has 30,643 square feet of floor space that encompasses a drill floor, offices, classrooms, kitchen, latrines, supply room and three weapons vaults. The drill floor has a tile floor, brick and concrete block walls that are 27 feet high and exposed metal beams supporting a sloped roof. The office and classroom areas have carpet or tile floors, concrete block or gypsum board walls and suspended ceilings. The exterior of the building is brick veneer.

The Hutchinson Armory is the base of operations for the 1161st Forward Support Company 1st Battalion 161st Field Artillery. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Site personnel reported that the Hutchinson Armory had a firing range that was closed about 10 years ago. Weapons may be cleaned in a hallway, in vaults, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities may include: wedding receptions, dog shows, flower shows, and birthday parties.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Hutchinson Armory

VI. Findings, Discussion, and Recommendations

The Hutchinson Armory is the base of operations for the 1161st Forward Support Company 1st Battalion 161st Field Artillery. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in a hallway, in vaults, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria. The Hutchinson Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Surface Area Wipe Sampling Results for Metals
Kansas National Guard
Hutchinson Armory
Hutchinson, Kansas
January 7, 2010

Analyte	KSHUW1 (ug/ft^2) Room 138 – on Desktop	KSHUW2 (ug/ft^2) Room 141 – on Floor (Former Firing Range)	KSHUW3 (ug/ft^2) Drill Floor – on Floor – Center of Room
Lead	<91	135	<91
Cadmium	<9.1	<9.1	<9.1
Chromium	<91	<91	<91

Analyte	KSHUW4 (ug/ft^2) Kitchen – on Countertop	KSHUW5 (ug/ft^2) Vault – Room 103 – on Storage Rack	KSHUW6 (ug/ft^2) Field Blank
Lead	<91	<91	ND
Cadmium	<9.1	10	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)


Sample KSHUW1


Sample KSHUW2

Sample KSHUW3

Sample KSHUW4

Sample KSHUW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Hutchinson Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Hutchinson Armory
Hutchinson, Kansas
January 7, 2010

Location	Illumination (foot candles)
Room 138	79
Room 141	8
Room 135 Latrine	51
Room 133 Classroom	33
Room 129	70
Room 118	33
Room 109	44
Room 105	63
Room 103 (Vault)	25
Kitchen	21
Drill Floor	28

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Hutchinson Armory Point of Contact

Non-Responsive – POC

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

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, Cadmium, and Chromium

Sampling Site:	NGB: Hutchison, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 9318
DFOH Lab Nos.:	TM-10-42725 through TM-10-42730
Date Received:	01/21/10
Data Analyzed:	01/25/10 – 01/26/10
Date Issued:	02/05/10

The samples were microwave digested using a CEM MDS-2000. The samples were run on a Perkin Elmer 200 flame atomic absorption spectrophotometer (AA).

Total Particulate is nonspecific and determines the total dust concentration to which a worker is exposed. Samples are allowed to equilibrate in the laboratory for a minimum of two hours then the filters are weighed with a microbalance. Before the sample is taken, the filter must be either pre-weighed or matched-weight so that the difference can be taken.

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 Non-Responsive

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY
LAB# 102643

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)
KSHUW1	TM-10-42725	<10	<91
KSHUW2	TM-10-42726	15	135
KSHUW3	TM-10-42727	<10	<91
KSHUW4	TM-10-42728	<10	<91
KSHUW5	TM-10-42729	<10	<91
KSHUW6**	TM-10-42730	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSHUW1	TM-10-42725	<1.0	<9.1
KSHUW2	TM-10-42726	<1.0	<9.1
KSHUW3	TM-10-42727	<1.0	<9.1
KSHUW4	TM-10-42728	<1.0	<9.1
KSHUW5	TM-10-42729	1.1	10
KSHUW6**	TM-10-42730	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSHUW1	TM-10-42725	<10	<91
KSHUW2	TM-10-42726	<10	<91
KSHUW3	TM-10-42727	<10	<91
KSHUW4	TM-10-42728	<10	<91
KSHUW5	TM-10-42729	<10	<91
KSHUW6**	TM-10-42730	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY
LAB# 102643

Project 9318
Page 2 of 2

Hutchinson Armory
Hutchinson, Kansas

Industrial Hygiene Survey
Survey Date: January 7, 2010

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
Attn: [redacted]
Name
Addre
Phone
Email

Non-Responsive

PROJECT REFERENCE

Agreement No.:	A 106644
Statement of Work No.:	S 136934
Project No:	P 136935
Agency/Project Name:	KANSAS ARMY NATIONAL GUARD
Location (City, State):	HUTCHINSON ARMORY HUTCHINSON, KS

For Lab Use Only: Q318
Project /Report #:
Due Date: 11/29/10
Samples Received Chilled? YES (NO) (circle one)
Conditions on Receipt with Name & Date

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

ID #	Sample Type[1]	Sample Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in²)	Water Volume (Liters)	Water Code[3]	Turn Around Time*	Lab ID #	Analysis Requested: LEAD	CADMIUM	CHROMIUM
KSHUW1	7	12	1-7-10						100 cm²		2		TM-10-42725			
KSHUW2													42726			
KSHUW3													42727			
KSHUW4													42728			
KSHUW5													42729			
KSHUW6					FIELD BLANK				—				42730			

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust
6-Bulk 7-Wipe 8-Contact Plate
9-Tape 10-Spore Trap (Zefon & others)
11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight
4-Preweighted 5-MEA 6-CCA 7-RIA/TBA
8-Air-O-Cell Cassette 9-MCE Cassette (0.45)
10-MCE Cassette (0.8) 11-MCE Filter 12-Other

Relinquished By	Date & Time	Received By	Date & Time
Non-Responsive [redacted]			

COMMENTS:

* Applied to non-viable microbiological samples only. @ Applied to asbestos samples. SD: 2-hour PLM/PCM, 6-hour TEM; ND: 24-hour; R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Hutchinson Armory
1111 N. Severance Street
Hutchinson, Kansas

Survey date: April 23, 2013

Performed by

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

June 9, 2013

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Appendices

I. Executive Summary

At the request of the Department of the Army, National Guard Bureau (NGB) field personnel representing the NGB Region West Industrial Hygiene Office conducted an industrial hygiene survey at the Kansas Army National Guard, Hutchinson Armory, located in Hutchinson, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Hutchinson Armory was built in 1958 and it has about 30,643 square feet of floor space that encompasses a drill floor, offices, classrooms, kitchen, latrines, supply room and three weapons vaults. The armory is the base of operations for the 635th RSC and the 1161st FSC. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Hutchinson Armory had an indoor firing range that was closed in 1991 and converted to a storage area, locker and weight room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor. The armory is available for rental for community activities that include: practice sessions for the high school soccer team; birthday parties; and a polling place.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for lead. Two of the surface wipe sample results exceeded the NGB surface wipe sampling guideline for lead. A sample collected in the caged storage area (at the firing line in the former IFR) had a lead concentration of 1,429 ug/ft^2. A sample collected in the weight room (at the bullet trap in the former IFR) had a lead concentration of 239 ug/ft^2. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

The Hutchinson Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Hutchinson Armory. Some of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

II. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the West Region of the Army National Guard at the Kansas Army National Guard, Hutchinson Armory, located in Hutchinson, Kansas. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 23, 2013.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Hutchinson Armory was built in 1958 and it has about 30,643 square feet of floor space that encompasses a drill floor, offices, classrooms, kitchen, latrines, supply room and three weapons vaults. The armory is the base of operations for the 635th RSC and the 1161st FSC. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Hutchinson Armory had an indoor firing range that was closed in 1991 and converted to a storage area, locker and weight room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: practice sessions for the high school soccer team; birthday parties; and a polling place.

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Hutchinson Armory

V. Findings, Discussion, and Recommendations

The Hutchinson Armory is the base of operations for the 635th RSC and the 1161st FSC. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Hutchinson Armory had an indoor firing range that was closed in 1991 and converted to a storage and locker room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for lead. The results are contained in Table 1. Wipe sample locations are identified in Figure 2. The NGB surface wipe sampling guideline for lead is contained in Table 2.

Two of the surface wipe sample results exceeded the NGB guideline. Sample KHUW14, which was collected in the caged storage area (at the firing line in the former IFR) had a lead concentration of 1,429 ug/ft^2. Sample KHUW15, which was collected in the weight room (at the bullet trap in the former IFR) had a lead concentration of 239 ug/ft^2. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15

Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

The Hutchinson Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Hutchinson Armory
Hutchinson, Kansas
April 23, 2013

Location	Sample #	Lead Concentration (ug/ft^2)
Room 138, on Conference Table	KHUW11	112
Drill Floor, Center	KHUW12	<91
Kitchen, on Counter	KHUW13	<91
Caged Storage, Former IFR, at Firing Line	KHUW14	**1,429**
Weight Room, Former IFR, at Bullet Trap	KHUW15	**239**
Field Blank	KHUW16	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Table 2
NGB Surface Wipe Sampling Guidelines for Lead

Metal	Acceptable Surface Level ug/ft^2	Basis for Criteria
Lead	200	NG Pam 420-15

Recommendations:

1. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2. (**RAC 2**)

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

3. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

4. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)


Sample KHUW11


Sample KHUW12


Sample KHUW13


Sample KHUW14


Sample KHUW15

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Hutchinson Armory. The results are contained in Table 3. NGB lighting criteria are contained in Table 4.

Table 3
Lighting Survey
Kansas Army National Guard
Hutchinson Armory
Hutchinson, Kansas
April 23, 2013

Location	Illumination (foot candles)
Room 129, S4 Office	17-74
Room 133, Classroom	21-61
Room 138, S1 Office	33-74
Weight Room	16-17
Cage Storage	12-22
Drill Floor	41-52
Latrine	58-75
Room 109, Office	20-66
Kitchen	18-34
Room 105, Office	13-40
Room 108, Classroom	8-30
Room 118, Office	30-37
Room 118A	32-54
Room 127, Office	35-70

Table 4
NGB Lighting Criteria

Location	Minimum Foot Candles Required
Inactive Areas	5
Billet Break Room/Dining Flammable Storage/POL/Waste Handling Latrine/Shower/Locker Mechanical/Electrical Room Storage/Tool/Supply Vault	30
Battery Room Fitness Room IFR/Small Arms Test (at firing line) Kitchen/Assembly Hall/Auditorium Mail Room Maintenance Workbay/Shop Paint Booth/Blast Booth, Paint Mix Room Office/Classroom/Library	50
Instrument Inspection/Repair	70

Sources:
ANSI/IESNA RP-1-04
ANSI/IESNA RP-7-01
NGB Design Guides, 2011

Some of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of the NGB. This survey report was reviewed by Non-Responsive, Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Non-Responsive
CW2 Industrial Hygiene Technician

Hutchinson Armory Point of Contact

Non-Responsive – POC

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Lead

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for lead. The lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated according to the manufacturer's specifications. Illumination levels were recorded as foot candles.

Appendix C

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: Hutchison, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 11100
DFOH Lab Nos.:	TM-13-60898 through TM-13-60903
Date Received:	04/26/13
Data Analyzed:	05/01/13 - 05/02/13
Date Issued:	05/02/13

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 (Non-Responsive

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

FOH ENVIRONMENTAL LABORATORY

538 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)
KHUW11	TM-13-60898	12	112
KHUW12	TM-13-60899	<10	<91
KHUW13	TM-13-60900	<10	<91
KHUW14	TM-13-60901	157	1429
KHUW15	TM-13-60902	28	239
KHUW16**	TM-13-60903	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

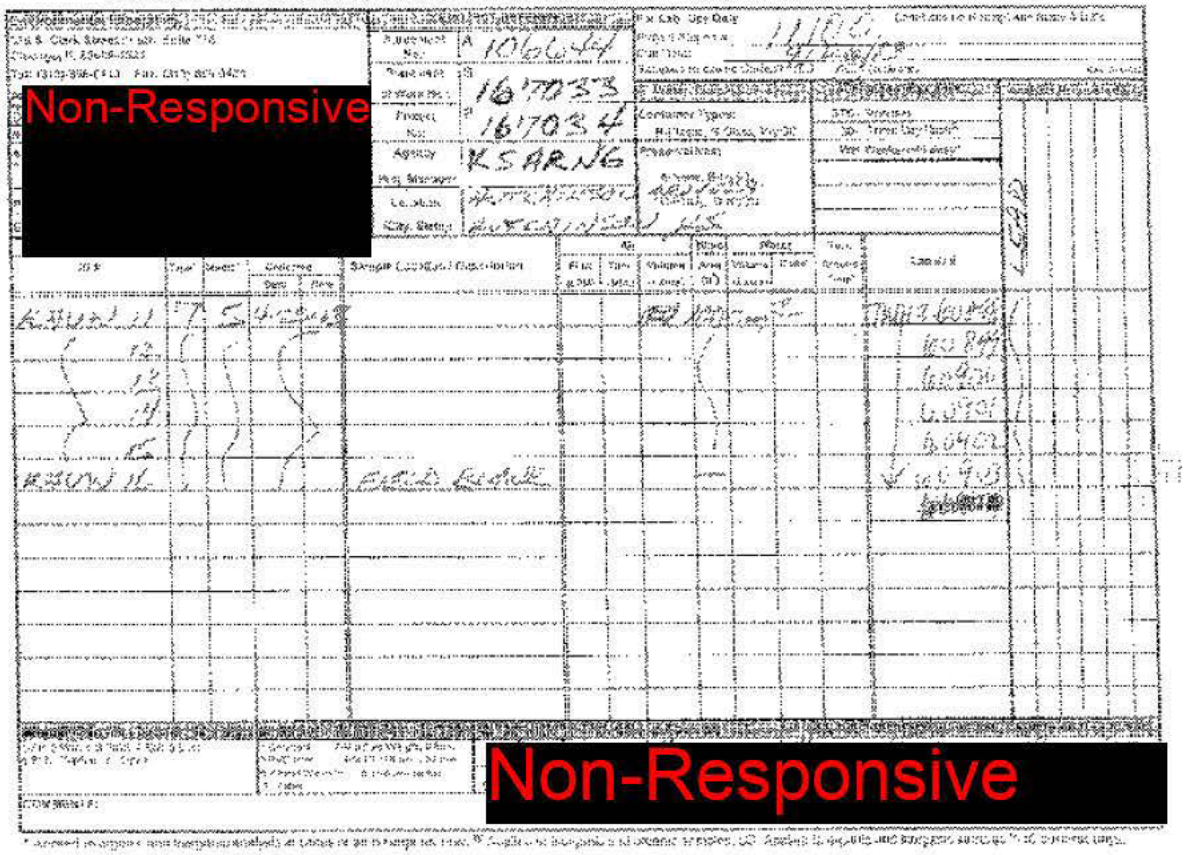
Metals in Wipe Limits
(based on one ft² sampled area)

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
ACCREDITED LABORATORY

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



Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Kansas City Armory
100 South 20th Street
Kansas City, Kansas

Survey date: April 15, 2013

Performed by

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

June 4, 2013

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Appendices

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The Kansas City Armory was built in 1956. The facility has about 54,324 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The armory is the base of operations for the 137th Combined Arms Battalion; 778th Transportation Company; and 369th Signal Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Kansas City Armory had an indoor firing range (IFR) that was closed in 1984 and converted to a supply room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: birthday parties; weddings; the fireman's ball; a polling place; the Starbase school for fourth and fifth graders; police cadet training; motorcycle club meetings; and music concerts.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for lead. Two of the surface wipe sample results exceeded the NGB guidelines for lead. A sample collected on the floor in the weight room (the bullet trap area in the former IFR) had a lead concentration of 698 ug/ft^2. A sample collected on the floor in the supply room (in the former IFR) had a lead concentration of 6,173 ug/ft^2. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

The Kansas City Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Kansas City Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

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The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Kansas City Armory was built in 1956. The facility has about 54,324 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The armory is the base of operations for the 137th Combined Arms Battalion; 778th Transportation Company; and 369th Signal Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Kansas City Armory had an indoor firing range that was closed in 1984 and converted to a supply room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: birthday parties; weddings; the fireman's ball; a polling place; the Starbase school for fourth and fifth graders; police cadet training; motorcycle club meetings; and music concerts.

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Kansas City Armory

V. Findings, Discussion, and Recommendations

The Kansas City Armory is the base of operations for the 137th Combined Arms Battalion; 778th Transportation Company; and 369th Signal Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Kansas City Armory had an indoor firing range that was closed in 1984 and converted to a supply room. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: birthday parties; weddings; the fireman's ball; a polling place; the Starbase school for fourth and fifth graders; police cadet training; motorcycle club meetings; and music concerts.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for lead. The results are contained in Table 1. Wipe sample locations are identified in Figure 2. The NGB surface wipe sampling guideline for lead is contained in Table 2.

Two of the surface wipe sample results exceeded the NGB guidelines. Sample KAKW13, which was collected on the floor in the weight room (bullet trap area in former IFR) had a lead

concentration of 698 ug/ft^2. Sample KAKW14, which was collected in the center of the floor of the supply room (former IFR) had a lead concentration of 6,173 ug/ft^2. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

The Kansas City Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Kansas City Armory
Kansas City, Kansas
April 15, 2013

Location	Sample #	Lead Concentration (ug/ft^2)
Drill Floor, Center	KAKW11	<91
Starbase Classroom, on Desktop	KAKW12	<91
Weight Room, Former IFR, at Bullet Trap	KAKW13	**698**
Supply Room, Former IFR, Center	KAKW14	**6,173**
Kitchen, on Counter	KAKW15	<91
Field Blank	KAKW16	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Table 2
NGB Surface Wipe Sampling Guidelines for Lead

Metal	Acceptable Surface Level ug/ft^2	Basis for Criteria
Lead	200	NG Pam 420-15

Recommendations:

1. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2. (**RAC 2**)

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

3. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

4. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)

Sample KAKW11

Sample KAKW12

Sample KAKW13

Sample KAKW14

Sample KAKW15

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Kansas City Armory. The results are contained in Table 3. NGB lighting criteria are contained in Table 4.

Table 3
Lighting Survey
Kansas Army National Guard
Kansas City Armory
Kansas City, Kansas
April 15, 2013

Location	Illumination (foot candles)
HHC Supply Room	25-28
778th Supply Room	7-26
Orderly Room	44-59
Mess Hall	27-30
778th Locker Room	12-22
Boiler Room Corridor	1-25
Vault Hallway	1-30
369th Supply Room, Former IFR	6-19
Weight Room	17-19
Troop Movement Area	13-15
Drill Floor	27-41
Starbase Office	33-51
Starbase Classroom	24-56

Table 4
NGB Lighting Criteria

Location	Minimum Foot Candles Required
Inactive Areas	5
Billet Break Room/Dining Flammable Storage/POL/Waste Handling Latrine/Shower/Locker Mechanical/Electrical Room Storage/Tool/Supply Vault	30
Battery Room Fitness Room IFR/Small Arms Test (at firing line) Kitchen/Assembly Hall/Auditorium Mail Room Maintenance Workbay/Shop Paint Booth/Blast Booth, Paint Mix Room Office/Classroom/Library	50
Instrument Inspection/Repair	70

Sources:
ANSI/IESNA RP-1-04
ANSI/IESNA RP-7-01
NGB Design Guides, 2011

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

This survey was conducted by, and report written by Non-Responsive CIH, CPE as a representative of the NGB. This survey report was reviewed by Non-Responsive, Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Non-Responsive
CW2 Industrial Hygiene Technician

Kansas City Armory Point of Contact

Non-Responsive – POC

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Lead

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for lead. The lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated according to the manufacturer's specifications. Illumination levels were recorded as foot candles.

Appendix C

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: Kansas City, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 11083
DFOH Lab Nos.:	TM-13-60782 through TM-13-60787
Date Received:	04/23/13
Data Analyzed:	04/29/13 - 04/30/13
Date Issued:	04/30/13

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 11083
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY

538 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)
KAKW11	TM-13-60782	<10	<91
KAKW12	TM-13-60783	<10	<91
KAKW13	TM-13-60784	77	698
KAKW14	TM-13-60785	679	6173
KAKW15	TM-13-60786	<10	<91
KAKW16**	TM-13-60787	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

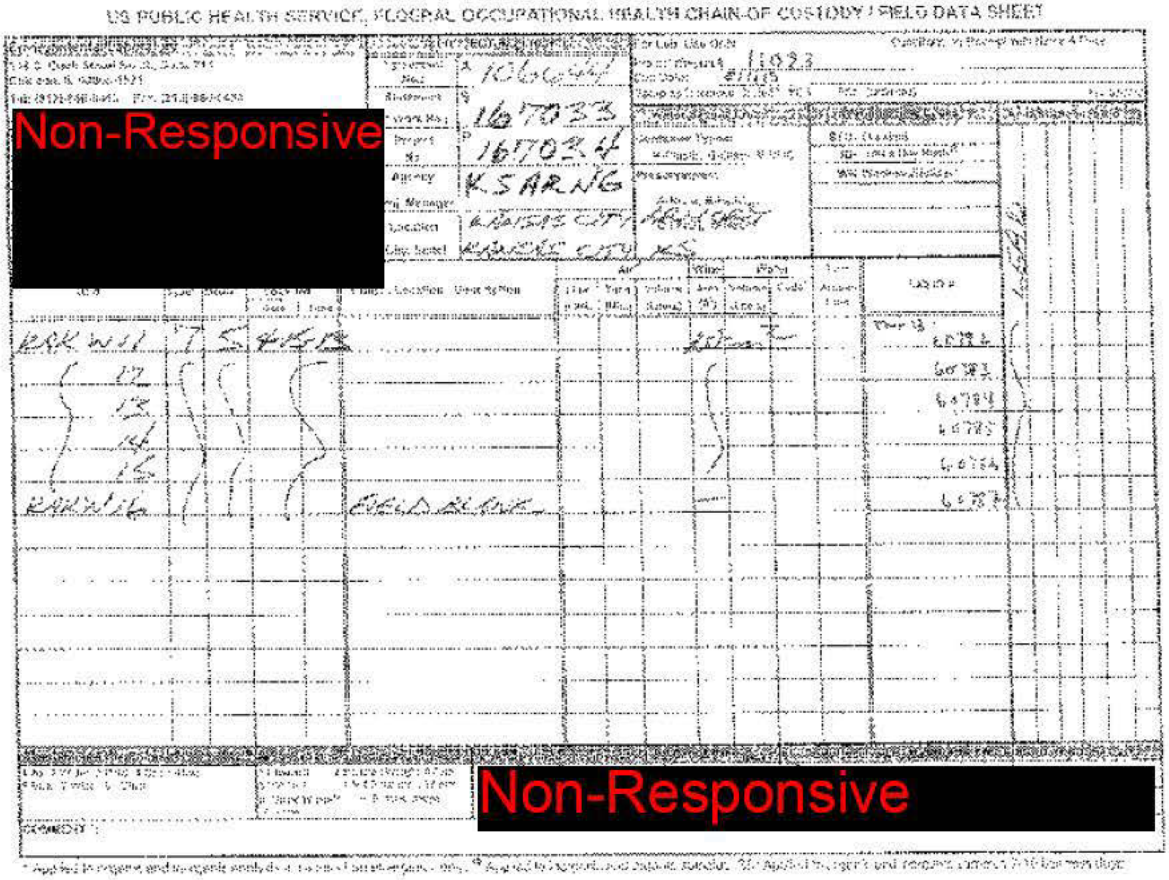
Metals in Wipe Limits
(based on one ft² sampled area)

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
ACCREDITED LABORATORY

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



Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Kansas City Armory
100 S. 20th Street
Kansas City, Kansas

Survey date: April 30, 2009

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

June 22, 2009

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Kansas City Armory, located in Kansas City, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Kansas City Armory was built in 1956. The facility has about 54,324 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a wood central area with tile on the perimeter of the floor, concrete block walls that are 28 feet high and a sloped roof that is supported by exposed metal columns and exposed metal beams. The office and classroom areas have carpeted or tile floors, concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Kansas City Armory is the base of operations for the 778th Transportation Company 137th Combined Arms Battalion. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Kansas City Armory had a firing range that was closed in 1998 and decontaminated in 2005. Weapons may be cleaned in the vaults, in the troop bay area, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities include the Star Base children's learning program that is provided for 4th and 5th grade school children.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAKW5 which was collected on the floor in the HHC rear supply area had a lead concentration of 677 ug/ft^2. The HHC rear supply area occupies the former firing range that was closed in 1998.

The Kansas City Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special

attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Kansas City Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAKW5 which was collected on the floor in the HHC rear supply area had a lead concentration of 677 ug/ft^2. The HHC rear supply area occupies the former firing range that was closed in 1998.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Kansas City Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Kansas City Armory, located in Kansas City, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 30, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Kansas City Armory was built in 1956. The facility has about 54,324 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a wood central area with tile on the perimeter of the floor, concrete block walls that are 28 feet high and a sloped roof that is supported by exposed metal columns and exposed metal beams. The office and classroom areas have carpeted or tile floors, concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Kansas City Armory is the base of operations for the 778th Transportation Company 137th Combined Arms Battalion. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Kansas City Armory had a firing range that was closed in 1998 and decontaminated in 2005. Weapons may be cleaned in the vaults, in the troop bay area, or on tables set up on the drill floor.

The armory is available for rental for community activities. Community activities include the Star Base children's learning program that is provided for 4th and 5th grade school children.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Kansas City Armory

VI. Findings, Discussion, and Recommendations

The Kansas City Armory is the base of operations for the 778th Transportation Company 137th Combined Arms Battalion. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vaults, in the troop bay area, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KAKW5 which was collected on the floor in the HHC rear supply area had a lead concentration of 677 ug/ft^2. The HHC rear supply area occupies the former firing range that was closed in 1998.

The Kansas City Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special

attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Kansas City Armory
Kansas City, Kansas
April 30, 2009

Analyte	KAKW1 (ug/ft^2) Star Base Classroom - Shaumeyer Hall – on Desktop	KAKW2 (ug/ft^2) Mess Hall – on Countertop	KAKW3 (ug/ft^2) Troop Bay Area – on Floor
Lead	<91	<91	<91
Cadmium	<9.1	<9.1	<9.1
Chromium	<91	<91	<91

Analyte	KAKW4 (ug/ft^2) Vault 4 – on Storage Shelf	KAKW5 (ug/ft^2) HHC Rear Supply – on Floor (former firing range)	KAKW6 (ug/ft^2) Field Blank
Lead	<91	**677**	ND
Cadmium	<9.1	10	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)

Sample KAKW1

Sample KAKW2

Sample KAKW3

Sample KAKW4

Sample KAKW3

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Kansas City Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Kansas City Armory
Kansas City, Kansas
April 30, 2009

Location	Illumination (foot candles)
Drill Floor	35
Star Base Classroom Shaumeyer Hall	56
Mess Hall	36
Troop Bay Area	24
Vault 4	23
Vault 3	4
HHC Supply (Rear)	24
Weight Room	26
Boiler Room	11
Office 1	53
Office 4	59
Office 5A	49
Office 6	56
Conference Room	34

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Kansas City Armory Point of Contact

Non-Responsive POC

Appendix B

VI. Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

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, Cadmium, and Chromium

Sampling Site:	NGB: Kansas City, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8871
DFOH Lab Nos.:	TM-09-38467 through TM-09-38472
Date Received:	05/08/09
Data Analyzed:	05/12/09
Date Issued:	05/13/09

The samples were microwave digested using a CEM MDS-2000. 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

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)
KAKW1	TM-09-38467	<10	<91
KAKW2	TM-09-38468	<10	<91
KAKW3	TM-09-38469	<10	<91
KAKW4	TM-09-38470	<10	<91
KAKW5	TM-09-38471	75	677
KAKW6**	TM-09-38472	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KAKW1	TM-09-38467	<1.0	<9.1
KAKW2	TM-09-38468	<1.0	<9.1
KAKW3	TM-09-38469	<1.0	<9.1
KAKW4	TM-09-38470	<1.0	<9.1
KAKW5	TM-09-38471	1.2	10
KAKW6**	TM-09-38472	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KAKW1	TM-09-38467	<10	<91
KAKW2	TM-09-38468	<10	<91
KAKW3	TM-09-38469	<10	<91
KAKW4	TM-09-38470	<10	<91
KAKW5	TM-09-38471	<10	<91
KAKW6**	TM-09-38472	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihalqap.org for details

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

A [redacted] Non-Responsive

PROJECT REFERENCE

Agreement No.:	A 106644
Statement of Work No.:	S 136934
Project No:	P 136935
Agency/Project Name:	KANSAS ARMY NATIONAL GUARD
Location (City, State):	KANSAS CITY ARMORY, KS

For Lab Use Only — Conditions on Receipt with Name & Date
Project /Report #: 8871
Due Date: 5/15/09
Samples Received Chilled? YES NO (circle one)

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

Sample ID #	Type[1]	Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in^2)	Water Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested: LEAD	CADMIUM	CHROMIUM
KARW1	7	12	4/30/09						100 cm^2				TM-09-38467			
KARW2													38468			
KARW3													38469			
KARW4													38470			
KARW5													38471			
KARW6					FIELD BLANK				—				38472			

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust
6-Bulk 7-Wipe 8-Contact Plate
9-Tape 10-Spore Trap (Zefon & others)
11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight
4-Preweighted 5-MEA 6-CCA 7-R2A/TSA
8-Air-O-Cell Cassette 9-MCE Cassette (0.45)
10-MCE Cassette (0.8) 11-MCE Filter 12-Oth

Relinquished By	Date & Time	Received By	Date & Time
[redacted] Non-Responsive			

COMMENTS:

* Applied to non-viable microbiological samples only. @ Applied to asbestos samples, SD: 2-hour PLM/TEM, 6-hour TEM, ND: 24-hour, R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Lenexa Armory
18200 W. 87th St. Parkway
Lenexa, Kansas

Survey date: April 13, 2009

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

July 4, 2009

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Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Lenexa Armory, located in Lenexa, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Lenexa Armory was built in 1988. The facility has about 32,059 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor covered with rubber, concrete block walls that are 20 feet high and exposed metal beams supporting a gabled roof. The maintenance bay area has a concrete floor, concrete block walls that are 18 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpeted or tile floors, concrete block or gypsum walls and suspended ceilings. The exterior of the building is brick veneer.

The Lenexa Armory is the base of operations for the 161st Field Artillery, the Medical Detachment, and the 635th Armor Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Lenxa Armory building is owned by the City of Lenexa. The city has a municipal firing range in the building that cannot be accessed by National Guard personnel. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is used for community activities that include: basketball games on the drill floor; and weapons qualification and target practice on the municipal firing range located in the building.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KALW3 which was collected on the floor in front of the municipal firing range had a cadmium concentration of 275 ug/ft^2. The Lenexa Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are

cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Lenexa Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KALW3 which was collected on the floor in front of the municipal firing range had a cadmium concentration of 275 ug/ft^2	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Lenexa Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Lenexa Armory, located in Lenexa, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 13, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Lenexa Armory was built in 1988. The facility has about 32,059 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor covered with rubber, concrete block walls that are 20 feet high and exposed metal beams supporting a gabled roof. The maintenance bay area has a concrete floor, concrete block walls that are 18 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpeted or tile floors, concrete block or gypsum walls and suspended ceilings. The exterior of the building is brick veneer.

The Lenexa Armory is the base of operations for the 161st Field Artillery, the Medical Detachment, and the 635th Armor Company. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Lenxa Armory building is owned by the City of Lenexa. They have a municipal firing range in the building that cannot be accessed by National Guard personnel. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is used for community activities that include: basketball games on the drill floor; and weapons qualification and target practice on the municipal firing range located in the building.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Lenexa Armory

VI. Findings, Discussion, and Recommendations

The Lenexa Armory is the base of operations for the 161st Field Artillery, the Medical Detachment, and the 635th Armor Company. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Lenxa Armory building is owned by the City of Lenexa. They have a municipal firing range in the building that cannot be accessed by National Guard personnel. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KALW3 which was collected on the floor in front of the municipal firing range had a cadmium concentration of 275 ug/ft^2. The Lenexa Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Lenexa Armory
Lenexa, Kansas
April 13, 2009

Analyte	KALW1 (ug/ft^2) Room 106 - Computer Lab – on Desktop	KALW2 (ug/ft^2) Room 133 – on Desktop	KALW3 (ug/ft^2) Hallway – on floor in front of Room 135 – Rifle Range
Lead	<91	<91	<91
Cadmium	<9.1	<9.1	**275**
Chromium	<91	<91	<91

Analyte	KALW4 (ug/ft^2) Kitchen – on Countertop	KALW5 (ug/ft^2) Maintenance Bay – on Solvent Tank	KALW6 (ug/ft^2) Field Blank
Lead	<91	<91	ND
Cadmium	18	21	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

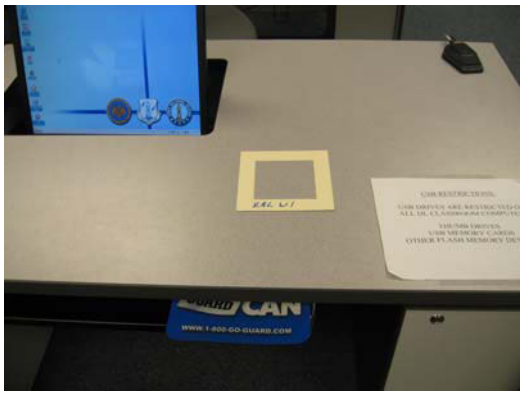
Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

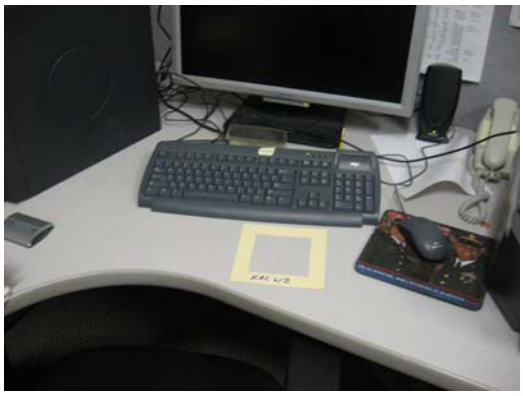
2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

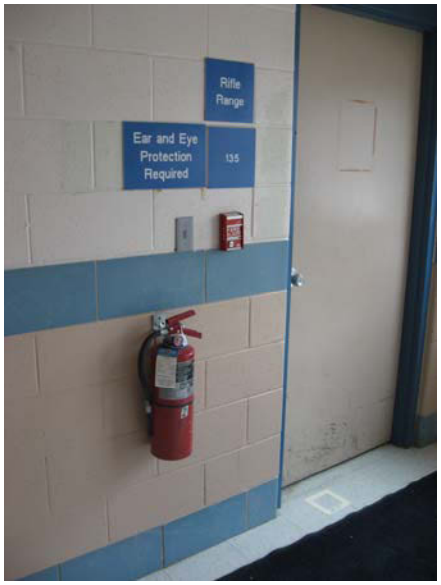
Figure 2 – Wipe Sample Locations (below)



Sample KALW1



Sample KALW2



Sample KALW3

Sample KALW4

Sample KALW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Lenexa Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Lenexa Armory
Lenexa, Kansas
April 13, 2009

Location	Illumination (foot candles)
Room 131 Fitness Room	76
Room 130 Records	70
Room 129 Classroom	50
Room 128 Classroom	47
Room 126 Classroom	47
RSP Room 102	30
Room 104 Orderly Room	93
Mail Room	45
Room 106 Rec Center (Computer Lab)	37
Room 108 Facility Maintenance	13
Room 110 Facility Storage	19
Room 111 Kitchen	64
Maintenance Bays	12
Gym/Drill Floor	14
Room 130 NE Corner (Office)	3

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Lenexa Armory Point of Contact

Non-Responsive

Appendix B

VI. Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

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:

Submitted By: Non-Responsive

Reference Data: Lead, Cadmium, and Chromium

Sampling Site:	NGB: Lenexa, KS (Lenexa Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8852
DFOH Lab Nos.:	TM-09-38274 through TM-09-38279
Date Received:	04/24/09
Data Analyzed:	04/28/09 – 05/05/09
Date Issued:	05/07/09

The samples were microwave digested using a CEM MDS-2000. 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

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)
KALW1	TM-09-38274	<10	<91
KALW2	TM-09-38275	<10	<91
KALW3	TM-09-38276	<10	<91
KALW4	TM-09-38277	<10	<91
KALW5	TM-09-38278	<10	<91
KALW6**	TM-09-38279	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KALW1	TM-09-38274	<1.0	<9.1
KALW2	TM-09-38275	<1.0	<9.1
KALW3	TM-09-38276	30	275
KALW4	TM-09-38277	2.0	18
KALW5	TM-09-38278	2.3	21
KALW6**	TM-09-38279	<1.00	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KALW1	TM-09-38274	<10	<91
KALW2	TM-09-38275	<10	<91
KALW3	TM-09-38276	<10	<91
KALW4	TM-09-38277	<10	<91
KALW5	TM-09-38278	<10	<91
KALW6**	TM-09-38279	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

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

Lenexa Armory
Lenexa, Kansas

Industrial Hygiene Survey
Survey Date: April 13, 2009

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

A: [redacted]
N:
A:
P:
E:

Non-Responsive

PROJECT REFERENCE	
Agreement No.:	A 106644
Statement of Work No.:	S 136934
Project No:	P 136935
Agency/Project Name:	KANSAS ARMY NATIONAL GUARD
Location (City, State):	LENEXA ARMORY LENEXA, KS

For Lab Use Only
Project /Report #: 8852
Due Date: 5/8/09
Samples Received Chilled? YES (NO) (circle one)
Conditions on Receipt with Name & Date

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

Analysis Requested
LEAD
CADMIUM
CHROMIUM

Sample ID #	Type[1]	Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in^2)	Water Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #
KALW1	7	12	4-13-09						100 cm²				TM09-3827
KALW2													38275
KALW3													38276
KALW4													38277
KALW5													38278
KALW6					FIELD BLANK				—				38279

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8-Contact Plate 9-Tape 10-Spore Trap (Zeton & others) 11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight 4-Preweighted 5-MEA 6-CCA 7-R2A/TSA 8-Air-O-Cell Cassette 9-MCE Cassette (0.45) 10-MCE Cassette (0.8) 11-MCE Filter 12-Oth

Relinquished By: [redacted] Non-Responsive
Date & Time:
Received By:

COMMENTS:

* Applied to non-viable microbiological samples only. @ Applied to asbestos samples. SD: 2-hour PLM/PCM, 6-hour TEM; ND: 24-hour; R: 3-5 business days.

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Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Lenexa Armory
18200 West 87th Street Parkway
Lenexa, Kansas

Survey date: July 13, 2012

Performed by

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

August 20, 2012

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Appendices

I. Executive Summary

At the request of the Department of the Army, National Guard Bureau (NGB), field personnel representing the NGB Region West Industrial Hygiene Office conducted an industrial hygiene survey at the Kansas Army National Guard, Lenexa Armory, located in Lenexa, Kansas. This survey was conducted to determine if lead contamination was present in areas adjacent to an indoor firing range located in the building.

The Lenexa Armory has a municipal firing range that is used by the Lenexa Police Department (LPD). The firing range cannot be accessed by Kansas Army National Guard personnel. Site personnel were planning to renovate and convert the FA storage room adjacent to the firing range to a dental examination office. The FA storage room was equipped with a 24 inch by 48 inch access door that is used to enter the area behind the firing range bullet trap. This access door had visible silver/gray deposits that originated from the edge of the sealing area of the access door.

A ventilation survey was performed. The LPD activated the ventilation system for the firing range. Smoke tubes were used to visibly identify ventilation patterns in the firing range and adjacent areas. The firing range had supply air that was provided behind the firing line area. Exhaust air was removed behind the bullet trap. In the firing range, smoke movement patterns generally indicated that the smoke moved downrange toward the bullet trap.

Smoke movement patterns at the entrance to the firing range indicated that the range was under positive pressure with respect to areas outside the firing range entrance.

Smoke movement patterns at the 24 inch by 48 inch access door that is used to enter the area behind the firing range bullet trap indicated that the firing range was under positive pressure with respect to the FA storage room.

The firing range should be maintained under negative pressure with respect to outside areas so that potential metal contamination is contained within the firing range. (RAC 2)

Ventilation in the firing range should be tested periodically to ensure that it is operating properly and maintaining negative pressure with respect to outside areas so that potential metal contamination is contained within the firing range. (RAC 2)

Thirty-five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and copper). Lead and copper contamination that exceeded the NGB surface wipe sampling criteria for metals was identified in the firing range and in the adjacent FA storage room. Lead concentrations in the firing range and bullet trap area ranged up to 4,520 ug/ft^2. Copper concentrations in the firing range and bullet trap area ranged up to 269,300 ug/ft^2. Lead concentrations in the FA storage room area ranged up to 3,660 ug/ft^2. Copper concentrations in the FA storage room area ranged up to 122,400 ug/ft^2.

Lead contamination that exceeded the NGB surface wipe sampling criteria for metals was identified on the floor to the entrance of the firing range. Lead and copper contamination that

exceeded the NGB surface wipe sampling criteria for metals was identified on the floor of the bullet trap area. Lead contamination that exceeded the NGB surface wipe sampling criteria for metals was identified in the FA storage room on the outside of the access door to the firing range. Lead concentrations in the FA storage room on the outside of the access door to the firing range measured up to 2,735 ug/ft^2.

The lead concentration on the exhaust vent in the FA storage room was 2,055 ug/ft^2, which indicates that lead may have migrated into the HVAC system that exhausts the FA storage room.

The results indicate lead and copper contamination of surface areas in the firing range and bullet trap area that exceed the NGB surface wipe sampling criteria for metals. The results also indicate that the positive pressure within the firing range appears to permit metal contamination to spread beyond the firing range.

The site should clean up all lead contaminated areas according to the guidance provided in NGR 385-15, AR 385-63 and the Regulatory Guidance – Lead Hazard provided by the NGB. (RAC 2)

The facility should seal all penetrations to the firing range. (RAC 2)

The site should discontinue use of the firing range until the above recommendations have been completed. (RAC 2)

II. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the West Region of the Army National Guard at the Kansas Army National Guard, Lenexa Armory, located in Lenexa, Kansas. This survey was conducted to determine if lead contamination was present in an indoor firing range located in the building, or in areas adjacent to the indoor firing range. Mr. Non-Responsive, Certified Industrial Hygienist (CIH) conducted this survey on July 13, 2012

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Lenexa Armory was built in 1988. The facility has about 32,059 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The Lenexa Armory is the base of operations for the 161st Field Artillery, the Medical Detachment, and the 635th Armor Company. A municipal firing range in the building is used by the Lenexa police department. The firing range cannot be accessed by Kansas Army National Guard personnel.

Site personnel were planning to renovate and convert a storage room adjacent to the firing range to a dental examination office. The FA storage room (designated Storeroom FA on the facility layout Appendix B) was equipped with a 24 inch by 48 inch access door that is used to enter the area behind the firing range bullet trap. This access door had visible silver/gray deposits that originated from the edge of the sealing area of the access door (Figure 2)

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. Ventilation testing was performed on the firing range and representatives from the Lenexa police department were interviewed. The survey also included: collecting surface wipe samples for heavy metal contamination. Photographs were taken, as appropriate.

Figure 1 – Lenexa Armory

Figure 2 – Access door to bullet trap with visible silver/gray deposits that originate from the edge of the sealing area of the access door.

V. Findings, Discussion, and Recommendations

On the day of the survey, Non-Responsive and Non-Responsive met with Non-Responsive, Captain of the Lenexa Police Department and Non-Responsive, Armorer of the Lenexa Police Department to discuss the survey and review the Lenexa Police Department (LPD) standard

operating procedures for the firing range. Non-Responsive reported that the LPD used only lead free ammunition and lead free primers.

Non-Responsive provided a BVAC ProGrade Ammo Group Material Safety Data Sheet (MSDS) for the ammunition used on the range (Appendix B). The MSDS indicated that the BVAC ProGrade ammunition had a lead content of 5-10%. The LPD provided a box of BVAC Huntington Target Match Centerfire Ammunition which they indicated was the ammunition that they used on the firing range. The BVAC Huntington Target Match Centerfire Ammunition box had a lead hazard warning on the box. The box was labeled "Lead Warning: Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition may result in exposure to lead, a substance known to cause birth defects, reproductive harm, and other serious physical injury. Have adequate ventilation at all times. Wash hands thoroughly after exposure."

The LPD later reported that they had provided an incorrect MSDS, and that they used only lead free ammunition and lead free primers.

Ventilation Testing

The LPD activated the ventilation system for the firing range. Smoke tubes were used to visibly identify ventilation patterns in the firing range and adjacent areas. The firing range had supply air that was provided behind the firing line area. Exhaust air was removed behind the bullet trap. In the firing range, smoke movement patterns generally indicated that the smoke moved downrange toward the bullet trap.

Smoke movement patterns at the entrance to the firing range indicated that the range was under positive pressure with respect to areas outside the firing range entrance.

Smoke movement patterns at the 24 inch by 48 inch access door that is used to enter the area behind the firing range bullet trap indicated that the firing range was under positive pressure with respect to the FA storage room which site personnel were planning to renovate and convert to a dental examination office.

Firing ranges should be maintained under negative pressure with respect to outside areas so that potential metal contamination is contained within the firing range.

Recommendation:

1. The firing range should be maintained under negative pressure with respect to outside areas so that potential metal contamination is contained within the firing range. (**RAC 2**)

2. Ventilation in the firing range should be tested periodically to ensure that it is operating properly and maintaining negative pressure with respect to outside areas so that potential metal contamination is contained within the firing range. (**RAC 2**)

Surface Area Wipe Samples

Thirty-five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and copper). The results are contained in Table 1. The NGB surface wipe sampling criteria for metals are contained in Table 2. Surface wipe sample locations are contained in Figure 3.

Lead and copper contamination that exceeded the NGB surface wipe sampling criteria for metals was identified in the firing range and in the adjacent FA storage room. Lead concentrations in the firing range and bullet trap area ranged up to 4,520 ug/ft^2. Copper concentrations in the firing range and bullet trap area ranged up to 269,300 ug/ft^2. Lead concentrations in the FA storage room area ranged up to 3,660 ug/ft^2. Copper concentrations in the FA storage room area ranged up to 122,400 ug/ft^2.

Lead contamination that exceeded the NGB surface wipe sampling criteria for metals was identified on the floor to the entrance of the firing range. Lead and copper contamination that exceeded the NGB surface wipe sampling criteria for metals was identified on the floor of the bullet trap area. Lead contamination that exceeded the NGB surface wipe sampling criteria for metals was identified in the FA storage room on the outside of the access door to the firing range. Lead concentrations in the FA storage room on the outside of the access door to the firing range measured up to 2,735 ug/ft^2.

The lead concentration on the exhaust vent in the FA storage room (sample KL 20) was 2,055 ug/ft^2, which indicates that lead may have migrated into the HVAC system that exhausts the FA storage room.

The results indicate lead and copper contamination of surface areas in the firing range and bullet trap area that exceed the NGB surface wipe sampling criteria for metals. The results also indicate that the positive pressure within the firing range appears to permit metal contamination to spread beyond the firing range.

Table 1
Area Wipe Sampling Results for Metals
Lenexa Army National Guard
Lenexa Armory
Lenexa, Kansas
July 13, 2012

Sample Number and Location	Lead (ug/ft^2)	Cadmium (ug/ft^2)	Copper (ug/ft^2)
KL1 - Hallway outside firing range – in front of Room 135 door	19	<1.0	1171
KL 2 - Inside front door to Room 135	**670**	<1.0	7980
KL 3 - In front of door to	**715**	<1.0	4410

Sample Number and Location	Lead (ug/ft^2)	Cadmium (ug/ft^2)	Copper (ug/ft^2)
firing range			
KL 4 – Firing range - In front of door to storage area	195	<1.0	5718
KL 5 - Firing range - In storage room (center)	**1,035**	<1.0	6693
KL 6 - Firing range - Center at 15 yard line	**2,420**	<1.0	11050
KL 7 - Firing range - Left side at 10 yard line	**384**	<1.0	3870
KL 8 - Firing range - Right side at 5 yard line	**710**	<1.0	**14,400**
KL9 - Firing range - Center in front of bullet trap	**2,130**	<1.0	**124,250**
KL 10 - Firing range - Center of bullet trap	**2,520**	<1.0	**68,850**
KL 11 - Firing range - On top of second rafter from bullet trap	**2,735**	1.7	9685
KL 12 - East back wall in storage locker area storage room	<10	1.8	138
KL 13 - North wall storage area between vault and locker area	<10	3.5	120
KL 14 - South wall beside cork board	<10	3.5	36
KL 15 - Firing range - Inside access door, on floor behind bullet trap	**4,520**	2.1	**269,300**
KL 16 - Center on the floor of FA storage room	**366**	**71**	9585
KL 17 - On floor in FA storage room under key cabinet	**255**	**59**	2330
KL 18 - On floor of southeast corner of vault next to door	**288**	**76**	931
KL 19 - On top of vault in FA storage room	<10	15	224
KL 20 - Vent on north wall in FA storage room	**2,055**	**366**	5110
KL 21 - FA storage room - On floor in front of access door to area behind bullet trap	**3,660**	26	**122,400**
KL 22 - FA storage room - On access door to area behind bullet trap	**2,735**	1.2	5055
KL 23 - FA storage room -	**2,580**	2.4	2920

Sample Number and Location	Lead (ug/ft^2)	Cadmium (ug/ft^2)	Copper (ug/ft^2)
Above access door to area behind bullet trap			
KL 24 - Southeast corner of gym – on floor	<10	<1.0	95
KL 25 - Northeast corner of gym – on floor	<10	1.2	181
KL 26 - Northwest corner of gym – on floor	<10	1.3	35
KL 27 - Northwest corner of gym	<10	1.4	392
KL 28 - Center of gym	<10	<1.0	22
KL 29 - Center of Co-2137CAB supply room	<10	4.1	54
KL 30 - Center of med vet supply room	<10	<1.0	85
KL 31 - On top of cabinet in medical records room	<10	1.3	20
KL 32 - On top of cabinet in PDRHA room	18	1.1	520
KL 33 - Center of locker room FA on floor	<10	1.4	22
KL 34 - Center of locker room armory on floor	<10	8.4	223
KL 35 - FA storage room - On top of rafters	**316**	**123**	453
KL 36 – Field Blank	ND	ND	4.2
KL 37 – Field Blank	ND	ND	2.5

Note:

1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant." 3) ND = None Detected

Table 2
NGB Surface Wipe Sampling Criteria for Metals

Metal	Acceptable Surface Level ug/ft^2	Basis for Criteria
Cadmium	28	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Copper	13,935	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

Recommendations:

1. Clean up all lead contaminated areas according to the guidance provided in NGR 385-15, AR 385-63 and the Regulatory Guidance – Lead Hazard provided by the NGB. (**RAC 2**)

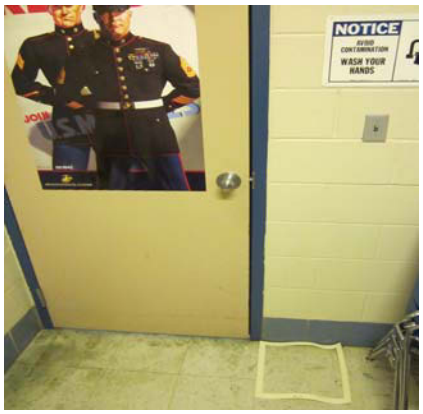
2. Establish negative pressure within the firing range. (**RAC 2**)

3. Seal all penetrations to the firing range. (**RAC 2**)

4. Discontinue use of the firing range until the above recommendations have been completed. (**RAC 2**)

Figure 3 – Wipe Sample Locations (below)

Sample KL1



Sample KL2

Sample KL3

Sample KL4

Sample KL5

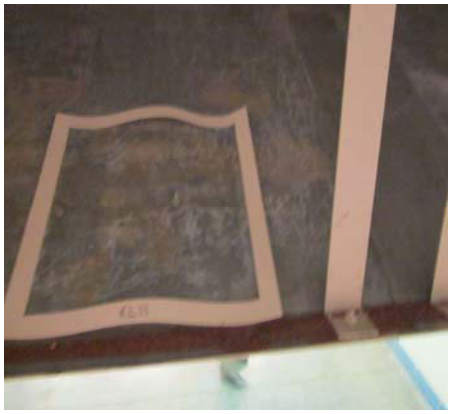
Sample KL6

Sample KL7

Sample KL8

Sample KL9

Sample KL10



Sample KL11

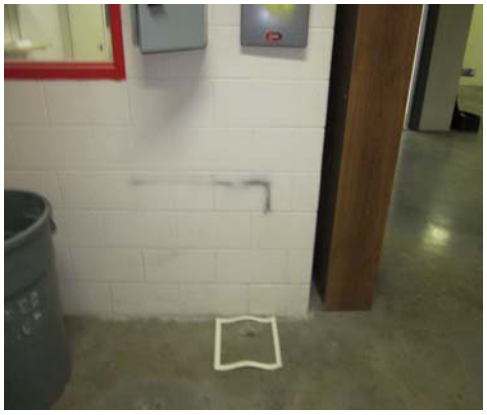
Sample KL12

Sample KL13

Sample KL14

Sample KL15

Sample KL16



Sample KL17

Sample KL18

Sample KL19

Sample KL20

Sample KL21

Sample KL22

Sample KL23

Sample KL24

Sample KL25

Sample KL26

Sample KL27

Sample KL28

Sample KL29

Sample KL30

Sample KL31

Sample KL32

Sample KL33

Sample KL34

Sample KL35

Firing Range Wall Penetrations

The partition wall between the firing range and the FA storage room has gaps (Figure 4). The unsealed areas (gaps) above the partition wall between the firing range and FA storage room should be sealed to prevent migration of metal contamination.

Figure 4 -Unsealed areas above partition wall between firing range and FA storage room

Recommendation:

The unsealed areas (gaps) above the partition wall between the firing range and FA storage room should be sealed to prevent migration of metal contamination.

This survey was conducted by, and report written by Non-Responsive, CIH as a representative of NGB. This survey report was reviewed by Non-Responsive, Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

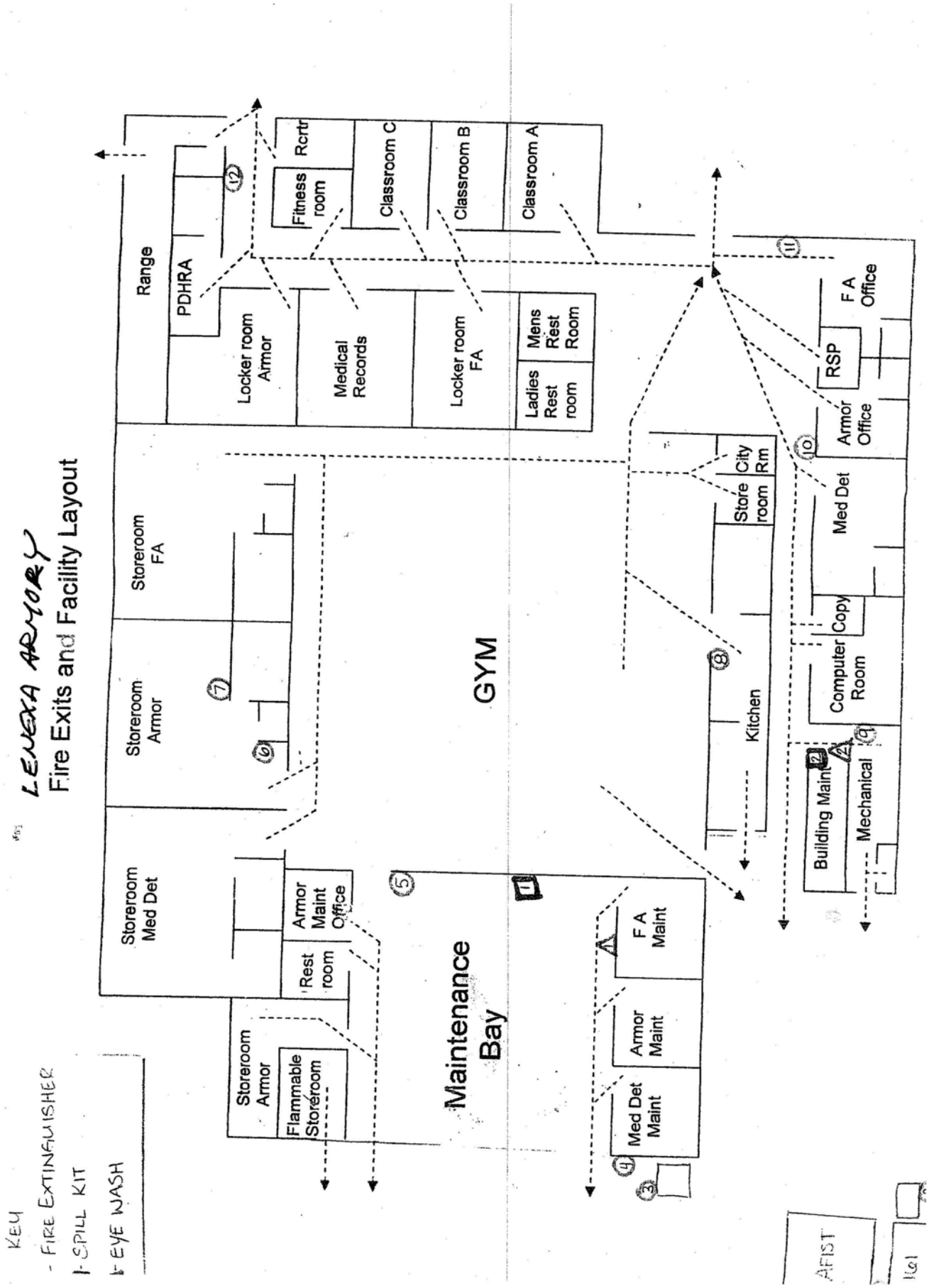
Non-Responsive
Industrial Hygiene Technician

Lenexa Police Department Points of Contact

Non-Responsive
Captain

Non-Responsive
Armorer

Appendix B



ProGrade Ammo Group LLC d/b/a BVAC

(MSDS) Material Safety Data Sheet

MSDS No.: CF01.0010
Supercedes: 8/18/03

Revision Date: 10/03/11

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **CENTERFIRE LOADED ROUNDS**

Chemical Name: Mixture – Metal Alloy

Synonyms: Centerfire Rifle: 17 MachV, 17 Remington, 204 Ruger, 20 TAC, 221 Fireball, 218 Bee, 22 Hornet, 22-250 Remington, 222 Remington, 223 Remington, 22-250, 220 Swift; 223 WSSM, 6mm PPC; 243 Winchester, 6mm BR, 6mm Remington, 243 WSSM, 250-3000, 250 Savage, 257 Roberts, 25 WSSV, 25-06 Remington, 257 Weatherby, 260 Remington, 6.5x55 Swedish, 6.5 x 284, 264 Winchester Mag., 6.8 SPC, 270 Winchester, 270 WSM, 270 Weatherby, 7mm-08, 7mm Mauser, 284 Winchester, 280 Remington, 7mm SAUM, 7mm WSM, 7mm Remington Mag., 7mm Weatherby Mag, 7 STW, 7 RUM, 30 Carbine, 30-30 Winchester, 30-60 Springfield, 30 40 Krag, 300 Winchester Mag., 300 SAUM, 300 WSM, 300 H & H Magnum, 308 Norma Mag., 300 Weatherby Mag., 300 RUM, 30-338, 30-378, 7.62x39, 300 Savage, 303 British, 308 Winchester, 7.65x53 Argentine, 8mm Mauser (8 x57), 8mm Remington Mag., 325 WSM, 338 Winchester Mag., 340 Weatherby Mag., 338 Lapua, 338 RUM, 338-378 Weatherby, 348 Winchester, 35 Remington, 35 Whelen, 350 Remington Mag., 357 Magnum, 357 Winchester, 375 H&H Magnum, 375 RUM, 38-40 Winchester, 38-55 Winchester, 44 Remington Magnum, 44-40 Winchester, 416 Remington Mag., 416 Rigby, 444 Marlin, 450 Marlin, 45 70 Government, 458 Winchester Mag, .50 BMG, Urban COPper® M40 Glass Penetrator .338 Lapua, .338 Winchester, .308 Winchester, 6.8 SPC, .223 Remington, UrbanCOPper® M40 Light Armor Piercing .223 Remington, .308 Winchester. .50 BMG; Urban COPper® M40 Long Range .338 Lapua, .50 BMG; Urban COPper® M40 Close Quarters Tactical .223 Remington; Urban COPper® M40 high Rotation .223 Remington, Urban COPper® M40 Limited Penetration .223 Remington, .308 Winchester.

Military Centerfire Rifle, 5.56mm 55 gr. full metal jacket, 5.56mm 62 gr. full metal jacket, 7.62x51mm 147 gr. full metal jacket, 50 BMG 647 gr. full metal jacket.

Centerfire Pistol/Revolver: 30 Carbine, 32 H&R Magnum, 380 Automatic, 38 Special, 9mm Luger(Parabellum), 357 Magnum, 10mm Automatic, 41 Remington Magnum, 44 Smith & Wesson Special, 44 Remington Magnum, 44 Russian, 44 40, 45 Automatic, 45 Colt, 45 Smith & Wesson, 357 Magnum, 44 Magnum, 40 Smith & Wesson, 45 Auto, 454 Casull, 45 Scofield, 460 Smith & Weston, 475 Linbough, 480 Ruger, 50 AE, 500 Smith & Wesson.

Chemical Family: Metal mixture

Formula: Not applicable - mixture

Product use: Centerfire Rifle and Pistol Loaded Ammunition

COMPANY ADDRESS ProGrade Ammo Group LLC d/b/a BVAC
5616 Eastside HWY
Stevensville, MT 59870
info@prograde ammo.com

CUSTOMER SERVICE:
406 777 7641

2. COMPOSITION / INFORMATION ON INGREDIENTS

CAS Number	Components	% By Weight	EINECS/ ELINCS #	EU Classification	
				Symbol	R-Phrase
7439-92-1	Lead	5-10	231-100-4	T, N*	R1-33-50/53-62
744-50-8	Copper	30-55	231-159-6	None	None
7440-66-6	Zinc	5-15	231-175-3	F (as dust or powder)	R 15-17
9004-70-0	Nitrocellulose	10-20	Not listed	E*	R 2
55-63-0	Nitroglycerin	1-2	200-240-8	E, T+, N	R 3-26/27/28-33-51-53

*This material is not listed in annex 1 of Directive 88/379/EEC. HSM has classified the material according to the conventional method based upon information from similar materials.

OSHA REGULATORY STATUS: Explosive

3. HAZARDS IDENTIFICATION

CAUTION!
EXPLOSIVE. KEEP AWAY FROM HEAT. DO NOT SUBJECT TO MECHANICAL SHOCK. PARTICLES FROM FIRING MAY BE HARMFUL IF INHALED. DO NOT TAKE INTERNALLY.

HAZARD RATINGS (for dust or fume)	Degree of hazard (0 – low, 4 = extreme)
Hazardous Materials Identification System (HMIS)	Health: 0 Flammability: 0 Physical Hazard Explosive 2
National Fire Protection Association (NFPA)	Mixture. Not rated.
HUMAN THRESHOLD RESPONSE DATA	
Odor Threshold:	Unknown
Irritation Threshold:	Unknown
Immediately Dangerous to Life or Health (IDLH) Value(s):	The IDLH for this product is not known. The IDLH for copper and lead is 100 mg/m³. The IDLH for nitroglycerin is 75 mg/m³.

POTENTIAL HEALTH EFFECTS

This product is composed of a finished metal alloy cartridge which contains the various components completely sealed within. Therefore, under normal handling of this product, no exposure to any harmful materials will occur.

When the ammunition is fired, a small amount of particles may be generated which may be slightly irritating to the eyes and the respiratory tract. The particles may contain trace amounts of these harmful substances:

Lead: Ingestion of large amounts of lead can cause abdominal pain, constipation, cramps, nausea and/or vomiting. Chronic exposure to lead can cause kidney damage, anemia, reproductive effects, developmental effects and permanent nervous system damage in humans including changes in cognitive function.

Appendix C

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Wipe Sampling – Heavy Metals

Surface wipe samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 1 square foot of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, copper and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Appendix D

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:

Submitted By: Non-Responsive

Reference Data: Lead, Cadmium and Copper
Sampling Site: NGB: Lenexa, KS
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 10610
DFOH Lab Nos.: TM-12-56342 through TM-12-56378
Date Received: 07/16/12
Data Analyzed: 07/18/12 – 07/30/12
Date Issued: 08/09/12

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

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)
KL1	TM-12-56342	19	19
KL2	TM-12-56343	670	670
KL3	TM-12-56344	715	715
KL4	TM-12-56345	195	195
KL5	TM-12-56346	1035	1035
KL6	TM-12-56347	2420	2420
KL7	TM-12-56348	384	384
KL8	TM-12-56349	710	710
KL9	TM-12-56350	2130	2130
KL10	TM-12-56351	2520	2520
KL11	TM-12-56352	2735	2735
KL12	TM-12-56353	<10	<10
KL13	TM-12-56354	<10	<10
KL14	TM-12-56355	<10	<10
KL15	TM-12-56356	4520	4520
KL16	TM-12-56357	366	366
KL17	TM-12-56358	255	255
KL18	TM-12-56359	288	288
KL19	TM-12-56360	<10	<10
KL20	TM-12-56361	2055	2055
KL21	TM-12-56362	3660	3660
KL22	TM-12-56363	2735	2735
KL23	TM-12-56364	2580	2580
KL24	TM-12-56365	<10	<10
KL25	TM-12-56366	<10	<10
KL26	TM-12-56367	<10	<10
KL27	TM-12-56368	<10	<10
KL28	TM-12-56369	<10	<10
KL29	TM-12-56370	<10	<10
KL30	TM-12-56371	<10	<10
KL31	TM-12-56372	<10	<10
KL32	TM-12-56373	18	18
KL33	TM-12-56374	<10	<10
KL34	TM-12-56375	<10	<10
KL35	TM-12-56376	316	316
KL36**	TM-12-56377	<10	None Detected
KL37**	TM-12-56378	<10	None Detected

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
LAB # 102643

Project 10610
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FOH ENVIRONMENTAL LABORATORY

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

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KL1	TM-12-56342	<1.0	<1.0
KL2	TM-12-56343	<1.0	<1.0
KL3	TM-12-56344	<1.0	<1.0
KL4	TM-12-56345	<1.0	<1.0
KL5	TM-12-56346	<1.0	<1.0
KL6	TM-12-56347	<1.0	<1.0
KL7	TM-12-56348	<1.0	<1.0
KL8	TM-12-56349	<1.0	<1.0
KL9	TM-12-56350	<1.0	<1.0
KL10	TM-12-56351	<1.0	<1.0
KL11	TM-12-56352	1.7	1.7
KL12	TM-12-56353	1.8	1.8
KL13	TM-12-56354	3.5	3.5
KL14	TM-12-56355	3.5	3.5
KL15	TM-12-56356	2.1	2.1
KL16	TM-12-56357	71	71
KL17	TM-12-56358	59	59
KL18	TM-12-56359	76	76
KL19	TM-12-56360	15	15
KL20	TM-12-56361	366	366
KL21	TM-12-56362	26	26
KL22	TM-12-56363	1.2	1.2
KL23	TM-12-56364	2.4	2.4
KL24	TM-12-56365	<1.0	<1.0
KL25	TM-12-56366	1.2	1.2
KL26	TM-12-56367	1.3	1.3
KL27	TM-12-56368	1.4	1.4
KL28	TM-12-56369	<1.0	<1.0
KL29	TM-12-56370	4.1	4.1
KL30	TM-12-56371	<1.0	<1.0
KL31	TM-12-56372	1.3	1.3
KL32	TM-12-56373	1.1	1.1
KL33	TM-12-56374	1.4	1.4
KL34	TM-12-56375	8.4	8.4
KL35	TM-12-56376	123	123
KL36**	TM-12-56377	<1.0	None Detected
KL37**	TM-12-56378	<1.0	None Detected

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ISO/IEC 17025:2005
LAB # 102643

FOH ENVIRONMENTAL LABORATORY

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

COPPER on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KL1	TM-12-56342	1171	1171
KL2	TM-12-56343	7980	7980
KL3	TM-12-56344	4410	4410
KL4	TM-12-56345	5718	5718
KL5	TM-12-56346	6693	6693
KL6	TM-12-56347	11050	11050
KL7	TM-12-56348	3870	3870
KL8	TM-12-56349	14400	14400
KL9	TM-12-56350	124250	124250
KL10	TM-12-56351	68850	68850
KL11	TM-12-56352	9685	9685
KL12	TM-12-56353	138	138
KL13	TM-12-56354	120	120
KL14	TM-12-56355	36	36
KL15	TM-12-56356	269300	269300
KL16	TM-12-56357	9585	9585
KL17	TM-12-56358	2330	2330
KL18	TM-12-56359	931	931
KL19	TM-12-56360	224	224
KL20	TM-12-56361	5110	5110
KL21	TM-12-56362	122400	122400
KL22	TM-12-56363	5055	5055
KL23	TM-12-56364	2920	2920
KL24	TM-12-56365	95	95
KL25	TM-12-56366	181	181
KL26	TM-12-56367	35	35
KL27	TM-12-56368	392	392
KL28	TM-12-56369	22	22
KL29	TM-12-56370	54	54
KL30	TM-12-56371	85	85
KL31	TM-12-56372	20	20
KL32	TM-12-56373	520	520
KL33	TM-12-56374	22	22
KL34	TM-12-56375	223	223
KL35	TM-12-56376	453	453
KL36**	TM-12-56377	4.2	4.2
KL37**	TM-12-56378	2.5	2.5

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft	Basis for Criteria
Cadmium	28	Brookhaven National Laboratory, Surface Wipe Sampling Procedure, Risk Assessment for Metals, IH75190 Rev 18 5/10/11
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
LAB # 102643

Project 10610
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FOH ENVIRONMENTAL LABORATORY
536 S. CLARK STREET CHICAGO, IL 60605 PHONE: (312) 886-0413 FAX: (312) 886-0434

Metals in Wipe Limits
(based on one ft^2 sampled area)

Analyte	Analytical Method	Method Detection Limit	Minimum Reporting Limit
Lead	OSHA ID-121	5.0 $\mu g/ft^2$	10 $\mu g/ft^2$
Cadmium	OSHA ID-121	0.5 $\mu g/ft^2$	1.0 $\mu g/ft^2$
Copper	OSHA ID-121	1.0 $\mu g/ft^2$	2 $\mu g/ft^2$

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

Project 10610
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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
Tel: (312)-886-0413 Fax: (312)-886-0434

Non-Responsive

PROJECT REFERENCE

Agreement No.: A 106644
Statement of Work No.: S 1638333
Project No: P 1652224
Agency Proj. Manager: KSARNG
Location (City, State): LENEXA, KS

For Lab Use Only — Conditions on Receipt with Name & Date

Project /Report #:
Due Date:
Samples Received Chilled? YES NO (circle one)

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[6]; WH Weekend/Holiday[7]

ID #	Sample 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 #	Analysis Requested: Lead, Cadmium, Copper
KL1	7	5	13 July 12	0807	Hallway outside fire door in front of Rm 135 door				1 SQUARE FOOT					X X X
KL2	7	5	13 July 12	0802	inside front door to Rm 135									
KL3	7	5	13 July 12	0804	in front of door to Range									
KL4	7	5	13 Jul 12	0806	in front of door to storage area									
KL5	7	5	13 Jul 12	0811	in storage room (center)									
KL6	7	5	13 Jul 12	0825	center at 15yd line									
KL7	7	5	13 Jul 12	0830	left side at 10yd line									
KL8	7	5	13 Jul 12	0835	Right side at 5yd line									
KL9	7	5	13 Jul 12	0840	Center in front of back stop									
KL10	7	5	13 Jul 12	0850	Centre of back stop									
KL11	7	5	13 Jul 12	0855	on top of semi metal from back stop									
KL12	7	5	13 Jul 12	0930	on west east back wall in storage locker area storage room									
KL13	7	5	13 Jul 12	0935	on North wall between volt & locker area									

Relinquished By: Date & Time: Non-Responsive

Received By: Date & Time:

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

COMMENTS:

* Applied to organic and inorganic analysis in cases of an emergency rush @

US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET 2 of 3

Environmental Laboratory
536 S. Clark Street South, Suite 714
Chicago, IL 60605-1521
Tel: (312) 886-0442 Fax: (312) 886-0446

Non-Responsive

PROJECT REFERENCE
Agreement No.: A 1066944
Statement of Work No.: S 1638333
Project No: P 1652224
Agency KSARNG
Proj. Manager
Location (City, State): LENEXA, KS

For Lab Use Only
Project /Report #:
Due Date:
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
CADMIUM
Lead
Copper

ID #	Sample Type[1]	Sample 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[5]	Turn Around Time[4]	Lab ID #	Cadmium	Lead	Copper
KL14	T	S	13/12	0940	Room vault beside clock board				1 SQUARE FOOT					X	X	X
KL15	T	S	13/12	0930	inside door behind back stop											
KL16	T	S	13/12	1000	center on the floor of FA storage room											
KL17	T	S	13/12	1010	on floor in FA storage room under key cabinet											
KL18	T	S	13/12	1015	on floor in southeast corner of vault by clock											
KL19	T	S	13/12	1020	on top of vault in FA storage room											
KL20	T	S	13/12	1030	Vent on north wall in FA storage room											
KL21	T	S	13/12	1040	on floor in front of door to area behind backstop											
KL22	T	S	13/12	1045	on door to area behind backstop											
KL23	T	S	13/12	1040	above door to area behind backstop											
KL24	T	S	13/12	1041	south-east corner of gym on floor											
KL25	T	S	13/12	1049	North-east corner of gym on floor											
KL26	T	S	13/12	1053	North west corner of gym on floor											

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: Date & Time

Non-Responsive

Received By: Date & Time

COMMENTS:

* Applied to organic and inorganic analysis in cases of an emergency only @ Applied to inorganic

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

3 of 3

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

PROJECT REFERENCE
Agreement No.: A 106644
Statement of Work No.: S 163833
Project No: P 165224
Agency: KSARNG
Proj. Manager: [redacted]
Location (City, State): LENEXA, KS

For Lab Use Only — Conditions on Receipt with Name & Date
Project /Report #:
Due Date:
Samples Received Chilled? YES NO (circle one)

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[6]; WH Weekend/Holiday[7]

Rev. 07/2010

ID #	Sample Type[1]	Sample 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[5]	Turn Around Time[4]	Lab ID #	Analysis Requested: Lead, Aluminum, Copper
KL27	T	S	8/3/12	1045	North west corner of gym				1 SQUARE FOOT					X X
KL28	T	S	8/3/12	1047	center of gym									
KL29	T	S	8/3/12	1105	center of CO-2137CAB supply room									
KL30	T	S	8/3/12	1110	center of med Det supply room									
KL31	T	S	8/3/12	1115	on top of cabinet in medical records room									
KL32	T	S	8/3/12	1120	on top of cabinet in PDRHA room									
KL33	T	S	8/3/12	1130	center of lower room FA analog									
KL34	T	S	8/3/12	1135	center of logic room Armor tm Rack									
KL35	T	S	8/3/12	1200	on top of crates in FA Storage Room									
KL36	T	S	8/3/12	1205	Blank									
KL37	T	S	8/3/12	1210	Blank									

Relinquished By: [redacted] Date & Time: [redacted]
Received By: Date & Time:

Sample Type Codes: 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

COMMENTS:

* Applied to organic and inorganic analysis in place of an appropriate [illegible]

Appendix E

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Nickell Armory
2722 SW Topeka Blvd
Topeka, Kansas

Survey dates: June 25-July 18, 2012

Performed by

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

February 18, 2013

Table of Contents

Appendices

I. Executive Summary

At the request of the Department of the Army, National Guard Bureau (NGB) field personnel representing the NGB Region West Industrial Hygiene Office conducted an industrial hygiene survey at the Kansas Army National Guard, Nickell Armory, located in Topeka, Kansas. This survey was conducted in response to complaints of stuffiness, headaches and allergies among some of the office personnel who work in the armory.

The Nickell Armory was built in 1956 and an addition was constructed in 2007. The facility has about 65,100 square feet of floor space. During the week, most of the activities at the armory involve administrative work.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: a review of the operations of the heating, ventilation and air conditioning (HVAC) system; a visual inspection of the HVAC system; and indoor air quality measurements for carbon dioxide, temperature and relative humidity. Facility personnel indicated that indoor air quality concerns had been reported in the older section of the building in office suites 124, 127, 130, 133, 136 and 139.

Site personnel identified employees who reported symptoms that they associated with indoor air quality. Six employees were interviewed. Their symptoms included: allergies; asthma; irritation of eyes, nose and throat; sneezing; headaches; sinus congestion; drowsiness; and ear infections. Five of six of the persons who were interviewed reported having allergies. Two of six of the persons who were interviewed reported having asthma.

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) provide guidelines for indoor air quality. Facilities personnel provided HVAC information and calculations which indicated that ASHRAE guidelines for outside air were satisfied by the HVAC system. Indoor air quality measurements for temperature, relative humidity and carbon dioxide were within ASHRAE guidelines for comfort.

No visible mold was identified during the inspection of the accessible areas of the HVAC system. Facilities personnel were not able to open all of the fan coil boxes for a visual inspection.

The following recommendations are made to continue to improve indoor air quality. All of the fan coil units that supply office suites 124, 127, 130, 133, 136 and 139 should be opened and visually inspected to ensure that the condensate from the coils drains properly and does not allow potential growth of mold. The HVAC ducts that supply office suites 124, 127, 130, 133, 136 and 139 should be opened and visually inspected for mold. If complaints regarding indoor air quality continue, personnel who have symptoms should maintain a log with specific information regarding when symptoms occur and the severity of the symptoms. These logs should be reviewed periodically to identify trends. If necessary, personnel throughout the building should be interviewed to determine the potential incidence rates of symptoms in different areas of the building.

II. Introduction

An indoor air quality survey was conducted by the West Region of the Army National Guard at the Kansas Army National Guard, Nickell Armory, located in Topeka, Kansas. This survey was conducted in response to complaints of stuffiness, headaches and allergies among some of the office personnel who work in the armory. Non-Responsive, Certified Industrial Hygienist (CIH) performed site visits on June 25 and June 29, 2012. Indoor air quality measurements were collected by Non-Responsive, Industrial Hygiene Technician, on June 29 and July 18, 2012.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Nickell Armory was built in 1956 and an addition was constructed in 2007. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The drill floor has a vinyl tile floor, brick walls that are about 24 feet high and a sloped roof that is supported by exposed metal beams. The office and classroom areas have carpeted floors, gypsum or concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Nickell Armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Federal EEO, the State Environmental Office and the State Controller Office. Additional departments and offices are also located in the building.

During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Nickell Armory had a firing range in the basement that was decommissioned in September, 2006. Weapons may be cleaned in the vaults, in the supply room, or on tables set up on the drill floor.

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: a review of the operations of the heating, ventilation and air conditioning (HVAC) system; a visual inspection of the HVAC system; and indoor air quality measurements for carbon dioxide, temperature and relative humidity. Non-Responsive (Facility Management Branch Chief) provided information regarding the operation of the HVAC system and the history of employee indoor air quality concerns. He indicated that indoor air quality concerns had been reported in the older section of the building in office suites 124, 127, 130, 133, 136 and 139. Several employees working in those office suites were interviewed regarding their concerns about indoor air quality in the building. Photographs were taken, as appropriate.

Figure 1 – Nickell Armory

V. Findings, Discussion, and Recommendations

Site personnel and facilities personnel were interviewed regarding the history of indoor air quality concerns in the building. Facility personnel reported that a severe hail, wind and rain storm in January, 2011 caused roof leaks in several areas. Roof leaks caused by the storm have been repaired.

Site personnel identified employees who had symptoms that they associated with indoor air quality. Six employees were interviewed. Their symptoms included: allergies; asthma; irritation of eyes, nose and throat; sneezing; headaches; sinus congestion; drowsiness; and ear infections. Five of six of the persons who were interviewed reported having allergies. Two of six of the persons who were interviewed reported having asthma. Two of six of the persons who were interviewed reported their symptoms either began, or became worse, after the armory roof began leaking in January, 2011.

Heating, Ventilation and Air Conditioning (HVAC) System

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) provide guidelines for indoor air quality. Facilities personnel reported that the Nickell Armory is equipped with a variable air volume (VAV) heating, ventilation and air conditioning system. They indicated that outside air is brought into the building through three 2 feet by 5 feet air intakes located on the roof of the building. The outside air passes through VAV boxes and fan coil units that filter and condition the air. The outside air flows through foam coated air filters and fan coils that contain either chilled water or hot water. Fans blow air over the coils and

chilled or heated air is supplied to the office spaces. The fan coil units are equipped with a tray that collects condensed water and drains it to a pipe for disposal.

ASHRAE provides guidance for the amount of outside air that should be supplied to indoor environments (ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality). Facilities personnel were requested to provide information regarding the amount of outside air that is supplied to office spaces.

Non-Responsive of Latimer, Sommers and Associated P.A., Engineers reported that in the office suites where concerns had been raised (office suites 124, 127, 130, 133, 136 and 139), each fan coil unit serves a respective open office with a square foot area of 54 feet by 20 feet (1,080 square feet). He indicated that the minimum outside air for the fan coil units for each one of these office suites is 200 cubic feet per minute (20% of the total). ASHRAE outside air requirements are 0.06 cubic feet per minute (cfm) for each square foot of space and 5 cfm for each occupant. Based on the above information the ASHRAE calculation for outside air requirements is 1,080 square feet x 0.06 cfm per square foot which equals 65 cfm of outside air, and 200 cfm minus 65 cfm equals 135 cfm. 135 cfm divided by 5 cfm per person results in a maximum occupancy for each of the office suites of 27 people. On the days of the survey, the occupancies of the office suites ranged up to a maximum of 8 persons, which is well within the ASHRAE calculation for maximum occupancy for a 1,080 square foot room that receives 200 cfm of outside air.

No visible mold was identified during the inspection of the accessible areas of the HVAC system. Facilities personnel were not able to open all of the fan coil units for a visual inspection.

Indoor Air Quality Measurements –Temperature, Relative Humidity and Carbon Dioxide

Temperature and relative humidity are indicators of general comfort levels. Carbon dioxide measurements serve as an indirect indicator of the amount of outside air that is supplied to an office space. Since carbon dioxide is a by-product of respiration, increasing levels of carbon dioxide in an office environment may be an indication of a lack of sufficient outside air. Temperature, relative humidity and carbon dioxide levels were measured with a Q-Trak Indoor Air Quality Monitor (Model 7565). The monitor was calibrated prior to the survey.

Indoor air quality measurements were collected by Non-Responsive , Industrial Hygiene Technician, on June 29 and July 18, 2012. The measurements were collected in five office suites where personnel reported symptoms that they associated with indoor air quality (office suites 124, 130, 133, 136, and 139); in three control areas of the building where there had not been any indoor air quality complaints (room 108, room 163 and the drill floor); and outside of the building. The results are contained in Tables 1 and 2.

On June 29, the outdoor temperatures in front of the building ranged up to 103 degrees Fahrenheit. On July 18, the outdoor temperatures ranged up to 101 degrees Fahrenheit. Temperatures in the office suites where personnel reported symptoms were usually in the mid 70s and the relative humidity usually ranged between 48% to 59% which is within ASHRAE guidelines for thermal comfort (ASHRAE Standard 55-2004 Thermal Conditions for Human

Occupancy). Carbon dioxide levels in all of the office suites where personnel reported symptoms rose throughout the day. The largest indoor/outdoor differential of carbon dioxide levels was about 500 parts per million (ppm) which remained within the ASHRAE guidelines (ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality) that recommend an indoor/outdoor differential of carbon dioxide levels of no more than 700 ppm.

Table 1
Indoor Air Quality Survey
Kansas Army National Guard
Nickell Armory
Topeka, Kansas
June 29, 2012

Location		7:15	8:15	9:15	10:15	11:15	12:00	13:35	14:45
Outside 15' West side front entrance	CO2	620	617	617	607	601	625	607	601
	Temp	79	80	86	86	90	95	102.5	103
	RH	59%	60%	54%	59%	55%	46%	32.4%	26%
	# of ppl	---	---	---	---	---	---	---	---
Public Affairs Room 108	CO2	770	759	785	797	929	873	902	988
	Temp	75	76	81	82	82	86	89	81
	RH	52%	50%	45%	45%	44%	39%	30%	39%
	# of ppl	1	1	2	1	1	0	0	2
Facilities & Engineering Room 163	CO2	850	750	718	786	808	880	LOCKED	LOCKED
	Temp	75	75	76	78	77	79	LOCKED	LOCKED
	RH	48%	50%	42.7%	42%	48%	48%	LOCKED	LOCKED
	# of ppl	2	1	0	1	3	2	LOCKED	LOCKED
State Controllers Room 124	CO2	804	815	869	889	944	1005	1108	1091
	Temp	74	74	75	76	76	77	78	76
	RH	59%	58%	54	52%	54%	52%	44%	48%
	# of ppl	3	7	7	5	6	1	4	5
Environmental Office Room 130	CO2	720	723	746	751	767	806	950	893
	Temp	72	73	74	75	75	75	76	74
	RH	58%	57%	55%	55%	58%	55%	48%	51%
	# of ppl	2	4	5	4	6	2	4	1
Battalion & HQ Detachment Room 133	CO2	700	706	747	726	695	768	1005	920
	Temp	72	72	76	74	74	73	75	73
	RH	64%	69%	59%	58%	60%	56%	57%	55%
	# of ppl	2	3	4	3	2	2	4	2
State HRO Room 136	CO2	740	766	744	735	727	773	938	915
	Temp	71	73	75	74	74	73	74	72
	RH	58%	59%	54%	57%	59%	53%	52%	57%
	# of ppl	3	4	5	6	3	4	6	4
Federal HRO Room 139	CO2	725	760	733	753	762	796	934	909
	Temp	71	73	74	73	74	73	74	72
	RH	57%	56%	54%	57%	58%	57%	50%	54%
	# of ppl	3	3	3	2	4	3	1	---
Drill Floor	CO2	633	631	644	655	687	684	695	686
	Temp	78	78	79	80	81	81	80	82
	RH	64%	66%	62%	62%	61%	62%	57%	56%
	# of ppl	---	---	---	---	---	---	---	---

Note:
CO2 = carbon dioxide in parts per million
Temp = degrees Fahrenheit
RH = relative humidity
# of ppl = number of people in the office suite at the time of the measurement

Table 2
Indoor Air Quality Survey
Kansas Army National Guard
Nickell Armory
Topeka, Kansas
July 18, 2012

Location		8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00
Outside 15' West side front entrance	CO2	557	622	564	554	620	534	658	1179 *
	Temp	82.2	83	87	90	97	100	101	100
	RH	69%	69%	70%	70%	59%	62%	43%	37%
	# of ppl	---	---	---	---	---	---	---	---
Public Affairs Room 108	CO2	653	812	815	826	1033	942	909	964
	Temp	79	80	80	82	86	87	88	81
	RH	51%	47%	46%	43%	40%	38%	32%	40%
	# of ppl	2	2	0	0	1	2	1	1
Facilities & Engineering Room 163	CO2	---	716	825	829	903	894	871	980
	Temp	---	77	77	78	79	80	80	79
	RH	---	43%	41%	38%	37%	37%	35%	38%
	# of ppl	---	2	2	2	1	1	1	3
State Controllers Room 124	CO2	722	855	922	972	1017	1027	949	926
	Temp	76	76	75	76	76	76	77	77
	RH	56%	54%	54%	52%	48%	49%	48%	49%
	# of ppl	5	5	2	6	6	4	3	4
Environmental Office Room 130	CO2	718	806	845	870	935	884	944	951
	Temp	73	74	74	74	74	74	74	74
	RH	55%	52%	54%	51%	78% *	48%	47%	47%
	# of ppl	3	8	5	5	6	5	3	6
Battalion & HQ Detachment Room 133	CO2	620	793	855	940	845	886	907	953
	Temp	72	73	72	73	73	74	74	74
	RH	62%	64%	58%	63%	56%	62%	60%	58%
	# of ppl	1	3	4	1	2	4	4	4
State HRO Room 136	CO2	779	848	896	1052	907	945	1018	987
	Temp	72	72	72	73	73	73	74	73
	RH	57%	54%	55%	51%	52%	51%	50%	50%
	# of ppl	4	4	5	4	5	5	5	3
Federal HRO Room 139	CO2	821	867	934	1016	982	990	1059	1001
	Temp	72	72	72	73	72	73	73	74
	RH	58%	55%	55%	56%	52%	53%	51%	51%
	# of ppl	5	5	4	4	3	5	5	2
Drill Floor	CO2	610	588	596	640	572	672	674	588
	Temp	80	80	79	82	82	84	84	83
	RH	69%	67%	67%	65%	62%	63%	56%	54%
	# of ppl	3	4	0	0	1	2	0	0

* suspected measurement error, not consistent with other measurements

Note:

CO2 = carbon dioxide in parts per million

Temp = degrees Fahrenheit

RH = relative humidity

# of ppl = number of people in the office suite at the time of the measurement

Recommendations:

1. All of the fan coil units that supply office suites 124, 127, 130, 133, 136 and 139 should be opened and visually inspected to ensure that the condensate that drips from the coils drains properly and does not allow potential growth of mold. **(RAC 2)**

2. The HVAC ducts that supply office suites 124, 127, 130, 133, 136 and 139 should be opened and visually inspected for mold. **(RAC 2)**

3. If complaints regarding indoor air quality continue, personnel who have symptoms should maintain a log with specific information regarding when symptoms occur and the severity of the symptoms. These logs should be reviewed periodically to identify trends. **(RAC 2)**

4. If complaints regarding indoor air quality continue, personnel throughout the building should be interviewed to determine the potential incidence rates of symptoms in different areas of the building. **(RAC 2)**

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of the NGB. This survey report was reviewed by Non-Responsive, Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Non-Responsive
Industrial Hygiene Technician

Nickell Armory Points of Contact

Non-Responsive

Appendix B

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Nickell Armory
2722 SW Topeka Blvd
Topeka, Kansas

Survey date: April 17, 2009

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

July 4, 2009

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Nickell Armory, located in Topeka, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Nickell Armory was built in 1956. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The drill floor has a vinyl tile floor, brick walls that are 24 feet high and a sloped roof that is supported by exposed metal beams. The office and classroom areas have carpeted floors, gypsum or concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Nickell Armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Family Support, the Chaplain's office, State Benefits Advisor, Integration Cell, Public Affairs Office, RPO, 105th MPAD, J-2 and State Human Resources.

During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Nickell Armory had a firing range in the basement that was decommissioned in September, 2006. Weapons may be cleaned in the vaults, in the supply room, or on tables set up on the drill floor.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KATW5 which was collected on the floor in the basement caged area (the site of the decommissioned firing range) had a lead concentration of 1,568 ug/ft^2.

The Nickell Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Nickell Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KATW5 which was collected on the floor in the basement caged area (the site of the decommissioned firing range) had a lead concentration of 1,568 ug/ft^2.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Nickell Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Nickell Armory, located in Topeka, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 17, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Nickell Armory was built in 1956. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The drill floor has a vinyl tile floor, brick walls that are 24 feet high and a sloped roof that is supported by exposed metal beams. The office and classroom areas have carpeted floors, gypsum or concrete block walls and suspended ceilings. The exterior of the building is brick veneer.

The Nickell Armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Family Support, the Chaplain's office, State Benefits Advisor, Integration Cell, Public Affairs Office, RPO, 105th MPAD, J-2 and State Human Resources.

During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Nickell Armory had a firing range in the basement that was decommissioned in September, 2006. Weapons may be cleaned in the vaults, in the supply room, or on tables set up on the drill floor.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Nickell Armory

VI. Findings, Discussion, and Recommendations

The Nickell Armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Family Support, the Chaplain's office, State Benefits Advisor, Integration Cell, Public Affairs Office, RPO, 105th MPAD, J-2 and State Human Resources.

Site personnel reported that no vehicle maintenance is performed at the armory. The Nickell Armory had a firing range in the basement that was decommissioned in September, 2006. Weapons may be cleaned in the vaults, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). Some of the sample results were below the limit of detection for the metals and other results indicated that metals were detected, mostly at lower levels. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. One of the surface wipe sample results exceeded the above criteria. Sample KATW5 which was collected on the floor in the basement caged area (the site of the decommissioned firing range) had a lead concentration of 1,568 ug/ft^2. The Nickell Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage

areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Nickell Armory
Nickell, Kansas
April 17, 2009

Analyte	KATW1 (ug/ft^2) Room 174 Break Room – on Countertop	KATW2 (ug/ft^2) Vault 85 – on Desktop	KATW3 (ug/ft^2) Vault 86 – on Storage Rack
Lead	<91	<91	<91
Cadmium	<9.1	<9.1	<9.1
Chromium	<91	<91	<91

Analyte	KATW4 (ug/ft^2) Kitchen – on Griddle	KATW5 (ug/ft^2) Basement Caged Area – on Floor (Decommissioned Firing Range)	KATW6 (ug/ft^2) Field Blank
Lead	<91	**1568**	ND
Cadmium	<9.1	<9.1	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area.
2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)

Sample KATW1

Sample KATW2

Sample KATW3

Sample KATW4

Sample KATW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Nickell Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Nickell Armory
Nickell, Kansas
April 17, 2009

Location	Illumination (foot candles)
Room 163 Office	67
Room 162 Office	55
Room 166 Classroom	48
Room 167 Office	87
Room 174 Break Room	88
Room 140 Office	78
Room 130 Office	56
127 Conference Room	55
Room 88 Vault	170
Room 85 Vault	35
Room 86 Vault	7
Lower Level Storage Area	32
Drill Hall	28
Kitchen	35
Basement Caged Area	14
Room 10 – Fitness Room	49

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Nickell Armory Points of Contact

Non-Responsive

Appendix B

VI. Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

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:

Submitted By: Non-Responsive

Reference Data: Lead, Cadmium, and Chromium

Sampling Site:	NGB: Topeka, KS (Nickell Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8849
DFOH Lab Nos.:	TM-09-38257 through TM-09-38262
Date Received:	04/24/09
Data Analyzed:	04/28/09 – 05/05/09
Date Issued:	05/07/09

The samples were microwave digested using a CEM MDS-2000. 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

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)
KATW1	TM-09-38257	<10	<91
KATW2	TM-09-38258	<10	<91
KATW3	TM-09-38259	<10	<91
KATW4	TM-09-38260	<10	<91
KATW5	TM-09-38261	173	1568
KATW6**	TM-09-38262	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KATW1	TM-09-38257	<1.0	<9.1
KATW2	TM-09-38258	<1.0	<9.1
KATW3	TM-09-38259	<1.0	<9.1
KATW4	TM-09-38260	<1.0	<9.1
KATW5	TM-09-38261	<1.0	<9.1
KATW6**	TM-09-38262	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER^	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KATW1	TM-09-38257	<10	<91
KATW2	TM-09-38258	<10	<91
KATW3	TM-09-38259	<10	<91
KATW4	TM-09-38260	<10	<91
KATW5	TM-09-38261	<10	<91
KATW6**	TM-09-38262	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihalqap.org for details

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

[redacted]

PROJECT REFERENCE	
Agreement No.:	A 106644
Statement of Work No.:	S 136934
Project No:	P 136935
Agency/Project Name:	KANSAS ARMY NATIONAL GUARD
Location (City, State):	NICKELL ARMORY, TOPEKA, KS

For Lab Use Only
Project /Report #: 8849
Due Date: 5/8/09
Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

Analysis Requested
LEAD
CADMIUM
CHROMIUM

Sample ID #	Type[1]	Media[2]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in^2)	Water Volume (Liters)	Water Code[3]	Turn Around Time*	Lab ID #
KATW1	7	12	4-17-09						100 cm²				TM09-38257
KATW2													38258
KATW3													38259
KATW4													38260
KATW5													38261
KATW6					FIELD BLANK				—				38262

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8-Contact Plate 9-Tape 10-Spore Trap (Zefon & others) 11-Other

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight 4-Preweighted 5-MEA 6-CCA 7-R2A/TSA 8-Air-O-Cell Cassette 9-MCE Cassette (0.45) 10-MCE Cassette (0.8) 11-MCE Filter 12-Oth

Relinquished By	Date & Time	Received By	Date & Time
[redacted]			

COMMENTS:

*Applied to non-viable microbiological samples only. @Applied to asbestos samples, SD: 2-hour PLM/PCM, 8-hour TEM; ND: 24-hour; R: 3-5 business days.

Nickell Armory
Topeka, Kansas

Industrial Hygiene Survey
Survey Date: April 17, 2009

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Nickell Armory Indoor Firing Range
2722 SW Topeka Blvd
Topeka, Kansas

Survey date: April 26, 2013

Performed by

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

July 9, 2013

Table of Contents

Appendices

I. Executive Summary

At the request of the Department of the Army, National Guard Bureau (NGB) field personnel representing the NGB Region West Industrial Hygiene Office conducted an industrial hygiene survey at the Kansas Army National Guard, Nickell Armory Indoor Firing Range (IFR), located in Topeka, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to identify potential lead levels in the closed IFR.

The Nickell Armory was built in 1956 and an addition was constructed in 2007. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Federal EEO, the State Environmental Office and the State Controller Office. Additional departments and offices are also located in the building. During the week, most of the activities at the armory involve administrative work.

The Nickell Armory had an indoor firing range in the basement. Site personnel reported that the IFR was closed in September, 2006 and converted to a caged storage area. An industrial hygiene survey was requested to determine the potential for residual lead contamination in the former IFR area.

Seventeen surface wipe samples were collected on representative surfaces in the closed IFR and analyzed for lead. Eleven of the seventeen surface wipe sample results exceeded the NGB guideline for lead of 200 ug/ft^2. The sample results ranged up to 30,909 ug/ft^2. The highest concentrations of lead were located on the floor in the former bullet trap area.

The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

II. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the West Region of the Army National Guard at the Kansas Army National Guard, Nickell Armory Indoor Firing Range (IFR), located in Topeka, Kansas. This survey was conducted in order to identify potential lead levels in the closed IFR. Non-Responsive, Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 26, 2013.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Nickell Armory was built in 1956 and an addition was constructed in 2007. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Federal EEO, the State Environmental Office and the State Controller Office. Additional departments and offices are also located in the building. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory.

The Nickell Armory had an indoor firing range in the basement. Site personnel reported that the IFR was closed in September, 2006 and converted to a caged storage area. Non-Responsive, the KSARNG Occupational Health Manager, requested an industrial hygiene survey to determine the potential for residual lead contamination in the former IFR area.

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination. Photographs were taken, as appropriate.

Figure 1 – Nickell Armory

V. Findings, Discussion, and Recommendations

The Nickell Armory was built in 1956 and an addition was constructed in 2007. The facility has about 65,100 square feet of floor space that encompasses mostly offices, a drill floor, fitness room, classrooms, kitchen, latrines, storage rooms and weapons vaults. The armory is the base of operations for the Department of Facilities and Engineering (DOFE), Federal HRO, Federal EEO, the State Environmental Office and the State Controller Office. Additional departments and offices are also located in the building. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory.

The Nickell Armory had an IFR in the basement. Site personnel reported that the IFR was closed in September, 2006 and converted to a caged storage area.

Surface Wipe Samples

Seventeen surface wipe samples were collected on representative surfaces in the closed IFR and analyzed for lead. The results are contained in Table 1. Wipe sample locations are identified in Figure 2. The NGB surface wipe sampling guideline for lead is contained in Table 2.

Eleven of the seventeen surface wipe sample results exceeded the NGB guideline for lead of 200 ug/ft^2. The sample results ranged up to 30,909 ug/ft^2. The highest concentration of lead was located on the floor in the former bullet trap area.

Sample KNIW1, which was collected on the floor of the Chief of Staff's caged storage area, had a lead concentration of 5,691 ug/ft^2. Sample KNIW2, which was collected on the floor of the 1979th CCT caged storage area had a lead concentration of 4,182 ug/ft^2. Sample KNIW3, which was collected on the floor of the JAG caged storage area had a lead concentration of 2,845 ug/ft^2. Sample KNIW4, which was collected on the floor of the Safety Section caged storage area had a lead concentration of 5,286 ug/ft^2.

The Recruiting RSP/R&R caged storage area occupies the former bullet trap area in the IFR. Sample KNIW5, which was collected on the floor (south side) in the Recruiting RSP/R&R caged storage area had a lead concentration of 7,664 ug/ft^2. Sample KNIW6, which was collected on the floor (north side) in the Recruiting RSP/R&R caged storage area had a lead concentration of 14,023 ug/ft^2. Sample KNIW7, which was collected on the ledge for cleanout in the Recruiting RSP/R&R caged storage area had a lead concentration of 14,409 ug/ft^2. Sample KNIW9, which was collected on the west wall (lower southwest corner) in the Recruiting RSP/R&R caged storage area had a lead concentration of 410 ug/ft^2. Sample KNIW10, which was collected on the floor, beneath the storage racks, in the southwest corner of the Recruiting RSP/R&R caged storage area had a lead concentration of 30,909 ug/ft^2.

Sample KNIW16, which was collected on the HVAC duct near the ceiling, in the center of the room, had a lead concentration of 434 ug/ft^2. Sample KNIW17, which was collected on the floor at the former firing line area had a lead concentration of 976 ug/ft^2.

The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2.

The Nickell Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Nickell Armory Indoor Firing Range
Topeka, Kansas
April 26, 2013

Location	Sample #	Lead Concentration (ug/ft^2)
Chief of Staff caged storage area, on floor (near north wall)	KNIW1	**5,691**
1979th CCT caged storage area, on floor (near north wall)	KNIW2	**4,182**
JAG caged storage area, on floor (near south wall)	KNIW3	**2,845**
Safety Section caged storage area, on floor (near north wall)	KNIW4	**5,286**
Recruiting RSP/R&R, former bullet trap area – on floor, south side	KNIW5	**7,664**
Recruiting RSP/R&R, former bullet trap area – on floor, north side	KNIW6	**14,023**
Recruiting RSP/R&R, former bullet trap area – on ledge for cleanout	KNIW7	**14,409**
Recruiting RSP/R&R, former bullet trap area – on cleanout door	KNIW8	187
Recruiting RSP/R&R, former bullet trap area – on west wall, at lower southwest corner	KNIW9	**410**
Recruiting RSP/R&R, former bullet trap area– on floor, southwest corner, beneath storage racks	KNIW10	**30,909**
Recruiting RSP/R&R, former bullet trap area – on west wall, center of wall	KNIW11	163
Recruiting RSP/R&R, former bullet trap area – on west wall, upper northwest corner of wall	KNIW12	158
Mechanical Room, on air handler	KNIW13	190
G3 Storage, on wall (north side)	KNIW14	<91
DOFE Storage, on wall (south side)	KNIW15	<91
On HVAC duct near ceiling, center of room	KNIW16	**434**
On floor at former firing line area	KNIW17	**976**
Field Blank	KNIW18	ND

Notes: 1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant." 3) ND = None Detected

Table 2
NGB Surface Wipe Sampling Guideline for Lead

Metal	Acceptable Surface Level ug/ft^2	Basis for Criteria
Lead	200	NG Pam 420-15

Recommendations:

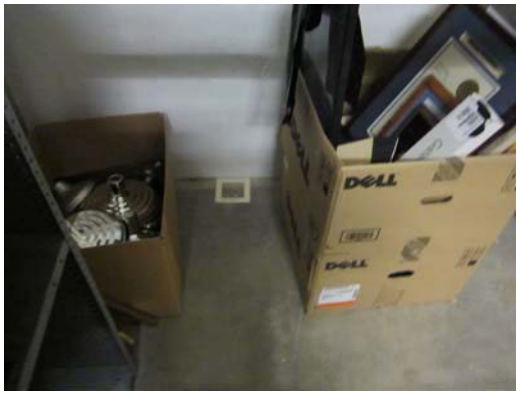
1. The closed indoor firing range should be cleaned up as specified by the procedures contained in NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. Residual lead contamination of surfaces must be less than 200 ug/ft^2. (**RAC 2**)

2. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

3. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

4. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)



Sample KNIW1


Sample KNIW2

Sample KNIW3

Sample KNIW4

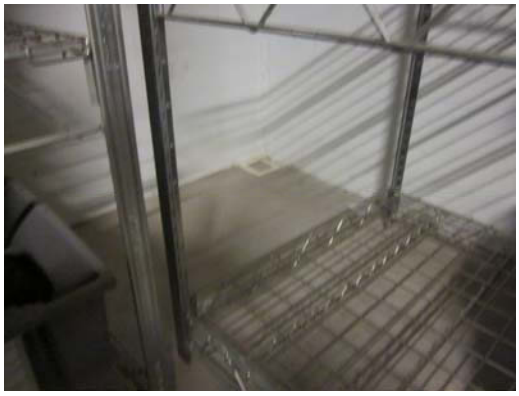
Sample KNIW5

Sample KNIW6

Sample KNIW7

Sample KNIW8

Sample KNIW9



Sample KNIW10

Sample KNIW11

Sample KNIW12

Sample KNIW13

Sample KNIW14

Sample KNIW15

Sample KNIW16

Sample KNIW17

This survey was conducted by, and report written by [redacted], CIH, CPE as a representative of the NGB. This survey report was reviewed by [redacted], Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Non-Responsive
CW2 Industrial Hygiene Technician

Nickell Armory Points of Contact

Non-Responsive

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Lead

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for lead. The lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Appendix C

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: Topeka, KS (Nickell Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 11109
DFOH Lab Nos.:	TM-13-60976 through TM-13-60993
Date Received:	05/02/13
Data Analyzed:	05/03/13 - 05/07/13
Date Issued:	05/07/13

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 11109
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY

538 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)
KNIW1	TM-13-60976	626	5691
KNIW2	TM-13-60977	460	4182
KNIW3	TM-13-60978	313	2845
KNIW4	TM-13-60979	582	5286
KNIW5	TM-13-60980	843	7664
KNIW6	TM-13-60981	1543	14023
KNIW7	TM-13-60982	1585	14409
KNIW8	TM-13-60983	21	187
KNIW9	TM-13-60984	45	410
KNIW10	TM-13-60985	3400	30909
KNIW11	TM-13-60986	18	163
KNIW12	TM-13-60987	17	156
KNIW13	TM-13-60988	21	190
KNIW14	TM-13-60989	<10	<91
KNIW15	TM-13-60990	<10	<91
KNIW16	TM-13-60991	48	434
KNIW17	TM-13-60992	107	976
KNIW18**	TM-13-60993	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

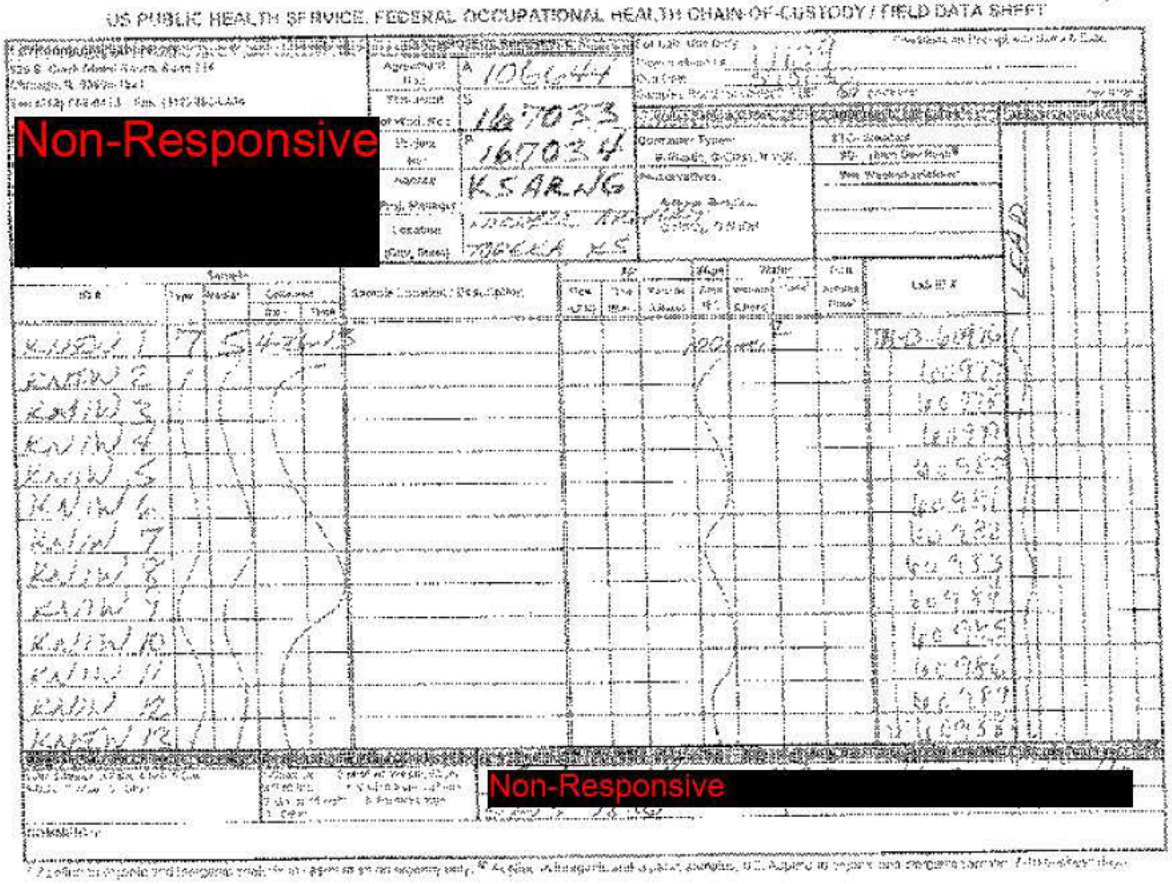
Metals in Wipe Limits
(based on one ft² sampled area)

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

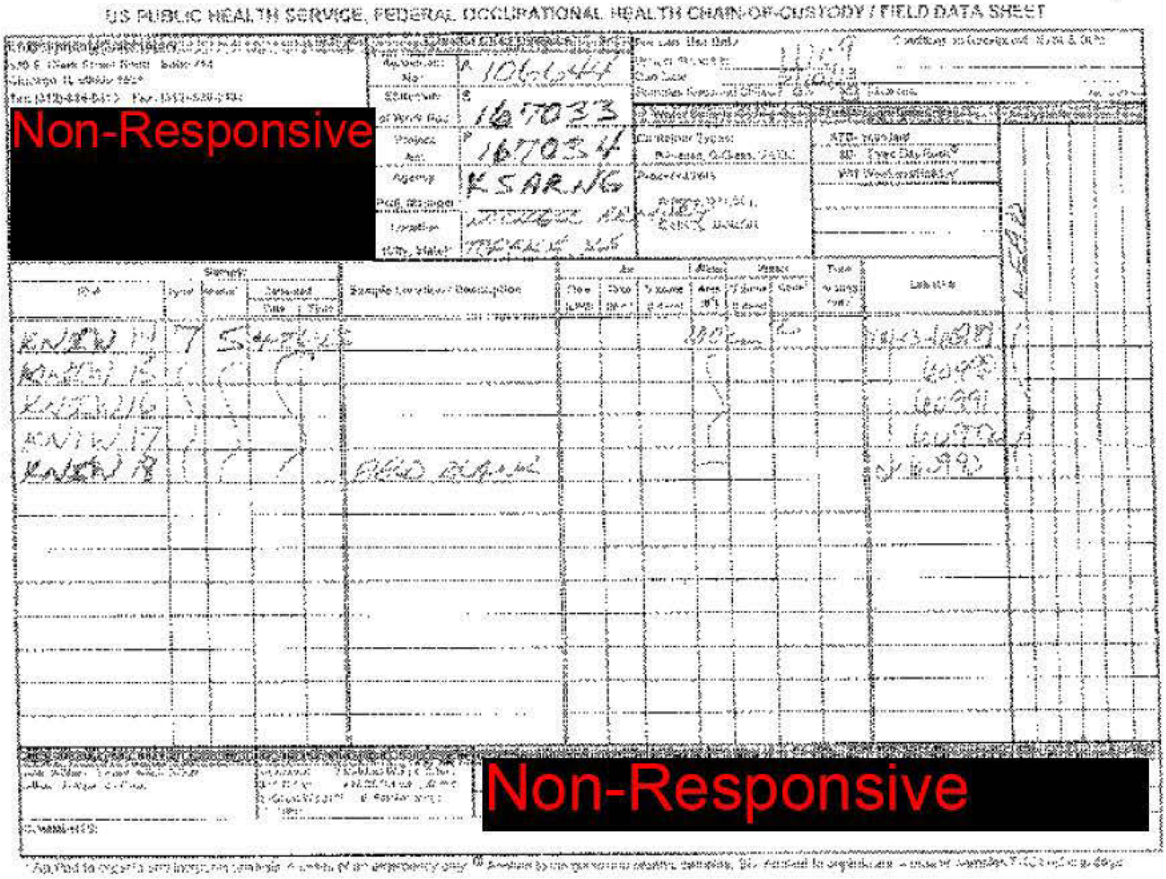
Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

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



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



Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Wichita South Armory
3617 S. Seneca Street
Wichita, Kansas

Survey date: June 24, 2009

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

September 5, 2009

Table of Contents

Appendices

I. Executive Summary

At the request of the National Guard Bureau Region West Industrial Hygiene Office, field personnel representing the U.S. Public Health Service, Division of Federal Occupational Health (FOH) conducted an industrial hygiene survey at the Kansas Army National Guard, Wichita South Armory, located in Wichita, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Wichita South Armory was built in 1958. The facility has 24,261 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor, concrete block walls that are 24 feet high and a sloped roof that is supported by exposed metal trusses. The maintenance bay area has a concrete floor, concrete block walls that are 18 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpeted or tile floors, gypsum walls and suspended ceilings. The exterior of the building is brick veneer. The Wichita South Armory had a firing range that was closed in 2005, and renovated in 2007, to add a weight room and classroom.

The Wichita South Armory is the base of operations for the following units: Company B and Company C 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting Retention Office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that may include: family reunions, wedding receptions, and birthday parties.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). All of the sample results were below the limit of detection for the metals. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria. The Wichita South Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Wichita South Armory. Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

II. Table of Findings and Recommendations

Findings	*Recommendations*	*RAC*
Surface Samples		
Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). All of the sample results were below the limit of detection for the metals. At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria.	Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. Continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.	4 4 2
Lighting		
A lighting survey was conducted in the offices and storage areas in the Wichita South Armory. Most of the areas surveyed did not meet minimum illumination requirements.	Illumination levels should be improved in some office, maintenance bay, and storage areas.	4

III. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the USPHS, FOH at the Kansas Army National Guard, Wichita South Armory, located in Wichita, Kansas. This work was conducted under the Interagency Agreement between The U.S. Public Health Service (USPHS) Federal Occupational Health (FOH) and the West Region of the Army National Guard. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on June 24, 2009.

FOH conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

IV. Site Description

The Wichita South Armory was built in 1958. The facility has 24,261 square feet of floor space that encompasses a drill floor, maintenance bay, offices, classrooms, kitchen, latrines, supply room and weapons vault. The drill floor has a concrete floor, concrete block walls that are 24 feet high and a sloped roof that is supported by exposed metal trusses. The maintenance bay area has a concrete floor, concrete block walls that are 18 feet high and a sloped roof that is supported by exposed metal trusses. The office and classroom areas have carpeted or tile floors, gypsum walls and suspended ceilings. The exterior of the building is brick veneer.

The Wichita South Armory is the base of operations for the following units: Company B and Company C 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting Retention Office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that vehicle maintenance activities are mostly limited to fluid checks and tire changes on drill weekends, and that no major vehicle maintenance is performed at the armory. No vehicle maintenance was performed on the day of the survey. The Wichita South Armory had a firing range that was closed in 2005, and renovated in 2007, to add a weight room and classroom. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that may include: family reunions, wedding receptions, and birthday parties.

V. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for heavy metal contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Wichita South Armory

VI. Findings, Discussion, and Recommendations

The Wichita South Armory is the base of operations for Company B and Company C 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting Retention Office. Site personnel reported that vehicle maintenance activities are limited to fluid checks and tire changes on drill weekends. No vehicle maintenance was performed on the day of the survey. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for three heavy metals (lead, cadmium and chromium). All of the sample results were below the limit of detection for the metals. The results are contained in Table 1.

At present, there are no regulated or recommended levels for surface levels of heavy metals in military facilities. There are no OSHA regulated levels for these heavy metals on surfaces. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered significant. None of the surface wipe sample results exceeded the above criteria. The Wichita South Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Area Wipe Sampling Results for Metals
Kansas National Guard
Wichita South Armory
Wichita, Kansas
June 24, 2009

Analyte	KSWSW1 (ug/ft^2) Large Classroom – on Table	KSWSW2 (ug/ft^2) Weight Room – on Floor	KSWSW3 (ug/ft^2) Kitchen – on Table
Lead	<91	<91	<91
Cadmium	<9.1	<9.1	<9.1
Chromium	<91	<91	<91

Analyte	KSWSW4 (ug/ft^2) Drill Floor – Center of Room – on Floor	KSWSW5 (ug/ft^2) Maintenance Bay – on Portable Grill	KSWSW6 (ug/ft^2) Field Blank
Lead	<91	<91	ND
Cadmium	<9.1	<9.1	ND
Chromium	<91	<91	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area.
2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

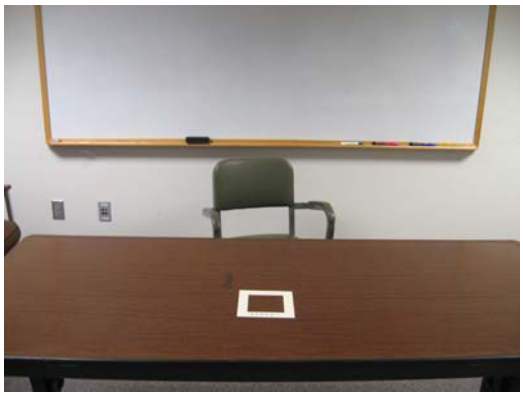
Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)


Sample KSWSW1


Sample KSWSW2

Sample KSWSW3

Sample KSWSW4

Sample KSWSW5

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Wichita South Armory. The results are contained in Table 2. ANSI lighting standards are contained in Table 3.

Table 2
Lighting Survey
Kansas National Guard
Wichita South Armory
Wichita, Kansas
June 24, 2009

Location	Illumination (foot candles)
Large Classroom	65
Weight Room	62
Recruiters Office	124
Small Classroom	87
Latrine	58
Kitchen	89
Drill Floor	51
Maintenance Bay	4
RSP Office	56

Table 3
Lighting Standards
ANSI Standard RP7 "Practice for Lighting" Table 6-1

Location	Minimum foot candles required
Office/library/general areas	100
Any maintenance areas	100
Battery room (or any electrical equipment areas)	100
Break room	100
Supply or storage rooms/area	20
Corridors	20
Inactive areas	5

Most of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some office, maintenance bay, and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

Technical Assistance: 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.

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of Federal Occupational Health. This survey report was reviewed by Non-Responsive, CIH, CSP of Federal Occupational Health.

Appendix A

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Wichita South Armory Point of Contact

Non-Responsive

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Heavy Metals

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for multiple metals. The cadmium, chromium and lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method. At present there are no regulated or recommended levels for surface levels of heavy metals in military facilities. For purposes of this report, any level of any metal that exceeds 200 ug/ft^2 is considered excessive (or significant).

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated by the manufacturer. Illumination levels were recorded as foot candles.

Appendix C

[redacted]

OH ENVIRONMENTAL LABORATORY

[redacted] 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, Cadmium and Chromium

Sampling Site:	NGB: Wichita South, KS (Armory)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 8948
DFOH Lab Nos.:	TM-09-38921 through TM-09-38926
Date Received:	06/30/09
Data Analyzed:	07/01/09
Date Issued:	07/12/09

The samples were microwave digested using a CEM MDS-2000. 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 Non-Responsive

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihaloap.org for details

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)
KSWSW1	TM-09-38921	<10	<91
KSWSW2	TM-09-38922	<10	<91
KSWSW3	TM-09-38923	<10	<91
KSWSW4	TM-09-38924	<10	<91
KSWSW5	TM-09-38925	<10	<91
KSWSW6**	TM-09-38926	<10	None Detected

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSWSW1	TM-09-38921	<1.0	<9.1
KSWSW2	TM-09-38922	<1.0	<9.1
KSWSW3	TM-09-38923	<1.0	<9.1
KSWSW4	TM-09-38924	<1.0	<9.1
KSWSW5	TM-09-38925	<1.0	<9.1
KSWSW6**	TM-09-38926	<1.0	None Detected

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
KSWSW1	TM-09-38921	<10	<91
KSWSW2	TM-09-38922	<10	<91
KSWSW3	TM-09-38923	<10	<91
KSWSW4	TM-09-38924	<10	<91
KSWSW5	TM-09-38925	<10	<91
KSWSW6**	TM-09-38926	<10	None Detected

AGENCY	FLOORS	INTERIOR WINDOW SILLS	WINDOW TROUGHS
EPA	40 µg/ft²	250 µg/ft²	400 µg/ft²

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
Cadmium	OSHA ID-121	0.5 µg/ft²	1.0 µg/ft²
Chromium	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

Accredited by the American Industrial Hygiene Association (AIHA)
Environmental Lead and Industrial Hygiene (Lab ID #102643) programs
See aihaldap.org for details

Project 8948
Page 2 of 2

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

Non-Responsive

PROJECT REFERENCE

Agreement No.: A 106644
Statement of Work No.: S 136934
Project No: P 136935
Agency/Project Name: KANSAS ARMY NATIONAL GUARD
Location (City, State): WICHITA SOUTH ARMORY, WICHITA KS

For Lab Use Only
Project /Report #: 8948
Due Date: 7/13/09
Samples Received Chilled? YES (NO) (circle one)

Conditions on Receipt with Name & Date

Sample ID #	Type[1]	Media[1]	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (in²)	Wipe Volume (Liters)	Water Code[3]	Turn Around Time[4]	Lab ID #	Analysis Requested
KSNSW1	W	2	6-24-09						100 cm²			TAT 07-38921	38922	LEAD
KSNSW2													38923	CADMIUM
KSNSW3													38924	CHROMIUM
KSNSW4													38925	
KSNSW5													38926	
KSNSW6					FIELD BLANK				—					

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
R- Rush[@]
2D- Two Day Rush*
ND- Next Day Rush*[@]
SD- Same Day Rush*[@]
WH- Weekend/Holiday*

Sample Type Codes[1]
1-Air 2-Water 3-Paint 4-Soil 5-Dust 6-Bulk 7-Wipe 8-Contact Plate 9-Tape 10-Space Trap (Zefon & others)

Sample Media Codes[2]
1-Charcoal 2-XAD 3-Matched Weight 4-Preweighted 5-MEA 6-OGA 7-R2A/TSA 8-Air-O-Cell Cassette 9-MCE Cassette (0.45) 10-MCE Cassette (0.8) 11-MCE Filter 12-Other

Relinquished By / Date & Time / Received By / Date & Time

Non-Responsive

[@] Applied to asbestos samples, SD: 2-hour PLM/PCM, 6-hour TEM; ND: 24-hour; R: 3-5 business days.

Appendix D

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	>CT	>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

Industrial Hygiene Survey Report

At

Kansas Army National Guard
Wichita South Armory
3617 South Seneca Street
Wichita, Kansas

Survey date: April 22, 2013

Performed by

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

June 7, 2013

Table of Contents

Appendices

I. Executive Summary

At the request of the Department of the Army, National Guard Bureau (NGB) field personnel representing the NGB Region West Industrial Hygiene Office conducted an industrial hygiene survey at the Kansas Army National Guard, Wichita South Armory, located in Wichita, Kansas. This survey was conducted as part of the Army National Guard occupational safety and health program to evaluate potential personnel exposure to contaminants generated during typical activities performed at this facility.

The Wichita South Armory was built in 1958 and it has about 24,261 square feet of floor space. The armory is the base of operations for Company B 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting and Retention Office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Wichita South Armory had an indoor firing range (IFR) that was closed in 2005. The IFR was renovated in 2007 and converted to a weight room and classroom. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: Golden Gloves boxing; job fairs; birthday parties; family reunions; receptions; and fundraisers.

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey.

Five samples were collected on representative surfaces in the facility and analyzed for lead. One of the surface wipe sample results exceeded the NGB surface wipe sampling guideline for lead. A sample collected on the floor in the vault had a lead concentration of 656 ug/ft^2. The Wichita South Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

A lighting survey was conducted in the offices and storage areas in the Wichita South Armory. Some of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

II. Introduction

An Occupational Health and Industrial Hygiene Evaluation was conducted by the West Region of the Army National Guard at the Kansas Army National Guard, Wichita South Armory, located in Wichita, Kansas. This survey was conducted in order to identify exposure levels to hazardous chemical, physical, and biological agents occurring to Army National Guard employees while engaged in a full range of work responsibilities and tasks. Non-Responsive Certified Industrial Hygienist (CIH), Certified Professional Ergonomist (CPE) conducted this survey on April 22, 2013.

The NGB conducted this survey in the interest of preventing employee illness and in meeting legal obligations where applicable. Based on information provided, every effort was made to conduct a comprehensive survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey.

III. Site Description

The Wichita South Armory was built in 1958 and it has about 24,261 square feet of floor space. The armory is the base of operations for Company B 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting and Retention Office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Wichita South Armory had an indoor firing range (IFR) that was closed in 2005. The IFR was renovated in 2007 and converted to a weight room and classroom. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

The armory is available for rental for community activities that include: Golden Gloves boxing; job fairs; birthday parties; family reunions; receptions; and fundraisers.

IV. Scope of Work

The industrial hygiene survey included a walkthrough of the facility and interviews with employees. The survey also included: collecting surface wipe samples for lead contamination and a lighting survey. Photographs were taken, as appropriate.

Figure 1 – Wichita South Armory

V. Findings, Discussion, and Recommendations

The Wichita South Armory is the base of operations for Company B 2nd Battalion 137th Infantry; Detachment 2 731st Medium Truck Company; and Detachment 3 Recruiting and Retention Office. During the week, most of the activities at the armory involve administrative work. Site personnel reported that no vehicle maintenance is performed at the armory. The Wichita South Armory had an indoor firing range (IFR) that was closed in 2005. The IFR was renovated in 2007 and converted to a weight room and classroom. Weapons may be cleaned in the vault, in the supply room, or on tables set up on the drill floor.

Surface Wipe Samples

Five samples were collected on representative surfaces in the facility and analyzed for lead. The results are contained in Table 1. Wipe sample locations are identified in Figure 2. The NGB surface wipe sampling guideline for lead is contained in Table 2.

One of the surface wipe sample results exceeded the NGB guideline. Sample KWSW11, which was collected on the floor in the vault had a lead concentration of 656 ug/ft^2. The Wichita South Armory should continue to prohibit the presence of food and drink in work areas, stress the importance of hand washing prior to the consumption of food items and continue to clean the

horizontal surfaces in work and storage areas. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition.

Table 1
Surface Area Wipe Sampling Results for Lead
Kansas Army National Guard
Wichita South Armory
Wichita, Kansas
April 22, 2013

Location	Sample #	Lead Concentration (ug/ft^2)
Vault, on Floor	KWSW11	**656**
Drill Floor, Center	KWSW12	<91
Garage, on Parts Washer	KWSW13	<91
Large Classroom, on Table	KWSW14	<91
Kitchen, on Counter	KWSW15	<91
Field Blank	KWSW16	ND

Note:
1) ug/ft^2= micrograms per square foot of surface area. 2) **Bold** indicates that concentration was "significant."
3) ND = None Detected

Table 2
NGB Surface Wipe Sampling Guidelines for Lead

Metal	Acceptable Surface Level ug/ft^2	Basis for Criteria
Lead	200	NG Pam 420-15

Recommendations:

1. Continue to prohibit the presence of food and drink in work areas and stress the importance of hand washing prior to the consumption of food items. (**RAC 4**)

2. Continue to clean the horizontal surfaces in work and storage areas. (**RAC 4**)

3. When weapons are cleaned, special attention should be given to cleaning up the work area to prevent potential lead contamination from ammunition. (**RAC 2**)

Figure 2 – Wipe Sample Locations (below)

Sample KWSW11

Sample KWSW12

Sample KWSW13

Sample KWSW14

Sample KWSW15

Lighting Survey

A lighting survey was conducted in the offices and storage areas in the Wichita South Armory. The results are contained in Table 3. NGB lighting criteria are contained in Table 4.

Table 3
Lighting Survey
Kansas Army National Guard
Wichita South Armory
Wichita, Kansas
April 22, 2013

Location	Illumination (foot candles)
Bravo Company, Orderly Room	41-52
Bravo Company, 1st Sgt. Office	50-53
Bravo Company, Readiness NCO Office	47-57
Computer Lab	21-40
Small Classroom	40-54
Kitchen	52-70
Drill Floor	36-45
Garage	15-33
Latrine	46-55
Large Classroom	26-46
Supply Room	30-35
Supply Office	40-46
Auxiliary Building, Bravo Company Operations Room	38-46
Auxiliary Building, Supply Office	73-99
Auxiliary Building, Conference Room	78-86
Auxiliary Building, Simulator Room	22-32

Table 4
NGB Lighting Criteria

Location	Minimum Foot Candles Required
Inactive Areas	5
Billet Break Room/Dining Flammable Storage/POL/Waste Handling Latrine/Shower/Locker Mechanical/Electrical Room Storage/Tool/Supply Vault	30
Battery Room Fitness Room IFR/Small Arms Test (at firing line) Kitchen/Assembly Hall/Auditorium Mail Room Maintenance Workbay/Shop Paint Booth/Blast Booth, Paint Mix Room Office/Classroom/Library	50
Instrument Inspection/Repair	70

Sources:
ANSI/IESNA RP-1-04
ANSI/IESNA RP-7-01
NGB Design Guides, 2011

Some of the areas surveyed did not meet minimum illumination requirements. Illumination levels should be improved in some offices and storage areas.

Recommendation:

Increase the illumination levels in the areas that did not meet minimum illumination requirements. (**RAC 4**)

This survey was conducted by, and report written by Non-Responsive, CIH, CPE as a representative of the NGB. This survey report was reviewed by Non-Responsive, Regional Industrial Hygienist at the NGB ARNG Region West Industrial Hygiene Office.

Technical Assistance: 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

Kansas Army National Guard State Points of Contact

Non-Responsive
Occupational Health Manager

Non-Responsive
CW2 Industrial Hygiene Technician

Wichita South Armory Point of Contact

Non-Responsive

Appendix B

Methodology and Assessment Criteria

Methods used in this survey to collect surface wipe samples are listed below. The sampling strategy used in this survey was designed to characterize employee exposure to the various contaminants that could be generated from the various activities/tasks performed in the facility. It was based, in part, on information provided by site personnel.

Surface sampling reported in this survey represents the work conditions existing at the time of the survey. Changes in work practices and/or processes may change employee exposure levels. Use of different materials may result in exposure to a different air contaminant.

Surface Sampling – Lead

Surface samples were collected from representative areas using Environmental Express Ghost™ Wipes and templates that encompassed 100 centimeters squared (cm^2) of surface area. The entire area was wiped using an "S" configured motion, the Ghost™ Wipe was then folded in half and the area was again wiped in a direction 90^0 to the first using an "S" motion. The wipe was folded again and the perimeter of the area was wiped. The wipe was then placed into a plastic cylinder, the cylinder was capped and sealed and the samples were sent to the FOH Laboratory in Chicago, Illinois, for analysis for lead. The lead samples were analyzed on a Perkin Elmer 200 flame atomic absorption spectrophotometer using the OSHA ID-121 method.

Lighting Levels

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC Meter that had been calibrated according to the manufacturer's specifications. Illumination levels were recorded as foot candles.

Appendix C

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: Wichita, KS (Armory-South)
Sample Media:	Ghost Wipe(s)®
Method Reference:	OSHA ID-121
Project ID:	Project 11088
DFOH Lab Nos.:	TM-13-60812 through TM-13-60817
Date Received:	04/23/13
Data Analyzed:	04/29/13 - 04/30/13
Date Issued:	04/30/13

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 11088
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FOH ENVIRONMENTAL LABORATORY

538 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)
KWSW11	TM-13-60812	72	656
KWSW12	TM-13-60813	<10	<91
KWSW13	TM-13-60814	<10	<91
KWSW14	TM-13-60815	<10	<91
KWSW15	TM-13-60816	<10	<91
KWSW16**	TM-13-60817	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	250	EPA TSCA 40 CFR 745 and HUD Window Sills

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

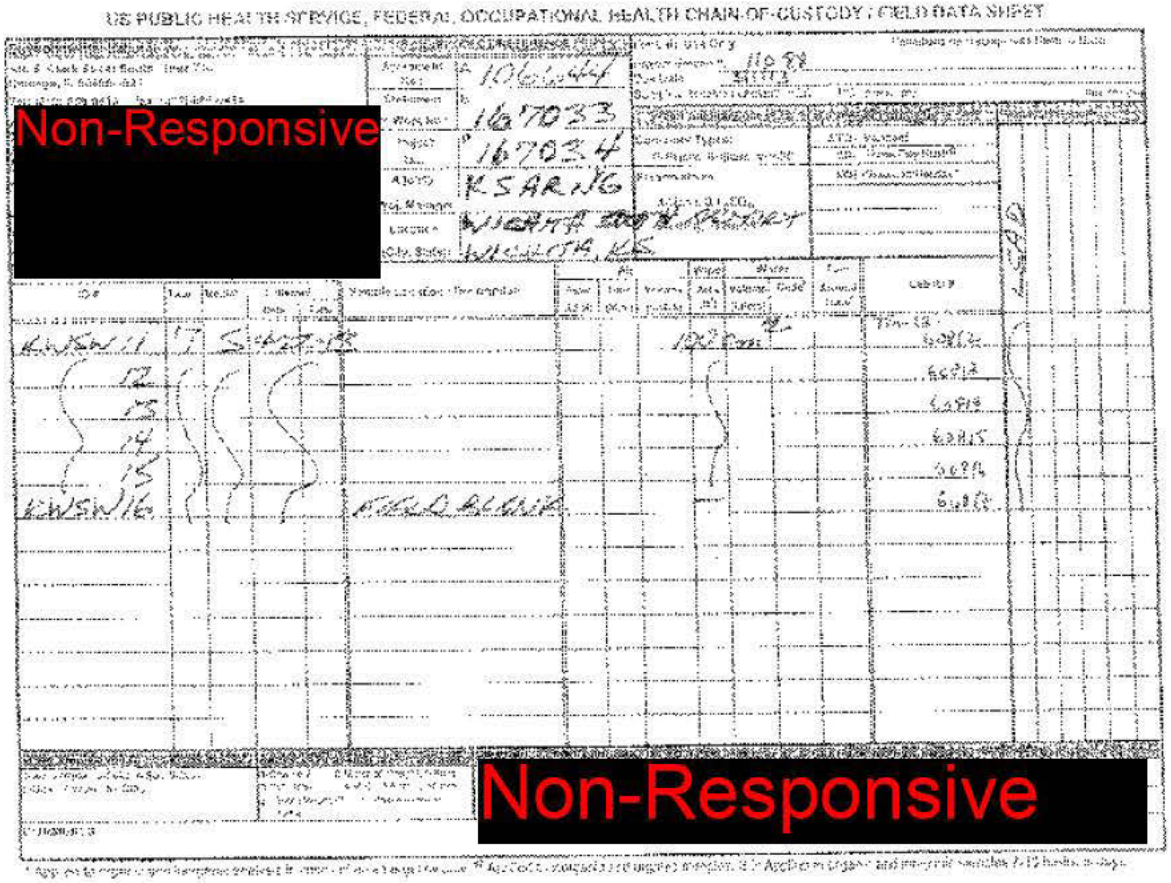
Analyte	Analytical Method	Method Detection Limit	Minimum Reporting Limit
Lead	OSHA ID-121	5.0 µg/ft²	10 µg/ft²

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

Project 11088
Page 2 of 2

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



Appendix D

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	>CT	>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