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

ARNG-CSG-P June 17, 2015

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Northfield Armory, Northfield, Minnesota

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, 2015 at the Minnesota Army National Guard Northfield Armory, 519 Division, Northfield, Minnesota. The site point of contact was 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 Northfield Armory was built in 1915, and it has about 25,000 square feet of floor space. The armory is the base of operations for 434th Chemical 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 Northfield Armory had an indoor firing range (IFR) that was closed and converted to caged storage. 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, wedding receptions, and YMCA use. Site personnel reported that the building will be closed in 2015 and sold. 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 ten of the surface wipe sample results exceeded the guideline for lead. A sample collected on the floor near the entrance of the supply office, in the bullet trap area in the former IFR, had a lead concentration of 268 μg/ft^2. Five of six samples collected in the former IFR had detectable levels of lead. <u>The following actions are required:</u>

- **Inform potential purchasers of the building that it has lead contamination in the former IFR area (RAC 2).**
- **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).**

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

[redacted]

Non-Responsive [redacted]

Regional Industrial Hygienist

Appendix	**Title**
A.	Laboratory Result Reports and Chain of Custody Sheets

Northfield Armory

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 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 1, are considered significant.

One of ten of the surface wipe sample results exceeded the guideline for lead. Sample MNNOW12, which was collected on the floor near the entrance of the supply office, in the bullet trap area in the former IFR, had a lead concentration of 268 $\mu g/ft^2$. Five of six samples collected in the former IFR had detectable levels of lead.

Table 1
Surface Area Wipe Sampling Results for Lead
Minnesota Army National Guard
Northfield Armory
Northfield, Minnesota
May 8, 2015

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNNOW11	Supply office, former IFR at bullet trap, SE corner on floor		96
MNNOW12	Supply office, former IFR at bullet trap, near entrance on floor		**268**
MNNOW13	HVAC and storage room, former IFR at bullet trap, NE corner on floor		143
MNNOW14	HVAC and storage room, former IFR at bullet trap, inside air supply duct		83
MNNOW15	Decon 3 storage, former IFR midrange, on floor		41
MNNOW16	Common area, former IFR at firing line, on floor		<10

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNNOW17	Drill floor, center		<10
MNNOW18	Cold storage, caged storage on floor		37
MNNOW19	Maintenance bay, on FLS cabinet		58
MNNOW20	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. **Inform potential purchasers of the building that it has lead contamination in the former IFR area (RAC 2).**
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: Non-Responsive

Submitted By:

Reference Data: Lead
Sampling Site: NGB: Northfield, MN (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 12835
DFOH Lab Nos.: TM-15-80297 through TM-15-80306
Date Received: 05/12/15
Data Analyzed: 05/12/15 - 05/13/15
Date Issued: 05/14/15

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

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FOH ENVIRONMENTAL LABORATORY

638 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)
MNN0W11	TM-15-80297	96	96
MNN0W12	TM-15-80298	268	268
MNN0W13	TM-15-80299	143	143
MNN0W14	TM-15-80300	83	83
MNN0W15	TM-15-80301	41	41
MNN0W16	TM-15-80302	<10	<10
MNN0W17	TM-15-80303	<10	<10
MNN0W18	TM-15-80304	37	37
MNN0W19	TM-15-80305	58	58
MNN0W20**	TM-15-80306	<10	

Surface Wipe Sampling Criteria

Metal	Acceptable Surface Level µg/ft²	Basis for Criteria
Lead	200 for facilities (all surfaces)	NG Pam 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006, http://www.nobpdc.nob.army.mil/pubs/420/nopam420__15.pdf
Lead	40 for any potentially child occupied areas of facility (all surfaces); used for armories with public access, family services offices, or other routine use by children	NG Pam 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006, http://www.nobpdc.nob.army.mil/pubs/420/nopam420__15.pdf

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

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

AIHA LAP, LLC ACCREDITED LABORATORY

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

538 S. Clark Street South, Suite 714
Chicago, IL 60605-1521
Tel: (312)-886-6413 Fax: (312)-886-0434
Non-Responsive

Non-Responsive

Agreement No.: A 166644
Statement of Work No.: S 188318
Project No: P 188319
Agency Proj. Manager: MNARNG
Location (City, State): Northfield Armory Northfield, MN

For Lab Use Only
Project /Report #: 18835
Due Date: 5/20/15
Samples Received Chilled? YES (NO) (circle one)
Conditions on Receipt with Name & Date

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

STD- Standard
3D- Three Day Rush[4]
WH Weekend/Holiday[4]

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)	Code[3]	Turn Around Time[4]	Lab ID #	Lead
MNNOW 11	T	S	5/8	15					1				14-15-80297	
12													80298	
13													80299	
14													80300	
15													80301	
16													80302	
17													80303	
18													80304	
19													80305	
20					Field blank				-				80306	

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

1-Charcoal 2-Washed Weight, 0.8um 3-PVC filter 4-MCE 0.8 um, 37 mm 5-Ghost Wipes[W] 6. Passive badge 7. Other

Non-Responsive

COMMENTS: samples are 1 square fo

[1] Applied to organic and inorganic analysis in cases of an emergency only. [4] Applied to inorganic and organic samples, SD: Applied to organic and inorganic samples 7-10 business days.

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

ARNG-CSG-P June 16, 2015

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Rochester Armory, Rochester, Minnesota

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 April 29, 2015 at the Minnesota Army National Guard Rochester Armory, 1715 SE Marion Road, Rochester, Minnesota. 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 Rochester Armory was built in 1979 and has about 33,309 square feet of floor space. The armory is the base of operations for Bravo Company 2-135th IN and 7212th Army Reserve Medics. 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 Rochester Armory had an indoor firing range that was closed and converted to unit storage in 2008. 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: children and adult soccer practice and a remote control aircraft flying club that uses the drill floor to fly their model airplanes. 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 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).**

For any further questions, please contact Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	**Title**
A.	Laboratory Result Reports and Chain of Custody Sheets

Rochester Armory

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 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 1, are considered significant. None of the surface wipe sample results exceeded the guideline for lead.

Table 1
Surface Area Wipe Sampling Results for Lead
Minnesota Army National Guard
Rochester Armory
Rochester, Minnesota
April 29, 2015

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNROAW21	Vault 711, on floor		39
MNROAW22	Unit storage, former IFR at firing line, SE by entrance on floor		54
MNROAW23	Unit storage, former IFR at firing line, center of room on floor		37
MNROAW24	3rd Platoon training room, former IFR midrange, on floor		16
MNROAW25	2nd Platoon training room, former IFR midrange, on floor		25
MNROAW26	1st Platoon training room, former IFR at bullet trap, near entrance on floor		61

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNROAW27	1st Platoon training room, former IFR at bullet trap, center of room on floor		51
MNROAW28	Drill floor, center on floor		<10
MNROAW29	Kitchen, on top of canopy hood above stove		<10
MNROAW30	Orderly room, on desktop		<10
MNROAW31	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: Rochester, MN (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 12814
DFOH Lab Nos.: TM-15-80151 through TM-15-80161
Date Received: 05/06/15
Data Analyzed: 05/06/15 – 05/07/15
Date Issued: 05/07/15

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 12814
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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)
MNROAW21	TM-15-80151	39	39
MNROAW22	TM-15-80152	54	54
MNROAW23	TM-15-80153	37	37
MNROAW24	TM-15-80154	16	16
MNROAW25	TM-15-80155	25	25
MNROAW26	TM-15-80156	61	61
MNROAW27	TM-15-80157	51	51
MNROAW28	TM-15-80158	<10	<10
MNROAW29	TM-15-80159	<10	<10
MNROAW30	TM-15-80160	<10	<10
MNROAW31**	TM-15-80161	<10	

Surface Wipe Sampling Criteria

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 12814
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US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET

Non-Responsive

Non-Responsive

Agreement No.: A 1066447
Statement of Work No.: S 188318
Project No: P 188319
Agency: MNARNG
Proj. Manager:
Location (City, State): Rochester Armory Rochester, MN

For Lab Use Only
Project /Report #: 188319
Due Date: 5/13/15
Samples Received Chilled? YES / NO (circle one)
Conditions on Receipt with Name & Date

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

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

ID #	Sample Type¹	Sample 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 Time⁴	Lab ID #
MNRCA4023	7	5	4/29	15					1				TM15-80151
22													80152
23													80153
24													80154
25													80155
26													80156
27													80157
28													80158
29													80159
30													80160
31					Field blank				-				80161

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

1-Charcoal 2-Matches Weight, 0.5 um 3-PVC filter 4-M GE 0.8 um , 37 mm 5-Ghost Wipes™ 6. Passive badge 7. Other

Non-Responsive

COMMENTS: Samples are 1 square foot

* Applied to organic and inorganic analyses in cases of an emergency only. ⁸ Applied to inorganic and organic samples, SD: Applied to organic and inorganic samples 7-10 business days.

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

ARNG-CSG-P June 16, 2015

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Rosemount Armory, Rosemount, Minnesota

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 April 30, 2015 at the Minnesota Army National Guard Rosemount Armory, 13865 Robert Trail, Rosemount, Minnesota. The site point of contact was 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 Rosemount Armory was built in 1994 and has about 140,000 square feet of floor space. The MNARNG occupies about 96,000 square feet of the floor space, and the balance is leased by the city of Rosemount for use as a community center. The armory is the base of operations for Alpha and Bravo Company DHHB; 34th ID Band; and RSP. 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 Rosemount Armory had an indoor firing range that was closed in 2000 and converted to classrooms in 2006. 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: teen night; weekly elementary and junior high school sports practice; and weekly toddler time activities for children ages 2-4. 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 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).**

For any further questions, please contact Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	**Title**
A.	Laboratory Result Reports and Chain of Custody Sheets

Rosemount Armory

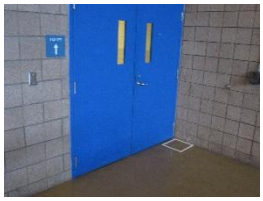
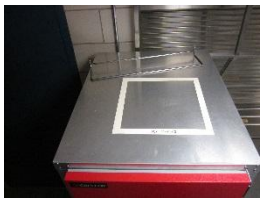
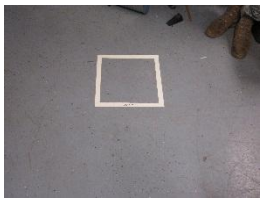
Surface Area Wipe Samples

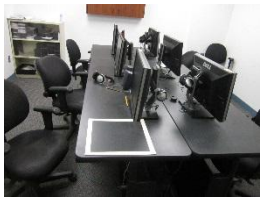
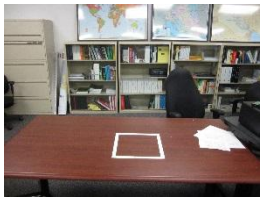
Wipe samples were collected from representative areas of the facility using Environmental Express Ghost™ Wipes and templates in accordance with the OSHA wipe sampling method (OSHA Technical Manual, Appendix II, 2-1). In addition, surface wipe samples were collected in the kitchen to assess migration 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 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 1, are considered significant. None of the surface wipe sample results exceeded the guideline for lead.

Table 1
Surface Area Wipe Sampling Results for Lead
Minnesota Army National Guard
Rosemount Armory
Rosemount, Minnesota
April 30, 2015

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNRSAW1	Room #221, 34th ID Band room, on table top		<10
MNRSAW2	Auditorium, on stage		<10
MNRSAW3	Gym/Drill floor, center on floor		<10
MNRSAW4	Gym/Drill floor, northeast corner on floor		<10
MNRSAW5	Kitchen, on Cres Cor food warmer		<10
MNRSAW6	Server room, former IFR, at bullet trap, on floor		<10

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNRSAW7	Alpha company vault, on floor		33
MNRSAW8	Room #167, Language lab foyer office, former IFR, at firing line, on floor		<10
MNRSAW9	Language lab testing room, former IFR, at firing line, on desktop		<10
MNRSAW10	Language lab, former IFR, midrange, on desktop		<10
MNRSAW11	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: Rosemount, MN (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 12813
DFOH Lab Nos.: TM-15-80140 through TM-15-80150
Date Received: 05/06/15
Data Analyzed: 05/06/15 – 05/07/15
Date Issued: 05/07/15

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 12813
Page 1 of 2

FOH ENVIRONMENTAL LABORATORY
638 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)
MNRSAW1	TM-15-60140	<10	<10
MNRSAW2	TM-15-60141	<10	<10
MNRSAW3	TM-15-60142	<10	<10
MNRSAW4	TM-15-60143	<10	<10
MNRSAW5	TM-15-60144	<10	<10
MNRSAW6	TM-15-60145	<10	<10
MNRSAW7	TM-15-60146	33	33
MNRSAW8	TM-15-60147	<10	<10
MNRSAW9	TM-15-60148	<10	<10
MNRSAW10	TM-15-60149	<10	<10
MNRSAW11**	TM-15-60150	<10	

Surface Wipe Sampling Criteria

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 12813
Page 2 of 2

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

Non-Responsive

Non-Responsive

Agreement No.: A 106644
Statement of Work No.: S 188318
Project No: P 188319
Agency Proj. Manager: MNARNG
Location (City, State): Rosemount Armory Rosemount, MN

For Lab Use Only: Project /Report #: 12813 Due Date: 5/13/15 Samples Received Chilled? YES NO (circle one)
Conditions on Receipt with Name & Date

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

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

ID #	Type¹	Media²	Collected Date	Collected Time	Sample Location / Description	Air Flow (LPM)	Air Time (Min.)	Air Volume (Liters)	Wipe Area (ft^2)	Water Volume (Liters)	Code³	Turn Around Time⁴	Lab ID #	Lead
MNRSAW1	7	5	4/30	15					1				PM-15-80140	
2													80141	
3													80142	
4													80143	
5													80144	
6													80145	
7													80146	
8													80147	
9													80148	
10													80149	
11	"	"	"		Field blank				-				80150	-

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

²-Charcoal 2-Matched Weight, 0.8um 3-PVC filter 4-MCE 0.8 um , 37 mm 5-Ghost Wipes™ 6. Passive badge 7. Other

Non-Responsive

COMMENTS: Samples are 1 square foot

* Applied to organic and inorganic analysis in cases of an emergency only. ⁴ Applied to inorganic and organic samples, SD; Applied to organic and inorganic samples 7-10 business days.

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

ARNG-CSG-P December 16, 2013

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Stillwater Armory, Stillwater Minnesota

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 December 11, 2013 at the Minnesota Army National Guard Stillwater Armory in Stillwater, MN. The site point of contact was Non-Resp [redacted]

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 Stillwater armory had an indoor firing range (IFR) that was closed and converted to a storage area. The IFR was located in the basement of the building. During the conversion, the IFR was redesigned to serve as an air plenum and mixing chamber for outside air that is supplied to the basement. Outside air is delivered to the IFR by a fan and sheet metal duct. The sheet metal duct blows air into the IFR, where it mixes with the air in the room. An overhead dehumidifier unit draws the mixed air from the room and it is then transported by ductwork to offices and storage areas in the basement.

This survey was requested as a follow up to a previous survey performed on November 18, 2013 that identified lead dust on surfaces in the former IFR, offices and storage areas in the basement. That survey identified lead dust on the floor of the former IFR that ranged up to 11,214 ug/ft^2.

The armory is available for rental for community activities that include: volleyball for girls and boys aged 12 to 14; basketball for adults; gymnasium activities for kindergarten through high school students; antique shows; gun shows; and craft shows. The industrial hygiene survey included a walkthrough of the facility, air sampling for lead and interviews with employees.

On the day of the survey, the basement areas were designated a restricted area, and no personnel were working in the basement. Materials stored in the IFR had been removed and relocated to a different storage room in the basement. The supply sergeant who worked in the supply room in the basement had been relocated to an office on the first floor of the armory.

Air samples were collected in four rooms in the basement and analyzed for lead. The air samples were below the limit of detection for lead. A pleated air filter on the dehumidifier in the IFR (which filters mixed air in the IFR plenum) was removed and sent to the laboratory for bulk analysis for lead. The pleated filter was not a high efficiency particulate air (HEPA) filter.

The laboratory analysis for the used pleated air filter indicated that lead was present at a concentration of 147 mg/kg. This result indicates a history of airborne lead in the former IFR. Lead on the floor surfaces in the IFR, designing the IFR to serve as an outdoor air mixing plenum, storing materials in the room, and retrieving materials from the room may cause lead to become airborne. No lead should be present in the air or on the pleated air filter, so the levels of lead detected are significant.

Since the former IFR is used as a mixing plenum, it is likely that airborne lead particles that are smaller than the removal characteristics of the pleated filter have been transported to other areas in the basement. Removal and use of materials that were stored in the former IFR may also lead to lead contamination in other areas.

The following actions are required:

- **Decontaminate the IFR and all of the materials that were stored in the IFR in accordance with NG Pam 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges (RAC 2).**
- **Coordinate the cleanup of the former indoor firing range and basement areas with the National Guard Bureau Mid-West Regional Industrial Hygiene Office (RAC 2).**
- **Ensure that the National Guard Bureau Mid-West Regional Industrial Hygiene Office reviews the scope and manner of the lead remediation project (RAC 2).**
- **Ensure that the supply sergeant remains in offices on the first floor until the basement has been decontaminated (RAC 2).**
- **Provide area air sampling results to personnel who work in the armory (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 3).**

For any further questions, please contact Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Lead – Air and Bulk Sampling	Attached

Appendix A
Air and Bulk Sampling for Lead

Air Samples

Portable air sampling pumps were used to collect area samples. SKC air sampling pumps (Universal XR Pump Model PCXR8) were calibrated with a primary airflow meter (BIOS Defender 510-M) before and after each sample was collected. SKC 37-millimeter cassettes with 0.8-micron mixed cellulose ester (MCE) filters were used to collect the air samples which were analyzed for lead by OSHA Method ID-121.

The Stillwater armory had an indoor firing range (IFR) that was closed and converted to a storage area. The IFR was located in the basement of the building (Figure 1). During the conversion, the IFR was redesigned to serve as an air plenum and mixing chamber for outside air that is supplied to the basement. Outside air is delivered to the IFR by a fan and sheet metal duct (Figures 2 and 3). The sheet metal duct blows air into the IFR, where it mixes with the air in the room. An overhead dehumidifier unit (Figure 4) draws the mixed air from the room and it is then transported by ductwork to offices and storage areas in the basement.

This survey was requested as a follow up to a previous survey performed on November 18, 2013 that identified lead dust on surfaces in the former IFR, offices and storage areas in the basement. That survey identified lead dust on the floor of the former IFR that ranged up to 11,214 ug/ft^2.

On the day of the survey, the basement areas were designated a restricted area, and no personnel were working in the basement. Materials stored in the IFR had been removed and relocated to a different storage room in the basement (Figure 5). The supply sergeant who worked in the supply room in the basement had been relocated to an office on the first floor of the armory.

The armory is available for rental for community activities that include: volleyball for girls and boys aged 12 to 14 (Figure 6); basketball for adults; gymnasium activities for kindergarten through high school students; antique shows; gun shows; and craft shows.

Area air samples were collected in four rooms in the basement and analyzed for lead. The samples were collected in the former IFR (room B14); the supply office (room B12); the kitchen storage area (room B11); and the QRF area (room B9). Air sampling results were compared to the applicable OSHA Permissible Exposure Limit (PEL). The results are contained in Table A-1. The air sample results were below the limit of detection for lead.

Table A-1
Area Air Sampling Results for Lead
Minnesota Army National Guard
Stillwater Armory
Stillwater, MN
December 11, 2013

Location	Work Activity	Sample #	Sample Volume (L)	Lead (mg/m^3)
OSHA PEL-TWA				**0.05**
Room B14, Former Indoor Firing Range, 5 feet above floor level, door to hallway closed	None	MSM1	1,737.2	<0.01
Room B12, Supply Office, 5 feet above floor level, door to hallway open	None	MSM2	1,744	<0.01
Room B11, Kitchen Storage, 5 feet above floor level, door to hallway open	None	MSM3	1,740	<0.01
Room B9, QRF Room, 5 feet above floor level, door to hallway open	None	MSM4	1,739.6	<0.01
Field Blank	N/A	MSM5	N/A	ND

Notes: 1) L = liters. 2) mg / m^3 = milligrams per cubic meter. 3) ND = none detected. 4) "<" means less than the reporting limit for the analytical method.

Bulk Samples

An overhead dehumidifier unit in the former IFR draws mixed air from the room which is then transported by ductwork to offices and storage areas in the basement. The dehumidifier in the former IFR was equipped with pleated air filters which are used to filter mixed air in the IFR plenum before it is transported by the ductwork. The pleated air filters were dirty. Site personnel could not provide information regarding the last time the air filters had been changed and replaced.

The pleated air filters were not high efficiency particulate air (HEPA) filters. Commercially available pleated air filters are designed to remove relatively large airborne particles. They are not designed to remove respirable dusts, which will penetrate them. A pleated air filter was removed and sent to the laboratory for bulk analysis for lead. An unused pleated air filter was also sent to the laboratory and analyzed as a field blank, or control bulk sample. The results are contained in Table A-2.

The laboratory analysis for the used pleated air filter indicated that lead was present at a concentration of 147 mg/kg. This result indicates a history of airborne lead in the former IFR. Lead on the floor surfaces in the IFR, designing the IFR to serve as an outdoor air mixing plenum, storing materials in the room, and retrieving materials from the room may cause lead to become airborne. No lead should be present in the air or on the pleated air filter, so the levels of lead detected are significant.

Since the former IFR is used as a mixing plenum, it is likely that airborne lead particles that are smaller than the removal characteristics of the pleated filter have been transported to other areas in the basement.

Removal and use of materials that were stored in the former IFR may also lead to lead contamination in other areas.

Table A-2
Bulk Sampling Results for Lead
Minnesota Army National Guard
Stillwater Armory
Stillwater, MN
December 11, 2013

Location	Sample #	Lead (mg/kg)
Used HVAC filter removed from dehumidifier in Room B14	MSB1	147
Unused HVAC filter stored in a box in Room B14 – field blank	MSB2	<50

Notes: 1) mg / kg = milligrams per kilogram 2) "<" means less than the reporting limit for the analytical method.

Recommendations:

1. Decontaminate the IFR and all of the materials that were stored in the IFR in accordance with NG Pam 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges (RAC 2).

2. Coordinate the cleanup of the former indoor firing range and basement areas with the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office (RAC 2).

3. Ensure that the National Guard Bureau (NGB) Mid-West Regional Industrial Hygiene (IH) Office reviews the scope and manner of the lead remediation project (RAC 2).

4. Ensure that the supply sergeant remains in offices on the first floor until the basement has been decontaminated (RAC 2).

5. Provide area air sampling results to personnel who work in the armory (RAC 3).

6. 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).

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

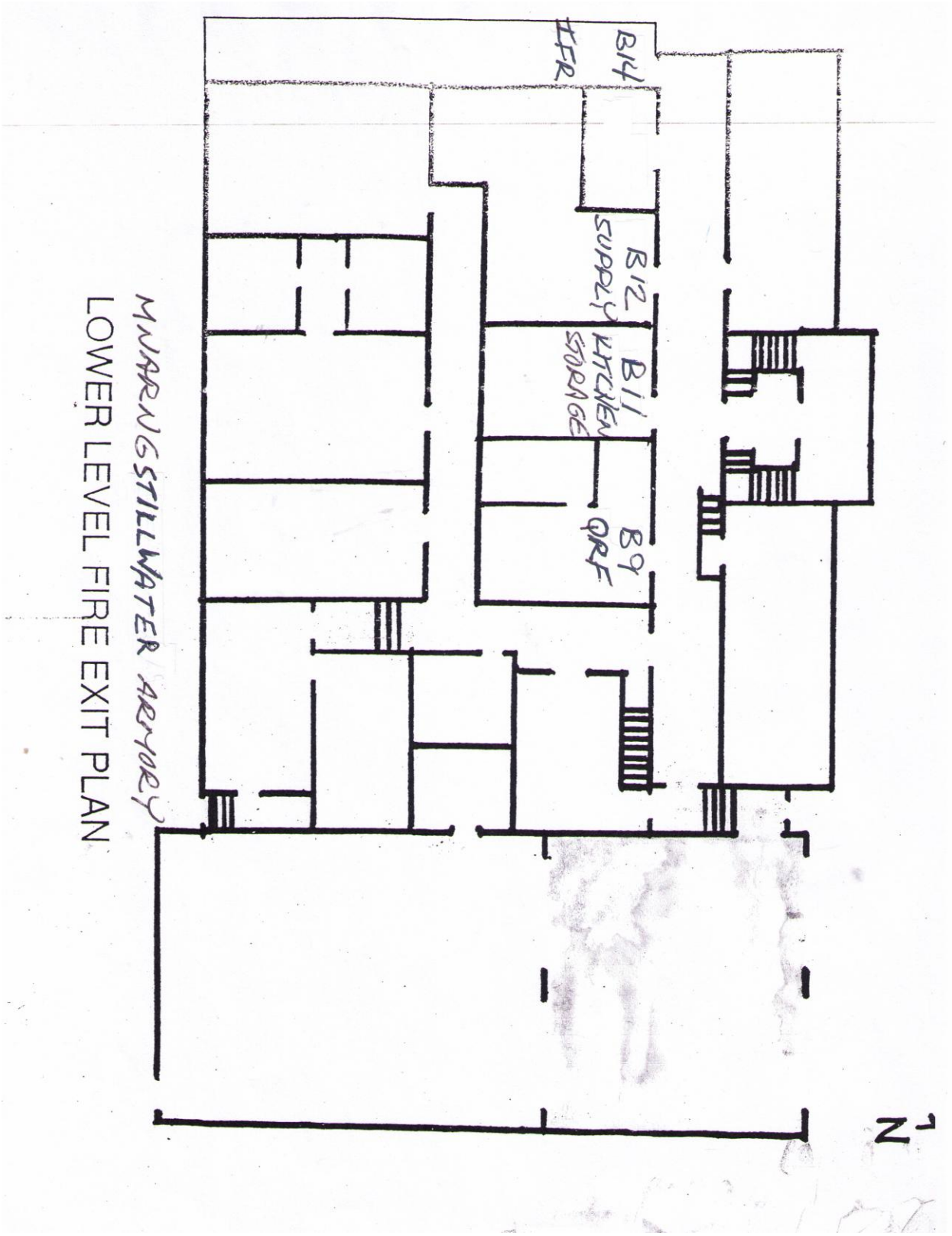


Figure 1 – Diagram for Basement Areas in Stillwater Armory

Figure 2 – Fan and Sheet Metal Duct that Provide Outside Air to Former IFR

Figure 3 – Fan and Sheet Metal Duct that Provide Outside Air to Former IFR

Figure 4 – Overhead Dehumidifier in Former IFR

Figure 5 - Stored Materials that Were Recently Removed from the Former IFR

Figure 6 – Girls Volleyball Team Practice in Stillwater Armory

Laboratory Result Reports and Chain of Custody Sheets

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

ANALYTICAL REPORT

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

Attention: Non-Responsive

Submitted By:

Reference Data: Lead

Sampling Site:	NGB: Stillwater, MN (Armory)
Sample Media:	Bulk Material and Air (MCE matched-weight filter)
Method Reference:	OSHA ID-121
Project ID:	Project 11510R
DFOH Lab Nos.:	TM-14-65495 through TM-14-65501
Date Received:	12/12/13
Data Analyzed:	12/12/13 – 12/13/13
Date Issued:	12/16/13

The air and bulk 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

AIHA LAP, LLC
ACCREDITED LABORATORY
LAB #102843

Project 11510R
Page 1 of 2

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

LEAD in BULK MATERIAL RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	AMOUNT OF LEAD FOUND (mg/kg)
MSB1	TM-14-65300	147
MSB2	TM-14-65501	<50

** Indicates that the samples are at or above the Action Level as established by the Environmental Protection Agency (EPA).

AGENCY	BARE SOIL, PLAY AREA	BARE SOIL, NON-PLAY AREA
EPA	400 ppm	1,200 ppm

Lead in Soil Limits

Analytical Method	Method Detection Limit	Reporting Limit
OSHA ID-121	23 mg/kg	50 mg/kg

LEAD in AIR RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	AIR VOLUME (L)	CONCENTRATION (mg/m^3)
MSM1	TM-14-65495	1737.2	<0.01
MSM2	TM-14-65496	1744.0	<0.01
MSM3	TM-14-65497	1740.0	<0.01
MSM4	TM-14-65498	1739.6	<0.01
MSM5**	TM-14-65499		None Detected

ANALYTE	METHOD DETECTION LIMIT (mg/m^3)	REPORTING LIMIT (mg/m^3)
Lead	0.005 @ 960 L	0.01 @ 960 L

ANALYTE	EXPOSURE LIMITS – (mg/m^3)		
	OSHA	NIOSH	ACGIH
Lead	0.05	< 0.1	0.05

Non-Responsive

AIHA LAP, LLC
ACCREDITED LABORATORY

Project 11510R
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 10060490
Statement of Work No.: S 16-7035
Project No: P 16-7035-34
Agency: MNARNG
Proj. Manager: STILLWATER
Location (City, State): "

For Lab Use Only
Project /Report #: 1510
Due Date:
Samples Received Chilled? YES NO (circle one)

Conditions on Receipt with Name & Date

Rev. 07/2010

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)	Wipe Volume (Liters)	Water Code[3]	Water Volume	Turn Around Time[4]	Lab ID #
HSM1	1	2	12-11-13			4.0	1,773	7.2					TAT-4	L05495
HSM2	1	2				4.0	1,746	0						L05496
HSM3	1	2				4.0	1,750	0						L05497
HSM4	1	2				3.99	1,739	.6						L05498
HSB1	6	7			FIELD BLANK		—							L05499
HSB2	1	1			USED HVAC FILTER									L05500
					UNUSED HVAC FILTER									L05501

LEAD

Non-Responsive

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

Sampler 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

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

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

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

Analysis Requested

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.

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

ARNG-CSG-P June 17, 2015

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Willmar Armory, Willmar, Minnesota

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 6, 2015 at the Minnesota Army National Guard Willmar Armory, 614 North Highway 71, Willmar, Minnesota. The site point of contact was 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.

Site personnel reported that the Willmar Armory was built in the 1950s. The armory is the base of operations for FSC 682nd, HHC 682nd, and Battalion HQ 682nd. 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 Willmar Armory had an indoor firing range (IFR) that was closed and converted to storage. No overhead or original ventilation remained from the former IFR. The concrete floor in the former IFR had been painted, and the paint was damaged in some areas. 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: child and teen dance classes, teen boxing classes, youth and adult martial arts classes, Cub Scout meetings and sleepovers, birthday parties, 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. Six of the nine surface wipe sample results exceeded the guideline for lead. All of these samples were located in the former IFR area.

A sample collected on the floor in HHC caged storage area #1, at the firing line in the former IFR, had a lead concentration of 2,475 µg/ft^2. A sample collected on the floor of the corridor in the caged storage area near the entrance, at the firing line in the former IFR, had a lead concentration of 1,693 µg/ft^2. A sample collected on the floor in FSC caged storage area #4, midrange in the former IFR, had a lead concentration of 1,585 µg/ft^2. A sample collected on the floor of the caged storage area corridor, midrange in the former IFR, had a lead concentration of 1,805 µg/ft^2. A sample collected on the floor in FSC caged storage area #6, at the bullet trap in the former IFR, had a lead concentration of 2,587 µg/ft^2. A sample collected on the floor in HHC caged storage area #7, at the bullet trap in the former IFR, had a lead concentration of 8,370 µg/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)**
- **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).**

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

[redacted]

Non-Responsive [redacted]

Regional Industrial Hygienist

Appendix	Title
A.	Laboratory Result Reports and Chain of Custody Sheets

Willmar Armory

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 1.

Site personnel reported that the Willmar Armory had an indoor firing range (IFR) that was closed and converted to storage. No overhead or original ventilation remained from the former IFR. The concrete floor in the former IFR had been painted, and the paint was damaged in some areas.

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).

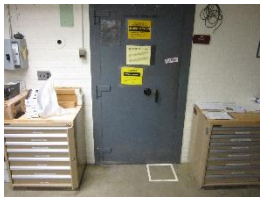
The NGB Mid-West Regional IH Office has adopted the guidelines for metal dust published in NG Pam 420-15, *Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges* and the Department of Energy (DOE)/ Brookhaven National Laboratory (BNL) *Surface Wipe Sampling Procedure* (IH75190). Any results that exceed these guidelines, which are shown in Table 1, are considered significant.

Six of the surface wipe sample results exceeded the guideline for lead. All of these samples were located in the former IFR area.

Sample MNWIAW3, which was collected on the floor in the HHC caged storage #1, at the firing line in the former IFR, had a lead concentration of 2,475 µg/ft^2. Sample MNWIAW4, which was collected on the floor of the corridor in the caged storage area near the entrance, at the firing line in the former IFR, had a lead concentration of 1,693 µg/ft^2. Sample MNWIAW5, which was collected on the floor in the FSC caged storage area #4, midrange in the former IFR, had a lead concentration of 1,585 µg/ft^2. Sample MNWIAW6, which was collected on the floor of the caged storage area corridor, midrange in the former IFR, had a lead concentration of 1,805 µg/ft^2. Sample MNWIAW7, which was collected on the floor in the FSC caged storage area #6, at the bullet trap in the former IFR, had a lead concentration of 2,587 µg/ft^2. Sample MNWIAW8, which was collected on the floor in the HHC caged storage area #7, at the bullet trap in the former IFR, had a lead concentration of 8,370 µg/ft^2.

Table 1
Surface Area Wipe Sampling Results for Lead
Minnesota Army National Guard
Willmar Armory
Willmar, Minnesota
May 6, 2015

Sample #	Location	Photo	Lead (µg/ft^2)
Surface Guideline			**200**
MNWIAW1	Drill floor, center on floor		<10
MNWIAW2	Kitchen, on food prep table counter top		<10
MNWIAW3	Storage, former IFR at firing line, inside HHC caged storage area #1		**2,475**

Sample #	Location	Photo	Lead ($\mu g/ft^2$)
Surface Guideline			**200**
MNWIAW4	Storage, former IFR at firing line, corridor by entrance on floor		**1,693**
MNWIAW5	Storage, former IFR midrange, inside FSC caged storage area #4 on floor		**1,585**
MNWIAW6	Storage, former IFR midrange, corridor on floor		**1,805**
MNWIAW7	Storage, former IFR at bullet trap, inside FSC caged storage area #6 on floor		**2,587**
MNWIAW8	Storage, former IFR at bullet trap, inside HHC caged storage area #7		**8,370**
MNWIAW9	Room #105, Supply room, in front of vault entrance on floor		48
MNWIAW10	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)**

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: Non-Responsive

Submitted By:

Reference Data: Lead
Sampling Site: NGB: Willmar, MN (Armory)
Sample Media: Ghost Wipe(s)®
Method Reference: OSHA ID-121
Project ID: Project 12837
DFOH Lab Nos.: TM-15-80313 through TM-15-80322
Date Received: 05/12/15
Data Analyzed: 05/13/15
Date Issued: 05/13/15

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

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

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

Non-Responsive

AIHA LAP, LLC ACCREDITED LABORATORY

Project 12837
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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)
MNWIAW1	TM-15-80313	<10	<10
MNWIAW2	TM-15-80314	<10	<10
MNWIAW3	TM-15-80315	2475	2475
MNWIAW4	TM-15-80316	1693	1693
MNWIAW5	TM-15-80317	1585	1585
MNWIAW6	TM-15-80318	1805	1805
MNWIAW7	TM-15-80319	2587	2587
MNWIAW8	TM-15-80320	8370	8370
MNWIAW9	TM-15-80321	48	48
MNWIAW10	TM-15-80322	<10	

Surface Wipe Sampling Criteria

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

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

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

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Project 12837
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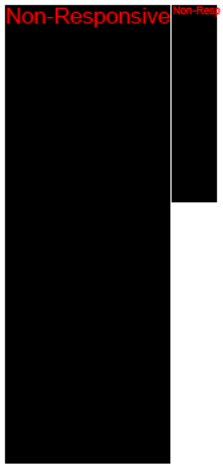


National Guard Bureau
Mid-West Regional Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, MD 21078

ARNG-CSG-P October 3, 2013

MEMORANDUM FOR: The Adjutant General for Minnesota

SUBJECT: Industrial Hygiene Survey at Old Faribault Armory, Faribault, Minnesota

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 July 30, 2013 at the Minnesota Army National Guard Old Faribault Armory, 2831 Park Avenue NW, Faribault, Minnesota. 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.

The Old Faribault Armory was built in 1979 and has been closed for about 3 to 4 years. The MNARNG is considering reopening the building, and requested a building survey to help to assess the condition of the building. The MNARNG requested an evaluation of toxic metals on surfaces, and a visual inspection for mold and suspect asbestos containing materials.

Occupational health risk assessment codes (RACs) are assigned to quantify health risks to personnel IAW 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.

Wipe samples were collected on representative surfaces in the facility and analyzed for toxic metals (lead, cadmium, and chromium). Two bulk samples of damaged paint were also collected from a wall on the drill floor and analyzed for toxic metals. The building had an indoor firing range (IFR) that had been closed and converted to a storage area. Site personnel could not provide information regarding when the IFR had been closed. For purposes of this report, any results that exceed the guidelines adopted by the NGB Mid-West Regional IH Office are considered significant. Seven of the surface wipe sample results exceeded the guideline for lead and cadmium. The results indicated that lead from the IFR and vault had spread to the drill floor and, potentially, other parts of the building. The following actions are required:

- **Perform follow up surface wipe sampling to determine all of the lead contamination in the building. Identify the spread and extent of lead contamination from the former IFR (RAC 2).**

- **Clean the surfaces of lead contaminated areas using high-efficiency particulate air (HEPA) filter vacuums or wet methods. Special attention should be given to the IFR area (RAC 2).**

A walk through of the building identified visual evidence of water leaks and mold in several areas. The following actions are required:

- **A thorough roof inspection should be performed and all existing roof leaks should be repaired (RAC 2).**

- **All water and mold damaged materials should be cleaned up or replaced (RAC 2).**

The reported construction age of the building (1979) suggests that it may have been constructed with asbestos containing materials. A partial list of suspect asbestos containing materials in the building includes; the boiler gasket material, roofing materials, suspended ceiling tiles, and floor tiles and mastic. The following actions are required:

- **A detailed asbestos inspection of all of the building materials in the Old Faribault Armory should be performed by a state certified asbestos inspector. A partial list of suspect asbestos containing materials in the building includes; the boiler gasket material, roofing materials, suspended ceiling tiles, and floor tiles and mastic (RAC 2).**

The building is equipped with an oil fired hot water boiler. The boiler may have an underground storage tank (UST). The following actions are required:

- **Determine whether a UST for the boiler fuel is on site. If present, the UST should be evaluated to determine its contents and integrity to prevent potential leaks to groundwater (RAC 2).**

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

For any further questions, please contact Non-Responsive

Non-Responsive

Regional Industrial Hygienist

Appendix	Title	Status
A.	Metals – Wipe Sampling	Attached
B.	Lighting	Attached
C.	Visual Inspection of Building	Attached

Appendix A
Metals

Surface Wipe Samples

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

Although OSHA does not have published exposure standards for metal surface contamination, the 29 CFR 1910 requires that all surfaces must be kept as free as practicable of accumulations of toxic metal dusts. 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 shown in Table A-1 are considered significant. Seven results exceeded these guidelines. Sample MNF1, which was collected in the firing line area, in former IFR, had a lead concentration of 235 µg/ft^2. Sample MNF2, which was collected 20 feet downrange, in the former IFR, had a lead concentration of 807 µg/ft^2. Sample MNF3, which was collected 40 feet downrange, in the former IFR, had a lead concentration of 249 µg/ft^2. Sample MNF5, which was collected at the bullet trap, southwest corner, in the former IFR, had a lead concentration of 7,998 µg/ft^2 and a cadmium concentration of 29 µg/ft^2. Sample MNF6, which was collected in the northwest corner, in the former IFR, had a lead concentration of 6,436 µg/ft^2. Sample MNF7, which was collected on the drill floor, in the former IFR, had a lead concentration of 235 µg/ft^2. Sample MNF8, which was collected on the floor in the vault had a lead concentration of 1,479 µg/ft^2 and a cadmium concentration of 550 µg/ft^2. The results indicated that lead from the IFR and vault had spread to the drill floor and, potentially, other parts of the building.

Bulk Paint Samples

Two bulk samples of damaged paint on the wall of the drill floor were collected and analyzed for toxic metals. The Department of Housing and Urban Development (HUD) guideline for lead containing paint is 0.5% lead by weight, or 5 milligrams per gram (5 mg/g). The results and photos are contained in Table A-2. Both of the samples were below the HUD guideline.

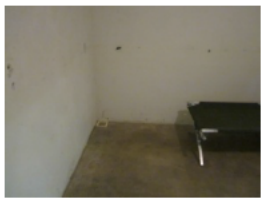
Recommendations:

1. Perform follow up surface wipe sampling to determine the extent of lead contamination in the building (RAC 2).

2. Clean the surfaces of lead contaminated areas using high-efficiency particulate air (HEPA) filter vacuums or wet methods (RAC 2).

Table A-1
Surface Wipe Sampling Results for Toxic Metals
Minnesota Army National Guard, Old Faribault Armory, Faribault MN
July 30, 2013

Sample #	Location	Photo	Lead (µg/ft^2)	Cadmium (µg/ft^2)	Chromium (µg/ft^2)
Surface Guideline			**200**	**28**	**6,970**
MNF1	Firing Line Area, Former IFR		235	21	<91
MNF2	20 Feet Downrange, Former IFR		807	18	<91
MNF3	40 Feet Downrange, Former IFR		249	<9.1	<91
MNF4	60 Feet Downrange, Former IFR		111	<9.1	<91
MNF5	SW Corner, Former IFR, at Bullet Trap		7,998	29	<91
MNF6	NW Corner, Former IFR, at Bullet Trap		6,436	26	<91

Sample #	Location	Photo	Lead ($\mu g/ft^2$)	Cadmium ($\mu g/ft^2$)	Chromium ($\mu g/ft^2$)
Surface Guideline			**200**	**28**	**6,970**
MNF7	Drill Floor, Former IFR		235	<9.1	<91
MNF8	Vault, on Floor, in the Corner		1,479	550	181
MNF9	Kitchen, on Countertop		<91	<9.1	<91
MNF10	Field blank	N/A	ND	ND	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.

Table A-2
Bulk Paint Sampling Results for Toxic Metals
Minnesota Army National Guard, Old Faribault Armory, Faribault MN
July 30, 2013

Sample #	Location	Photo	Lead (mg/g)	Cadmium (mg/g)	Chromium (mg/g)
HUD Bulk Paint Guideline			**5**	**N/A**	**N/A**
MNB1	Damaged Gray Paint on Drill Floor Wall		0.11	<0.01	0.10
MNB2	Damaged White Paint on Drill Floor Wall		0.07	<0.01	0.18

Notes: 1) mg/g = milligrams per gram. 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
636 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: Faribault, MN (Armory)
Sample Media: Ghost Wipe(s)® and Paint chip
Method Reference: OSHA ID-121
Project ID: Project 11320
DFOH Lab Nos.: TM-13-63002 through TM-13-63013
Date Received: 08/07/13
Data Analyzed: 08/08/13 – 08/13/13
Date Issued: 08/14/13

The wipe samples were hot plate digested. The paint samples were microwave 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

638 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)
MNF1	TM-13-63002	26	235
MNF2	TM-13-63003	89	807
MNF3	TM-13-63004	27	249
MNF4	TM-13-63005	12	111
MNF5	TM-13-63006	880	7998
MNF6	TM-13-63007	708	6436
MNF7	TM-13-63008	26	235
MNF8	TM-13-63009	163	1479
MNF9	TM-13-63010	<10	<91
MNF10**	TM-13-63011	<10	

CADMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
MNF1	TM-13-63002	2.4	21
MNF2	TM-13-63003	2.0	18
MNF3	TM-13-63004	<1.0	<9.1
MNF4	TM-13-63005	<1.0	<9.1
MNF5	TM-13-63006	3.2	29
MNF6	TM-13-63007	2.9	26
MNF7	TM-13-63008	<1.0	<9.1
MNF8	TM-13-63009	61	550
MNF9	TM-13-63010	<1.0	<9.1
MNF10**	TM-13-63011	<1.0	

CHROMIUM on WIPE RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (µg)	CONCENTRATION (µg/ft²)
MNF1	TM-13-63002	<10	<91
MNF2	TM-13-63003	<10	<91
MNF3	TM-13-63004	<10	<91
MNF4	TM-13-63005	<10	<91
MNF5	TM-13-63006	<10	<91
MNF6	TM-13-63007	<10	<91
MNF7	TM-13-63008	<10	<91
MNF8	TM-13-63009	20	181
MNF9	TM-13-63010	<10	<91
MNF10**	TM-13-63011	<10	

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Project 11320
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FOH ENVIRONMENTAL LABORATORY

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

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

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 $\mu g/ft^2$

LEAD in PAINT RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (%weight)	CONCENTRATION (mg/g)
MNB1	TM-13-63012	0.01	0.11
MNB2	TM-13-63012	0.007	0.07

CADMIUM in PAINT RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (%weight)	CONCENTRATION (mg/g)
MNB1	TM-13-63012	<0.001	<0.01
MNB2	TM-13-63012	<0.001	<0.01

CHROMIUM in PAINT RESULTS

SAMPLE NUMBER*	LABORATORY NUMBER	CONCENTRATION (%weight)	CONCENTRATION (mg/g)
MNB1	TM-13-63012	0.01	0.10
MNB2	TM-13-63012	0.02	0.18

NOTE: The Department of Housing and Urban Development classifies paint containing more than 0.5% lead by weight as being lead-based.

Project 11320
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FOH ENVIRONMENTAL LABORATORY

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

Metal in Paint Limits

METAL	ANALYTICAL METHOD	METHOD DETECTION LIMIT (%)	REPORTING LIMIT (%)
Lead	OSHA-ID 121	0.003 @ 0.10 gram sample	0.008 @ 0.10 gram sample
Chromium	OSHA-ID 121	0.005 @ 0.10 gram sample	0.01 @ 0.10 gram sample
Cadmium	OSHA-ID 121	0.0005 @ 0.10 gram sample	0.001 @ 0.10 gram sample

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Project 11320
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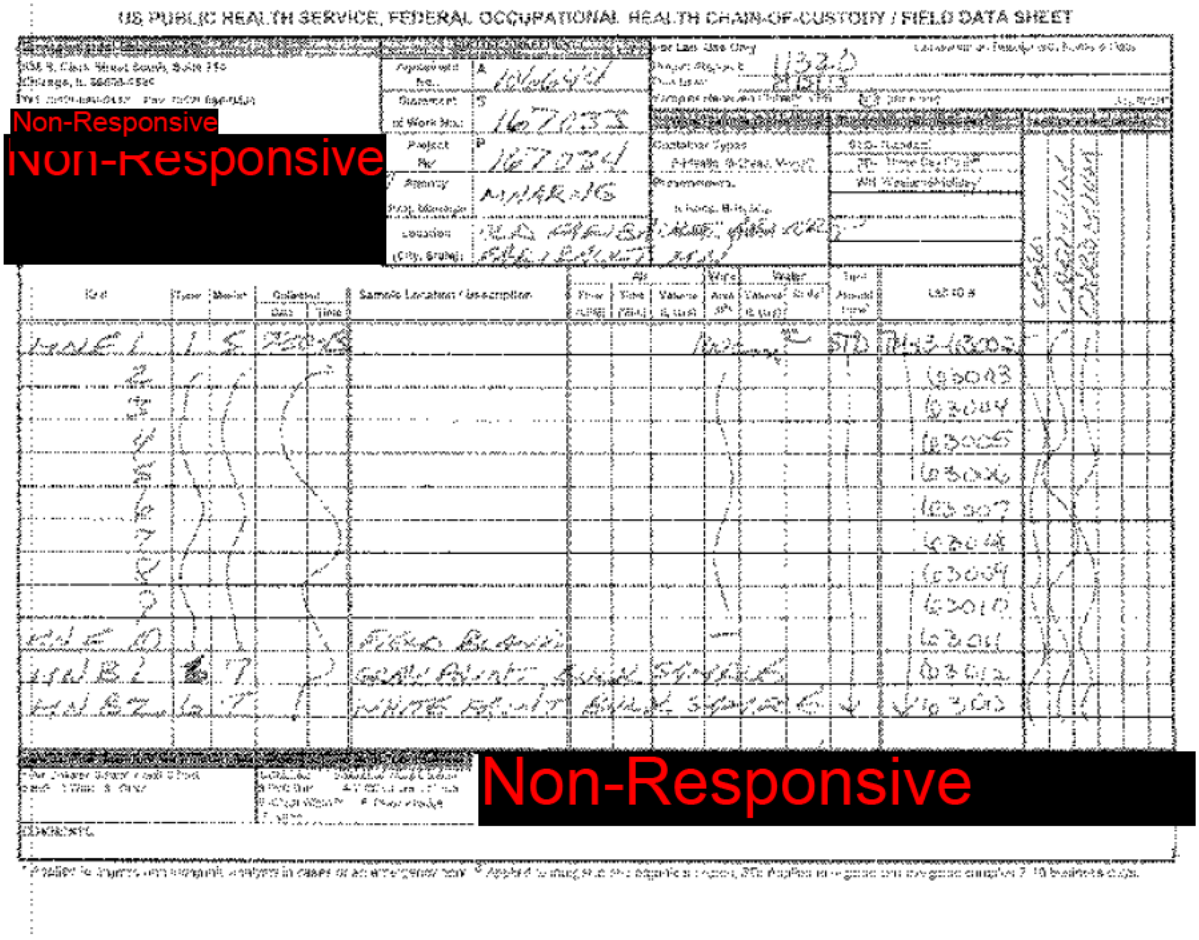
US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET
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US PUBLIC HEALTH SERVICE, FEDERAL OCCUPATIONAL HEALTH CHAIN-OF-CUSTODY / FIELD DATA SHEET

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Non-Responsive

Appendix B
Lighting

Illumination levels were measured with a Sper Scientific 840022 Broad Range Lux/FC 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. Twelve spaces in the facility did not meet the minimum lighting level.

Recommendations:

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

Table B-1
Lighting Measurements
Minnesota Army National Guard, Old Faribault Armory, Faribault MN
July 30, 2013

Locations	Measured Illumination (foot candles)	Required Illumination (foot candles)	Standard Met?
Room 103, Orderly Room	48-52	50	Partial
Room 104, Company Office	38-68	50	Partial
Room 105, Recruiter Office	38-43	50	No
Room 106, Training	26-38	50	No
Male Latrine	22-36	30	Partial
Female Latrine	36-40	30	Yes
Storage	23-35	30	Partial
Classroom	39-41	50	No
Locker Room	32-36	30	Yes
Male Shower	5-7	30	No
Supply Room	17-23	30	No
Vault	2-5	30	No
Drill Floor	Not Functional	30	No
Boiler Room	9-11	30	No
Firing Range	4-18	50	No
Kitchen	28-48	50	No
Pantry	6-13	30	No
Maintenance Room	39-77	50	Partial
Hazardous Waste Room	Not Functional	30	No

Appendix C
Visual Inspection of Building

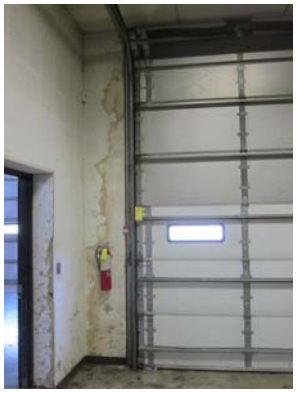
The Old Faribault Armory was built in 1979 and has been closed for about 3 to 4 years. The MNARNG is considering reopening the building, and requested a building survey to help to assess the condition of the building. The MNARNG requested a visual inspection for mold, lead paint and suspected asbestos containing materials. The NGB requested background information regarding previous surveys for these materials. Non-Responsive, Environmental Specialist for the MNARNG, reported that he could not locate any records of surveys for the presence of asbestos, lead paint or mold in the Old Faribault Armory.

Visual Identification of Water Leaks and Mold

A walk through of the building identified visual evidence of water leaks and mold in several areas. Table C-1 indicates locations of water leaks and mold. A thorough roof inspection should be performed and all existing roof leaks should be repaired. All water and mold damaged materials should be cleaned up or replaced.

Table C-1
Visual Inspection for Water Leaks and Mold
Minnesota Army National Guard, Old Faribault Armory, Faribault MN
July 30, 2013

Location/Description	Photo
Water leaks/mold on North wall and ceiling tiles, in area where low rooftop meets higher rooftop	
Water leaks/mold on North wall and ceiling tiles, in area where low rooftop meets higher rooftop	

Location/Description	Photo
Water leaks/mold adjacent to roll up door on east side of building	
Water damage on east wall of drill hall, bubbling and peeling paint	
Mold/water leaks on ceiling tiles in classroom	
Mold/water leaks on ceiling tiles in classroom	

Location/Description	Photo
Black mold beneath water heater in kitchen pantry	
Black mold beneath water heater in kitchen pantry	
Water damage/mold on ceiling tiles in maintenance room	
Water damage/mold on ceiling tiles in locker room	

Location/Description	Photo
Water damage/mold on ceiling tiles in supply room	

Visual Identification of Suspect Asbestos Containing Materials

The reported construction age of the building (1979) suggests that it may have been constructed with asbestos containing materials. The building is equipped with an oil fired hot water boiler. Most of the visible hot water pipe insulation appeared to be fiberglass. A partial list of suspected asbestos containing materials in the building includes; the boiler gasket material, roofing materials, suspended ceiling tiles, and floor tiles and mastic. A detailed asbestos inspection of all of the building materials in the Old Faribault Armory should be performed by a state certified asbestos inspector.

Underground Storage Tank

The building is equipped with an oil fired hot water boiler. The boiler may have an underground storage tank (UST). The MNARNG should determine whether a UST for the boiler fuel is on site. If present, the UST should be evaluated to determine its contents and integrity to prevent potential leaks to groundwater.

Heating, Ventilation and Air Conditioning (HVAC)

The facility engineer provided access to the rooftop HVAC unit. The rooftop air conditioning unit was observed to be clean and dry (Figure 1).

Recommendations:

1. A thorough roof inspection should be performed and all existing roof leaks should be repaired (RAC 2).

2. All water and mold damaged materials should be cleaned up or replaced (RAC 2).

3. A detailed asbestos inspection of all of the building materials in the Old Faribault Armory should be performed by a state certified asbestos inspector. A partial list of suspected asbestos containing materials in the building includes; the boiler gasket material, roofing materials, suspended ceiling tiles, and floor tiles and mastic (RAC 2).

4. Determine whether a UST for the boiler fuel is on site. If present, the UST should be evaluated to determine its contents and integrity to prevent potential leaks to groundwater (RAC 2).

Figure 1 – Rooftop HVAC Unit