SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

b. <u>Methodology</u>. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

# 5. FINDINGS AND DISCUSSION,

# a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot  $\langle \mu g/ft^2 \rangle$ . While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, seven were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard.

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR itself and the Plenum area (Appendix C, Figures C-1 thru C-11). (AW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). Excluded from cleaning are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

# 6. RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. Clean and decontaminate the IFR IAW NG Pare 420-15, Section 3-2 (reference 1b). **(RAC 3)** 

# b. Stored Materials,

(1) Cleaning Requirements. Cleanial non-porous stored items with either and more high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). (RAC 4)

2

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). (RAC 4)

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Port Murray IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.



1LT, MS Environmental Engineer

APPROVED BY:



NGB Regional Industrial Hygienist

3

ويوفرقهم والمراجب والمعريب

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

# APPENDIX A

# DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, 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

AER	Exposure Conditions				
POSSIBLE?	<al< th=""><th>Occasionally &gt; AL Always &lt; OEL</th><th>&gt; AL &lt; = OEL</th><th colspan="2">&gt; OEL</th></al<>	Occasionally > AL Always < OEL	> AL < = OEL	> OEL	
NO	0	3	5	7	
YES	1-2	4	6	8	

AER = Alternate exposure route, such as skin absorption, ingestion.

AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, parts per million.

OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

# b. Medical Effects Points Assessed.

Condition	Points
No medical effect, 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, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

Total Points (sum of A and B, above)	HHSC
13-16	1
9-12	11
5-8	
0-4	IV

c. Determine the HHSC by totaling the points assessed and using the following guide:

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of	Exposure Duration				
ot Exposure	1-8 hr/wk	>8hr/wk, not continuous	Continuous		
Irregular, intermittent	1-2	4-6	-		
Regular, periodic	2-3	5-7	8		

b. Number of Exposed Personnel Points Assessed

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

A-2

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	IPC
14-16	Α
10-13	В
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

N I	ILLNESS PROBABILITY CODE					
SEVERITY CODE	A B C D					
	1	1	2	3		
II	1	2	3	4		
	2	3	4	5		
IV	3	4	5	5		

From Table 2 of Department of Defense Instruction 6055.1,

Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

# 4. RAC DESCRIPTOR

# RAC DESCRIPTOR

1	CRITICAL
1	CHITCAL

- 2 SERIOUS
- 3 MODERATE
- 4 'MINOR --- --
- 5 NEGLIGIBLE

-1

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

# APPENDIX B WIPE SAMPLE RESULTS

Table B-1.	Lead Wipe Sample Results for Port Mu	rray IFR 20 March	2008	
Sample		Results	Std.	Met
	location			and the second sec

Number	Location	µg/ft <sup>2</sup> ª	$\mu$ g/ft <sup>2</sup>	Std.	
1C	IFR Floor near Bullet Trap	2400	200	No	
2C	IFR Bullet Trap	3500	200	No	
3C	IFR Floor along right wall near Bullet Trap	460	200	No	
4C	IFR Floor near drain	220	200	No	
5C	IFR on top of footlocker	<110	200	Yes	
6C	IFR Floor along right wall	980	200	No	
7C	Folding Table at firing line	400	200	No	
8C	IFR Plenum on Floor	260	200	No	
9C	Floor in front of entrance door to IFR	<110	200	Yes	
10C	IFR top of steel locker near firing line	<110	200	Yes	

a: Results are in micrograms per square foot.

S +++

< indicates the value is below the detectable limit

B-1

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

APPENDIX C



Figure C-1. Port Murray IFR being used as a storage area.

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.



Figure C-2. Wipe sample taken on IFR floor near the Bullet Trap

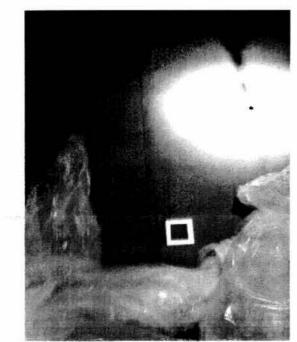


Figure C-3. Wipe sample taken on IFR Bullet Trap

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.



Figure C-4. Wipe sample taken on IFR floor along right wall near Bullet Trap

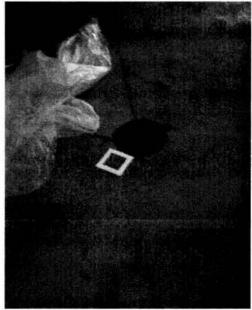


Figure C-5. Wipe sample taken on IFR floor near drain

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.



Figure C-6. Wipe sample taken on top of footlocker



Figure C-7. Wipe sample taken on IFR floor along right wall

C-4

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.

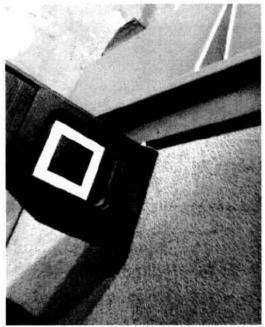


Figure C-8. Wipe sample taken on the folding table at the firing line



Figure C-9. Wipe sample taken on IFR Plenum on floor.

C-5

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Port Murray, New Jersey Army National Guard, 20 March 2008.



Figure C-10. Wipe sample taken on floor in front of entrance door to IFR



Figure C-11. Wipe sample taken on top of steel locker near firing line

C-6

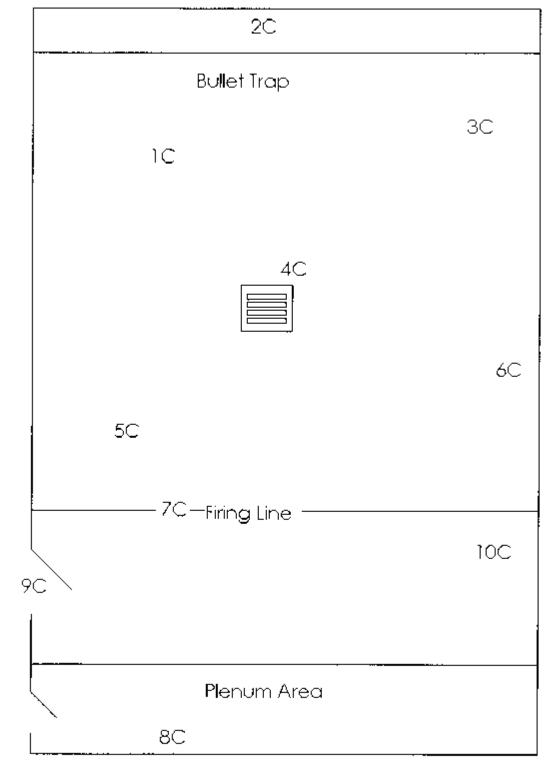


Figure 1. Diagram of Wipe Samples for Port Murray IFR 20 March 2008

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# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-AVS-SI 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

NGB-AVS-SI

10 April 2001

MEMORANDUM FOR The NJARNG, Safety and Occupational Health Office ATTN: SAAO-SM, Trenton-Mercer Airport, 152 Scotch Road, West Trenton, NJ 08628

SUBJECT: Evaluation of Indoor Firing Range

1. References. See Appendix A.

2. General.

a. Ms. Non-Responsive NGB, Army National Guard, Regional Industrial Hygienist performed an Indoor Rifle Range evaluation at Sea Girt, NJ. Mr. CIH and Mr. Non-Responsive IHIT, Industrial Hygienists from the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) assisted in the evaluation. The survey was conducted 21 February 2001.

b. Exposure and ventilation standards used in this report are the most stringent of those found in Title 29, Code of Federal Regulations (CFR) Part 1910, Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) or NGB, All States Letter Log Number (P00-0059); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges.

c. Risk Assessment Codes (RACs) are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix B of this report.

3. Background.

a. This range has been completely renovated from an existing 50 feet indoor firing range. The new range is a 4 lane, 25 meter indoor rifle range with a

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# NGB-AVS-SI Subject: Evaluation of Indoor Firing Range

lubricated Snail™ bullet trap. A computer automated control room has been installed behind the plenum section. An individual operating in this room monitors firers and can retrieve targets.

4. Findings and Discussion.

a. Range Classification. This range is classified as "SAFE" based upon ventilation and air sampling results.

b. Ventilation.

(1) The cross-sectional area of the range was measured to be 155 square feet ( $ft^2$ ). Air is introduced into a 1.5 ft wide by 7.75 ft high plenum wall. Air is exhausted downrange behind the bullet trap. "Smoke testing" of the range revealed laminar flow of air.

(2) Blueprint readings on the supply and exhaust fans wera 12,000 CFM and 13,280 CFM, respectfully. These fan speeds allow for the range to be under negative pressure, as required.

(3) The average velocity at the firing line was measured to be 78 feet per minute (FPM) which exceeds the minimum everage of 50 FPM as required by the NGB All States Letter.

(4) The static pressure of the range was measured to be -0.6 inches water gage (w.g.) pressure from the range vestibule area. The recommended static pressure is between -0.05 and -0.15 inches w.g.

(5) The amperage wes measured on the three phase exhaust and supply fans. The amperege for the supply fan was approximately 34 which was consistent with design criteria. The exhaust fan was measured at approximately 22 amps, this is about 10 percent below design specifications. Speeding up the exhaust fan will help decrease the static pressure in the range.

(6) The plenum wall was constructed of Lexan™ panels with 3/8 inch diameter holes. The average airflow through the plenum wall was measured to be 2530 FPM and was uniform and laminar.

c. Air Sampling Results. Air samples were collected and analyzed for airborne concontrations of inorganic lead fume end dust. Air sample results can be found in Appendix C. Personal breathing zone (BZ) air samples were collected on all four firers. General area (GA) air samples were collected 8 ft. 9 inches behind the firing line on the plenum wall behind lanes 2 and 3. Air sample results are reported as a time weighted average (TWA) for an 8 hour exposure and have been compared to the OSHA PEL-TWA standard of 0.05 milligrams per cubic centimeter (mg/m<sup>3</sup>), the inorganic lead action level of 0.03 mg/m<sup>3</sup> and the exposure limits listed in All States Memorandum (Log Number P00-0059) Figure 1-1. Air sample results did not exceed either the OSHA standard or the standard listed in the All States Letter. Personnal fired approximately 820 rounds of 5.56 millimeter ammunition from M16A2 rifles. The sampling period was 77 minutes. Sample results can be found in Appendix C.

d. Other Areas of Concern.

(1) Acoustical tile was installed on the ceiling in front of the firing line. This material will not help to eliminate any noise and may harbor dangerous lead dust and other contaminants in the future.

(2) Door sweeps and insulation around the door was installed prior to firing.

(3) A SOP needs to be developed and distributed or made available to all users and maintenance personnel.

(4) Light could be seen at the top of the bullet trap around the 3<sup>rd</sup> and 4<sup>th</sup> firing lanes. The bullet trap needs to be flush with the ceiling.

(5) An adjustable door stop needs to be installed in the door leading to the range. This will help to eliminate the door closing too quickly because of the high static pressure in the range.

(6) Additional signs have to be installed prior to opening the range for continuous use. Signs such as high noise hazard and no dry sweeping of the range should be installed.

(7) The range should be limited to 9 mm emmunition. If individuals are unsure of the caliber of ammunition that can be fired on the range, this office or the NJARNG Safety and Occupational Health Office can be contacted for assistance on the selection of correct ammunition.

# NGB-AVS-SI

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Subject: Evaluation of Indoor Firing Range

5. Recommendations.

a. Remove the ceiling acoustical tile in front of the firing line. (RAC 4)

b. Develop a SOP and staff the document through the NJARNG Safety Office and enforce the procedures prescribed within. (RAC 3) [AR 385-63]

c. Ensure the backstop is flush with the ceiling. (RAC 2)

d. Install an adjustable doorstop on the door leading into the range. (RAC 3)

e. Ensure all warning signs are posted as required. (RAC 3)

e. Adjust the speed of the exhaust fan so that the amperage is closer to design specifications. (RAC 3)

6. Request a reply by endorsement on the corrective action taken on the aforementioned deficiencies by 10 July 2001.

7. The point of contact is the undersigned and can be reached at (410) 942-0273, ext. 12.

Non-Responsive Regional Industrial Hygienist

# APPENDIX A REFERENCES

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, October 1998.

2, AR 40-5, Preventive Medicine, 15 October 1990.

3. TB MED 503, Occupational and Environmental Health, The Army Industrial Hygiene Program, February 1985.

4. NG PAM 385-14, Safety Evaluation of Indoor Firing Ranges, (DRAFT).

5. NGB, All States Letter Log Number (P00-0059); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges. 7. NGB Design Guide (DG) 415-1, Design Guide for Armories, Current.

6. Title 29 Code of Federal Regulations, 2001, Revision, Part 1910, Occupational Safety and Health Standards.

7. American Conference of Governmental Industrial Hygienists, Threshold Limit Values (TLVs) for Chemical Substances and Biological Exposure Indices for 2000-2001.

# APPENDIX B DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS (Ref: DOD Instruction 6055.1)

STEP 1. Using the following procedures to assess points, 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.

#### Exposure Points Assessed Α.

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			Exposure Conditions			
. <u> </u>		<ct< th=""><th>Occasio Always</th><th>onally - &gt;CT - <std< th=""><th>≻CT ≤S⊺D</th><th>&gt;STD</th></std<></th></ct<>	Occasio Always	onally - >CT - <std< th=""><th>≻CT ≤S⊺D</th><th>&gt;STD</th></std<>	≻CT ≤S⊺D	>STD
AER	NO	0	3		5	7
POSSIBLE?	YES	1-2	4		6	8

AER = Alternate exposure route, such as skin absorption, ingestion

CT = DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, \ parts per million

STD = DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit

B. Medical Effects Points Assessed <u>Condition</u>	<u>Points</u>
No medical effect, 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 and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

<u>Total Points (sum of A and B, above)</u>	<u>HHSC</u>
13-16	ł
9-12	Ħ
5-8	<b>II</b>
0-4	lV

STEP 2. Using the following guides to assess points, 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

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.

		Length	of Exposure	
	_	1-8 hr/wk not continuous		8 hr/wk ntinuous
Туре	irregular, intermittent	1-2	4-6	-
of Exposure	Regular, periodic	2-3	5-7	8
	r of Exposed Personnel Pe umbe <u>r of Exposed Person</u>		<u>Poin</u>	t <u>s</u>
	<5 5 to 9		1-2 3-4	
	to 49		5-6	
	>49		7-8	

### B-2

c. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	<u>MPC</u>
14-16	А
10-13	В
5-9	С
<5	D

STEP 3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

# MISHAP PROBABILITY

		A	В	С	D
	· ·			2 3	
HAZARD SEVERITY	jin jin	2	з	4 5	5

# APPENDIX C

# AIR SAMPLE RESULTS AND ANALYSIS

# Results of Lead Air Sampling During Firing 21 February 2001 Sea Girt, NJ Armory

Firier/Location	Туре	Sample Number	Time (Mins)	Lead ug/sample	Lead mg/m <sup>3</sup>	Lead TWA <sub>\$mgm</sub> 3
Lane 1	BZ	1	77	ND	< 0.008	< 0.0013
Lane 2	BZ	2	77	ND	<0.007	<0.0011
Lane 3	BZ	3	77	ND	<0.008	< 0.0013
Lane 4	BZ	4	77	ND	<0.008	< 0.0013
Plenum Lane 3	GA	5	77	ND	<0.008	< 0.0013
Plenum Lane 2	GA	6	77	ND	<0.008	< 0.0013
Outside Door	GA	7	77	ND	<0.008	< 0.0013
Reloader	BZ	8	77	DND	<0.008	<0.0013
Blank	N/A	9	N/A	ND	N/A	N/A

The OSHA PEL-TWA<sub>8</sub> for lead is 0.05 mg/m<sup>3</sup>

ND indicates the value is below the reporting limit

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# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-AVS-SI 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

NGB-AVS-SI

25 March 2003

# MEMORANDUM FOR The NJARNG, Safety and Occupational Health Office ATTN: SAAO-SM, Trenton-Mercer Airport, 152 Scotch Road, West Trenton, NJ 08628

SUBJECT: Evaluation of Indoor Firing Range

1. References. See Appendix A.

2. General.

a. Ms.Non-Responsive NGB, Army National Guard, Regional Industrial Hygienist and Non-Responsive performed an Indoor Rifle Range evaluation at Sea Girt, NJ. The survey was conducted 12 December 2002.

b. Exposure and ventilation standards used in this report are the most stringent of those found in Title 29, Code of Federal Regulations (CFR) Part 1910, Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) or NGB, All States Letter Log Number (P02-0033); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges (IFR) and Guidelines for IFR Rehabilitation, Conversion and Cleaning.

c. Risk Assessment Codes (RACs) are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix B of this report.

3. Background. This range has been completely renovated from an existing 50 feet indoor firing range. The new range is a 4 lane, 25 meter indoor rifle range

NGB-AVS-SI SUBJECT: Evaluation of Indoor Firing Range

with in lubricated Snail<sup>™</sup> bullet trap. A computer automated control room has been installed behind the plenum section. An individual operating in this room monitors firers and can retrieve tergets.

4. Findings and Discussion.

a. Range Classification. This range is classified as "LIMITED USE" based upon ventilation, air sampling results and the improper installation of the bullet trap.

b. Ventilation.

(1) The cross-sectional area of the range was measured to be 155 square feet (ft<sup>2</sup>). Air is introduced into a 1.5 ft wide by 7.75 ft high plenum wail. Air is exhausted downrange behind the bullet trap. "Smoke testing" of the range revealed laminar flow of air.

(2) Blueprint readings on the supply and exhaust fans were 12,000 CFM and 13,280 CFM, respectfully. These fan speeds allow for the range to be under negative pressure, as required.

(3) The average velocity at the firing line was measured to be 65 feet per minute (FPM) which exceeds the minimum average of 50 FPM as required by the NGB All States Letter.

(4) The static pressure of the range was measured to be -0.04 inches watar gage (w.g.) pressure from the range vestibule area. The recommended static pressure is between -0.05 and -0.15 inches w.g.

(5) The plenum wall was constructed of Lexan<sup>™</sup> panels with 3/8 inch diameter holes. The airflow through the plenum wall was uniform and laminar.

c. Air Sample Results.

(1) Air samples were collected and analyzed for airborne concentrations of inorganic lead fume and beryllium. Air sample results can be found in Appendix C. Personal breathing zone (BZ) air samples were collected on all firers. General area (GA) air samples were collected 8 ft. 9 inches behind the firing line on the plenum wall behind lanes 2 and 3. Air sample results are reported as a time weighted average (TWA) for an 8 hour exposure and have been compared to the OSHA PEL-TWA standard of 0.05 milligrams per cubic meter (mg/m<sup>3</sup>), the inorganic lead action level of 0.03 mg/m<sup>3</sup> and the exposure

NGB-AVS-SI SUBJECT: Evaluation of Indoor Firing Range

limits listed in All States Memorandum (Log Number P02-0033) Figure 1-1. The OSHA PEL-TWA for beryllium is 0.002 mg/m3. Air sample results did not exceed either the OSHA standards but did exceed the lead standard in lane 4 of the All States Letter, Figure 1-1 used to decide how long an individual cen fire on the range.

(2) Personnel fired approximately 1296 rounds of full metal jacketed 9 millimeter ammunition. The sampling period was 77 minutes. Sample results can be found in Appendix C.

d. Other Areas of Concern.

(1) Acoustical tile was installed on the ceiling in front of the firing line. This material will not help to eliminate any noise and may harbor dangerous lead dust and other contaminants in the future.

(2) A SOP needs to be developed and distributed or made available to all users and maintenance personnel.

(3) Light could be seen at the top of the bullet trap around the 3<sup>rd</sup> and 4<sup>th</sup> firing lanes. The bullet trap needs to be flush with the ceiling. This deficiency could permit a bullet to penetrate the area behind the bullet trap.

(4) The range should be limited to 9 mm ammunition. If individuals are unsure of the caliber of ammunition that can be fired on the range, this office or the NJARNG Safety and Occupational Health Office can be contacted for assistance on the selection of correct ammunition.

5. Recommendations.

a. Remove the ceiling acoustical tile in front of the firing line. **Repeat Deficiency** (RAC 4)

b. Develop a SOP and staff the document through the NJARNG Safety Office and enforce the procedures prescribed within. **Repeat Deficiency** (RAC 3) [AR 385-63]

c. Ensure the bullet trap is flush with the ceiling in lanes 3 and 4. Repeat Deficiency (RAC 2)

d. Limit the amount of firing time to Guardsmen on marksmanship teams or Guardsmen exposed more than 30 days per year and all non-military personnel.

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to 6 hours of firing per day. In addition it limits the shooting time to 3 hours for individuals 17 years of age or younger. (RAC 2) All States (Log number P02-0033) Figure 1-1.

6. Request a reply by endorsement on the corrective action taken on the aforementioned deficiencies by 25 June 2003.

7. The point of contact is the undersigned and can be reached at (410) 942-0273, ext. 12.



Regional Industrial Hygienist

# APPENDIX A REFERENCES

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, October 1998.

2. AR 40-5, Preventive Medicine, 15 October 1990.

3. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000.

4. NGB, All States Letter Log Number (P02-0033); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges.

5. NG8 Design Guide (DG) 415-1, Design Guide for Armories, Current.

6. Title 29, Code of Federal Regulations, 2002, Revision, Part 1910, Occupational Safety and Health Standards.

7. American Conference of Governmental Industrial Hygienists, Threshold Limit Values (TLVs) for Chemical Substances and Biological Exposure Indices for 2002.

# APPENDIX B DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS (Ref: DOD Instruction 6055.1)

STEP 1. Using the following procedures to assess points, 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. 6	Exposure	Points	Assessed
------	----------	--------	----------

6464646464646464			Exp	osure Conditions		
		T3>		asionally - >CT ys - <std< th=""><th>&gt;CT ≤STD</th><th>&gt;STD</th></std<>	>CT ≤STD	>STD
AER	NO	(	)	3	5	7
POSSIBLE?	YES	1-2	2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion

CT = DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, \ parts per million

STD = DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit

B. Medical Effects Points Assessed Condition	<u>Points</u>
No medical effect, 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 and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

<u>Total Points (sum of A and B, above)</u>	<u>HHSC</u>
13-16	I
9-12	I
5-8	151
0-4	IV

STEP 2. Using the following guides to assess points, 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

		Length	of Exposure	
		1-8 hr/wk not continuous		8 hr/wk Intinuous
Туре	Irregular, intermittent	1-2	4-6	-
of Ex <b>po</b> sure	Regular, periodic	2-3	5-7	8
	er of Exposed Personnel Person umber of Exposed Person		Poin	<u>ts</u>
	<5		1-2	
	5 to 9		3-4	
	to 49		5-0	3
	>49		7.	8

c. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	<u>MPC</u>
14-16	А
10-13	в
5-9	С
<5	D

STEP 3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

# MISHAP PROBABILITY

		А	В	С	D
				2	
HAZARD SEVERITY				3 4	
	IV	3	4	5	5

# APPENDIX C

# AIR SAMPLE RESULTS AND ANALYSES

# Results of Inorganic Lead Air Sampling During Firing 12 December 2002 Sea Girt, NJ Armory

Firier/Location	Type	Sample Number	Time (Mins)	Lead ug/sample	Lead mg/m <sup>3</sup>	Lead TWA <sub>8</sub>
Lane 1	BZ	11	90	4	0.02	0.004
Lane 2	BZ	2	90	5	0.02	0.004
Lane 3	8Z	3	90	7	0.03	0.006
Lane 4	BZ	4	90	10	0.037	0.007
Plenum Lane	GA	5	90	ND	<0,004	<0.0008
2						
Plenum Lane	GA	6	90	ND	<0.004	<0.0008
3				<u></u>		
In Observation	GA	7	90	ND	<0.004	<0.0008
Room				<u>                                     </u>		
Blank	N/A	8	N/A	ND	<u>N/A</u>	<u>N/A</u>

The OSHA PEL-TWAsfor lead is 0.05 mg/m<sup>3</sup>

ND indicates the value is below the reporting limit

# Results of Beryllium Air Sampling During Firing 12 December 2002

Firier/Localion	Туре	Sample Number	Time (Mins)	Beryllium ug/sample	Beryllium mg/m <sup>3</sup>	Beryllium TWA <sub>B</sub>
				ł		_mg/m
	⁻ BZ │	1	90	ND	< 0.002	<0.0004
Lane 2	BZ	2	90	ND -	<0.002	<0.0004
Lane 3	BZ	3	90	ND	<0.002	<0.0004
Lane 4	8Z	4	90	ND .	<0.002	<0.0004
Plenum Lane	GA	5	90	ND I	<0.002	<0.0004
2			<u>l</u>			
Plenum Lane	GA	6	90	ND	<0.002	<0.0004
3					I	
In Observation	GA	7	90	ND	<0.002	<0.0004
Room				<u>_</u>	L	<u> </u>
Blank	N/A	8	N/A	<u>ND</u>	<u>N/A</u>	] <u>N/A</u> ]

The OSHA PEL-TWAsfor beryllium is 0.002 mg/m<sup>3</sup>

ND indicates the value is below the reporting limit

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NGB ARNG REGION NORT 301-IH OLD BA HAVRE DE GR/	Y LANE		trial Hygie BESTA	VAI ABint GP Non- Samples	Contact (name/ Respons Collected By Respons	ohone #) 4 SiVe 4 SiVe	<u>5-6 (0</u> 10 942 0 10 942 0	254-FI
Sampled Facility		Cit		State	PLocation (	bldg/area)		
N) ARNG AR Description of Ope		<u> </u>	bea Girt	<u>_ (a</u> ]		< . d of Collection	<u> </u>	
IFR	IFR $\frac{7}{7}$ Pe		Persons Exposed	1.5 Hrad	ay CLOS		37mm CE	FILT
Analysis Desired		ł					<u></u>	
LEAD B	36396	2/2	77 365 8sar	36379	21100	36401	7/1/7/2	31.10
Sample No.	1	2	3	Hpling Data	36400 5	6	<u>36402</u> 7	<u>34 %</u> 8
Pump No.	7658	834	8 8349	8324	7605	7600	8241	В
Time On	1225	122	5 1225	1225	1225	1225	1225	L
Time Off	1355	135	5 1355	1355	1355	1355	1355	Α
Total Time (min)	90	90	90	90	90	90	90	N
Flow Rate (LPM)	2.8	3.0	2.9	3.0	3,0	3.0	3,0	K
Volume (liters)	252	270	261	270	270	270	276	
GA/BZ	BZ	BZ	B2	BZ	GA LANE 2	GA LANE 3	G A CONTROL	
Name/ID Laboratory No.	LANE I	LANE	2 LANE 3	LANE 4	PLENUM	PLENUM	ROOM	
			Calibrat	ion Informatio	n			
		Calibrati	on (LPM)		· · · ·			
Pump No.	Pre	-Use	Post-Use	Rotam	eter Setting		Date	
7658	2.	817	2.721		3	12	DEC 20	02
8348	2.9	84	2.963	. 3	•		tı	
8349	2.9	35	2.944	3			11	
8324	3.0	63	3,048	3	•		tı	
7605	2,0	<del>?</del> 91	2.892	3			"(	
7600	3.0	043	2.948	3			<sup>t</sup> 1	
8241	3.0	30	2.932	3			{ <b>f</b>	
Name of Callbrator			Calibration Date		Manufacturer			
DRY CAL DC Comments to Lab:	-1B REV			BIL				
10/19/0	DRYC	AL ME	d cell dc	- HC- 1	REV E.	S/N SIT		
	FOIA Reading	Room	BEST	2 ~ 1	on-Re		15-( by <b>lNational</b> -Gua	0085 (NH) rd Bureau 35 of 1660

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TEST REPORT Page 1 of 2 12/27/02

Submitted To: Non-Responsive Army National Guard Bureau 301- IH Old Bay Lane; Attn: NGB-AVN-SI Havre de Grace, MD 21078

Reference Data:	Metals
Client Sample No.:	1 through 8
P.O. No.:	VISA
Sample Location:	NJARNG ARMORY
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	02-8-6103
DCL Sample ID No.:	02-36396 through 02-36403
Sample Receipt Date:	12/18/2002
Preparation Date:	12/20/02
Analysis Date:	12/20/02

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL (ICP) purged spectrometer.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected except when clearly indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.





CINCINNATI OFFICE 4388 GLENDALE-MILFORD ROAD CINCINNATI, OHIO 45242-3706 513 733-5336, FAX 513 733-5347

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Posted to NGB FOIA Reading Room May, 2018 FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 66 of 1660

TEST REPORT Page 2 of 2 02-S-6103

# Results

µg/Filter

Client #	1	2	3	4	5	
DCL #	02-36396	02-36397	02-36398	02-36399	02-36400	LOD
Beryllium	ND	ND	ND	ND	ND	0.5
Lead	4.	5.	7.	10.	ND	1.

ND indicates the value was not detected at or above the limit of detection (LOD).

# Results

# µg/Filter

Client #	6	7	8		% Recovery	1
DCL #	02-36401	02-36402	02-36403	Prep Blank	LCS	LOD
Beryllium	ND	ND	ND	ND	104.	0.5
Lead	ND	ND	ND	ND	105.	1.

ND indicates the value was not detected at or above the limit of detection (LOD).

LCS stands for laboratory control sample.

# Results

			/ ***		
Client #	1	2	3	4	5
DCL #	02-36396	02-36397	02-36398	02-36399	02-36400
Volume (L)	252	270	261	270	270
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002
Lead	0.02	0.02	0.03	0.037	<0.004

# Results

 $mq/m^3$ 

			•	
Client #	6	7	8	
DCL #	02-36401	02-36402	02-36403	
Volume (L)	270	270	0	$\neg$
Beryllium	<0.002	<0.002	-	$\neg$
Lead	<0.004	<0.004	-	$\neg$



Analyst



Reviewer

Posted to NGB FOIA Reading Room May, 2018

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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 67 of 1660

Return Address	499939999899899899899999999999999999999		ISTRIAL HYGIG BEST A	VAILAPAIE CON Non- Samples	Respons	ohone#) 나 SIVE 나	10 942 0 10 942 0		
Sampled Facility		City		State	PLocation (I	oʻldg/area)			
N.) ARNG ARMORY		Se	ca Girt	N)	I FI	र d of Collection	-		
Description of Operation		7 Pe	rsons Exposed	1.5 Higo	ay CLos		37mm CE	= FL	
Analysis Desired		<b>I</b>	·			20 11	Dimin CL		
LEAD, B	BRILLIUM			npling Data					
Sample No.	Ι.					_		l	
Sample NO.		2	3	4	5	6	7	8	
Pump No.	7658	8348	8349	8324	7605	7600	8241	E	
Time On				0.544	1000	1600	0611	L	
	1225	1225	1225	1225	1225	1225	1225	L	
Time Off	1355	1355	1355	1355	1355	1355	1355	ļ	
Total Time (min)								N	
	90	90	90	90	90	90	90		
Flow Rate (LPM)	2.8	3.0	2.9	3,0	3.0	3.0	3,0	4	
Volume (liters)	0.00								
- •	252	270	261	270	270	270	270		
GA/BZ	BZ	BZ	82	82	GA	GA	GA		
Employee	14114		t And a	LANCH	LANE 2	LANE 3	CONTROL		
Name/ID	LANE I	LANE 2	. LANE 3	LANE 4	PLENUM	реним	ROOM		
Laboratory No.									
			Calibrat	tion Informatio	n				
Pump No.		Calibration	· · ·	Rotam	eter Setting		Date		
*******		Use							
7658	2.8	716	2.721		3		12 DEC 2002		
8348	2.9	84	2.963	3		ħ			
8349	2.9	3.5	2.944	3			£1		
8324	3.0	63	3 3,048		3		fr .		
7605	2.9	191	1 2.892		3		۲ <u>۱</u>		
7600	3.0	943	2.948	3			4		
8241	3.0	30	2.932	3			í:		
					·····			<u></u>	
Name of Calibrator			libration Date		lanufacturer				
DRYCAL DC	IB REV 2	2.06F		B10	5				
Comments to Lab:	DRYCI					S/N SIT			

# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-ARS-IHNE 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f)

16 April 2008

# EXECUTIVE SUMMARY INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) SEA GIRT, NJ 19 March 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Sea Girt IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Sea Girt IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

# 3. FINDINGS AND RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, six were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2, (RAC 3)

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR and Plenum Area (Appendix C, Figures C-1 thru C-10). **(RAC 3)** 

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). (RAC 4)

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements. (RAC 4)

# INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) SEA GIRT, NJ 19 March 2008

### 1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Pamphlet (NG Pam) 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

2. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Sea Girt IFR.

## 3. GENERAL.

a. Survey Personnel. This survey was conducted 19 March 2008 by 1LT Non-Responsive and 1LT Non-Responsive States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM-North), Fort George G. Meade, Maryland.

b. <u>Risk Assessment Codes (RACs</u>). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. <u>Background</u>. CW2<sup>Non-Responsive</sup> NJARNG State Occupational Health Manager (SOHM) G-3, requested an evaluation, through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, of the equipment stored at the inactive Sea Girt IFR to assess any possible inhalation hazards as a result of lead dust contamination.

### 4. METHODOLOGY.

a. <u>Assessment Criteria</u>. The United States Army, through the <u>Department of</u> Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

b. <u>Methodology</u>. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

#### 5. FINDINGS AND DISCUSSION.

#### a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, six were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard.

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR itself and Plenum Area (Appendix C, Figures C-1 thru C-10). IAW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). Excluded from cleaning are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

6. RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. Clean and decontaminate the IFR IAW NG Pam 420-15, Section 3-2 (reference 1b). (RAC 3)

b. Stored Materials.

(1) Cleaning Requirements. Clean all non-porous stored items with either at high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). (RAC 4)

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). (RAC 4)

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Sea Girt IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.



1LT, MS Environmental Engineer

APPROVED BY:



NGB Regional Industrial Hygienist

3

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

# APPENDIX A

# DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, 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.

- Exposure Conditions AER Occasionally > AL >AL <AL >OEL POSSIBLE? Always < OEL < = OEL0 3 5 7 NO YES 1 - 24 6 8
- a. Exposure Points Assessed

AER = Alternate exposure route, such as skin absorption, ingestion.

AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, parts per million.

OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

# b. Medical Effects Points Assessed.

Condition	Points
No medical effect, 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, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

A-1

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

Total Points (sum of A and B, above)	HHSC
13-16	1
9-12	I
5-8	111
0-4	IV

c. Determine the HHSC by totaling the points assessed and using the following guide:

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of	Exposure Duration			
Exposure	1-8 hr/wk	>8hr/wk, not continuous	Continuous	
Irregular, intermittent	1-2	4-6	-	
Regular, periodic	2-3	5-7	8	

b. Number of Exposed Personnel Points Assessed

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

A-2

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	IPC
14-16	A
10-13	В
5-9	С
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

	ILLNESS PROBABILITY CODE			
SEVERITY CODE	A	B	C	D
	1	1	2	3
	Т	2	3	4
<b>II</b>	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1,

· -..

Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1 2 3 4 5	CRITICAL SERIOUS MODERATE MINOR NEGLIGIBLE

- -

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

# APPENDIX B WIPE SAMPLE RESULTS

#### Table B-1. Lead Wipe Sample Results for Sea Girt IFR 19 March 2008

Sample Number	I ocation		Std. µg/ ft <sup>2</sup>	Met Std.
1	IFR Floor in front of firing line	230	200	No
2	Folding Table at firing line	<110	200	Yes
3	Pallet on left side of IFR	400	200	No
4	Top of box along left wall of IFR near Bullet Trap	<110	200	Yes
5	IFR Bullet Trap	<110	200	Yes
6	IFR Floor along right wall beneath pallets	3000	200	No
7	Top of IFR Lighting Baffles	1200	200	No
8	IFR Floor in front of Bullet Trap	3400	200	No
9	Back pallet on right wall in front of Bullet Trap	1200	200	No
10	Box under insulation along left wall near firing line	<110	200	Yes

a: Results are in micrograms per square foot.

< indicates the value is below the detectable limit

B-1

# NGB-ARS-IHNE SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.



APPENDIX C Photographs

Figure C-1. Wipe sample taken on IFR Floor in front of firing line

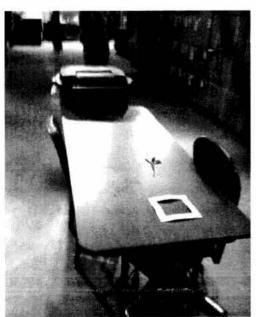


Figure C-2. Wipe sample taken on Folding Table at firing line

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

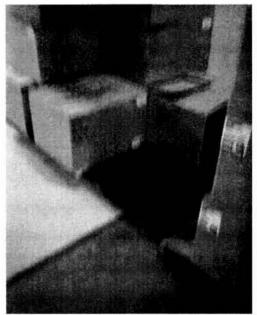
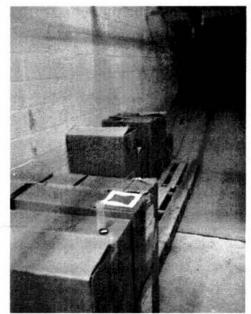
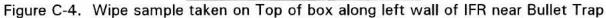


Figure C-3, Wipe sample taken on Pallet on left side of IFR





SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

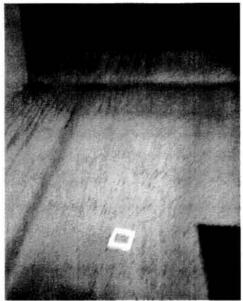


Figure C-5. Wipe sample taken on IFR Bullet Trap

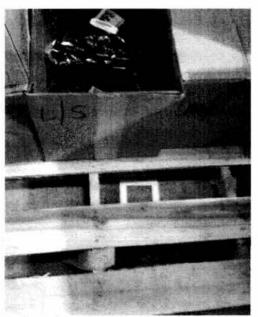


Figure C-6. Wipe sample taken on IFR Floor along right wall beneath pallets

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.



Figure C-7. Wipe sample taken on the Top of IFR Lighting Baffles



Figure C-8. Wipe sample taken on IFR Floor in front of Bullet Trap.

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Sea Girt, New Jersey Army National Guard, 19 March 2008.

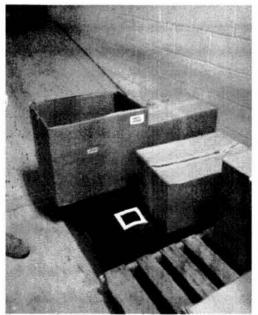


Figure C-9. Wipe sample taken on Back pallet on right wall in front of Bullet Trap

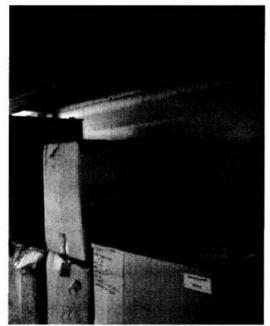


Figure C-10. Wipe sample taken on Box under insulation along left wall near firing line

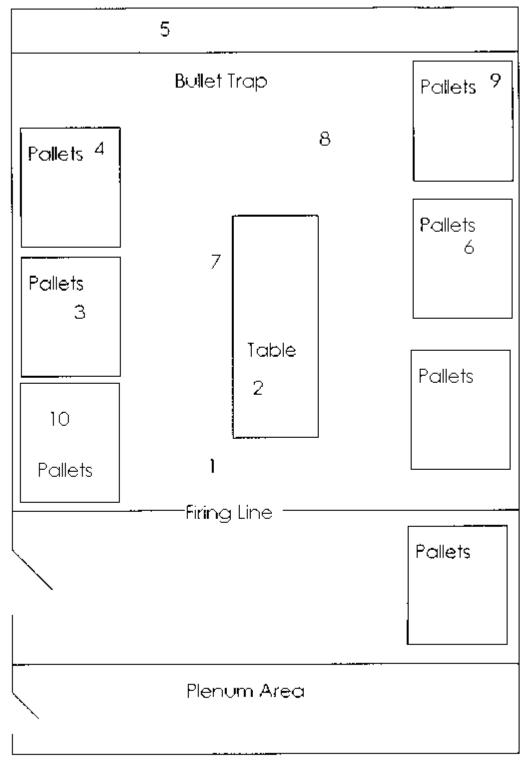


Figure 1. Diagram of Wipe Samples for Sea Grit IFR 19 March 2008

# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-ARS-IHNE 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

#### NGB-ARS-IHNE (40-5f)

16 April 2008

# EXECUTIVE SUMMARY INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) TOMS RIVER, NJ 19 MARCH 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Toms River IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Toms River IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

### 3. FINDINGS AND RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, four were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2, (RAC 3)

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR and Pienum Area (Appendix C, Figures C-1 thru C-11), **(RAC 3)** 

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). **(RAC 4)** 

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements. (RAC 4)

# INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) TOMS RIVER, NJ 19 March 2008

## 1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Pamphlet (NG Pam) 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

2. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Toms River IFR.

## 3. GENERAL.

a. Survey Personnel. This survey was conducted 19 March 2008 by 1LT Non-Responsive and 1LTNon-Responsive both Environmental Engineers from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. <u>Risk Assessment Codes (RACs</u>). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. <u>Background</u>. CW2 Tilbert Brymer, NJARNG State Occupational Health Manager (SOHM) G-3, requested an evaluation, through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, of the equipment stored at the inactive Toms River IFR to assess any possible inhalation hazards as a result of lead dust contamination.

# 4. METHODOLOGY.

a. <u>Assessment Criteria</u>. The United States Army, through the <u>Department of</u> Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

b. <u>Methodology</u>. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

## 5. FINDINGS AND DISCUSSION.

## a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, four were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard.

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR itself and Plenum Area (Appendix C, Figures C-1 thru C-11). IAW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). Excluded from cleaning are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

# 6. RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. Clean and decontaminate the IFR IAW NG Pam 420-15, Section 3-2 (reference 1b), **(RAC 3)** 

# b. Stored Materials.

(1) Cleaning Requirements. Clean all non-porous stored items with either a --high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). (RAC 4)

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). (RAC 4)

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Toms River IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive. Regional Industrial Hygienist, (410) 942-0273 ext 3.



1LT, MS Environmental Engineer

APPROVED BY:



NGB Regional Industrial Hygienist

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

#### APPENDIX A DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, 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.

AER	Exposure Conditions			
POSSIBLE?	<al< th=""><th>Occasionally &gt; AL Always &lt; OEL</th><th>&gt;AL &lt;=0EL</th><th>&gt; OEL</th></al<>	Occasionally > AL Always < OEL	>AL <=0EL	> OEL
NO	0	3	5	7
YES	1-2	4	6	8

a. Exposure Points Assessed

AER = Alternate exposure route, such as skin absorption, ingestion.

AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, parts per million.

OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

# b. Medical Effects Points Assessed.

Condition	Points
No medical effect, 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, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

Total Points (sum of A and B, above)	HHSC
13-16	1
9-12	I
5-8	111
0-4	IV

c. Determine the HHSC by totaling the points assessed and using the following guide:

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of	Exposure Duration			
Exposure	1-8 hr/wk	>8hr/wk, not continuous	Continuous	
Irregular, intermittent	1-2	4-6	-	
Regular, periodic	2-3	5-7	8	

b. Number of Exposed Personnel Points Assessed

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

A-2

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	IPC
14-16	А
10-13	В
5-9	С
< 5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

	ILLNESS	PROBABIL	LITY COD	E
SEVERITY CODE	A	В	c	ס
I	1	1	2	3
	1	2	3	4
L II	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1,

Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

•

# 4. RAC DESCRIPTOR

RAC	DESCRIPTOR
	DESCHIEF ON

2 SE 3 MC 4 Mi	ITICAL RIOUS DERATE NOR GLIGIBLE
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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

## APPENDIX B WIPE SAMPLE RESULTS

#### Table B-1. Lead Wipe Sample Results for Toms River IFR 19 March 2008

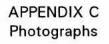
Sample Number	Location	Results µg/ft <sup>2</sup> *	Std. µg/ ft <sup>2</sup>	Met Std.
1A	Top of Supply Air Ventilation Casing	5300	200	No
2A	Top of MRE Boxes	<110	200	Yes
ЗA	Table Top near Bullet Trap	<110	200	Yes
4A	Top of Ceiling panels	<110	200	Yes
5A	IFR floor near Bullet Trap	220	200	No
6A	Top of video tape located along left side of IFR wall	<110	200	Yes
7A	IFR Bullet Trap	2000	200	No
8A	Top of Air-conditioning Unit	130	200	Yes
9A	IFR floor near firing line	250	200	No
10A	Top of box in IFR Plenum	<110	200	Yes

a: Results are in micrograms per square foot.

< indicates the value is below the detectable limit

B-1

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.



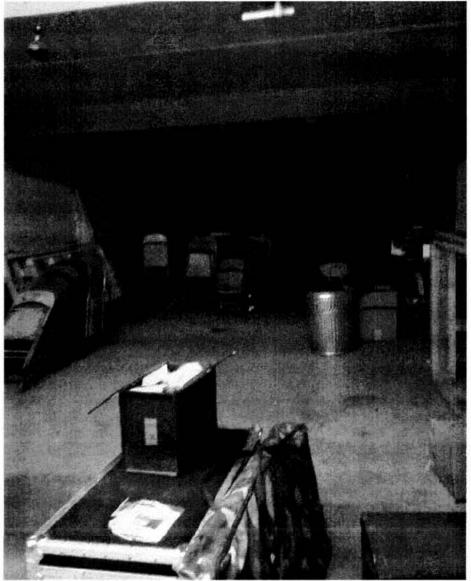


Figure C-1. Toms River IFR being used as a storage area.

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.



Figure C-2. Wipe sample taken on top of Supply Air Ventilation Casing



Figure C-3. Wipe sample taken on top of MRE Boxes

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.



Figure C-4. Wipe sample taken on table top near Bullet Trap



Figure C-5. Wipe sample taken on top of Ceiling panels

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.



Figure C-6. Wipe sample taken on IFR floor near Bullet Trap

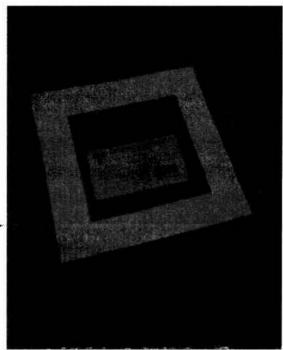


Figure C-7. Wipe sample taken on top of video tape located along left side of IFR wall

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

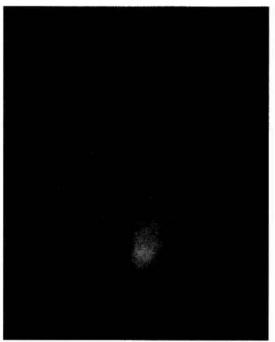


Figure C-8. Wipe sample taken on IFR Bullet Trap



Figure C-9. Wipe sample taken on top of Air-conditioning Unit.

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Toms River, New Jersey Army National Guard, 19 March 2008.

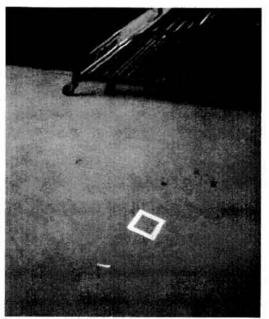


Figure C-10. Wipe sample taken on IFR floor near firing line



Figure C-11. Wipe sample taken on top of "Diversified Ceramics" box in IFR Plenum

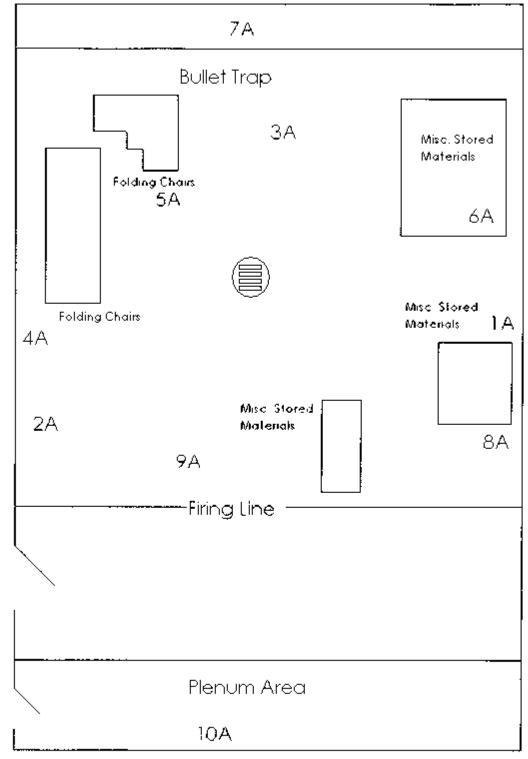


Figure 1. Diagram of Wipe Samples for Toms River IFR 19 March 2008

# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-AVS-SI 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

### NGB-AVS-SI

10 April 2001

MEMORANDUM FOR The NJARNG, Safety and Occupational Health Office ATTN: SAAO-SM, Trenton-Mercer Airport, 152 Scotch Road, West Trenton, NJ 08628

SUBJECT: Evaluation of Indoor Firing Range

1. References. See Appendix A.

2. General.

a. Ms Non-Responsive NGB, Army National Guard, Regional Industrial Hygienist performed an Indoor Rifle Range evaluation at Sea Girt, NJ. Mr. Cliffic CIH and Mr. Non-Responsive IHIT, Industrial Hygienists from the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) assisted in the evaluation. The survey was conducted 21 February 2001.

b. Exposure and ventilation standards used in this report are the most stringent of those found in Title 29, Code of Federal Regulations (CFR) Part 1910, Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) or NGB, All States Letter Log Number (P00-0059); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges.

c. Risk Assessment Codes (RACs) are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix B of this report.

3. Background.

a. This range has been completely renovated from an existing 50 feet indoor firing range. The new range is a 4 lane, 25 meter indoor rifle range with a

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NGB-AVS-SI Subject: Evaluation of Indoor Firing Range

lubricated Snail™ bullet trap. A computer automated control room has been installed behind the plenum section. An individual operating in this room monitors firers and can retrieve targets.

4. Findings and Discussion.

a. Range Classification. This range is classified as "SAFE" based upon ventilation and air sampling results.

b. Ventilation.

(1) The cross-sectional area of the range was measured to be 155 square feet ( $ft^2$ ). Air is introduced into a 1.5 ft wide by 7.75 ft high plenum wall. Air is exhausted downrange behind the bullet trap. "Smoke testing" of the range revealed laminar flow of air.

(2) Blueprint readings on the supply and exhaust fans were 12,000 CFM and 13,280 CFM, respectfully. These fan speeds allow for the range to be under negative pressure, as required.

(3) The everage velocity et the firing line was measured to be 78 feet per minute (FPM) which exceeds the minimum average of 50 FPM as required by the NGB All States Letter.

(4) The static pressure of the range was measured to be -0.6 inches water gage (w.g.) pressure from the range vestibule area. The recommended static pressure is between -0.05 and -0.15 inches w.g.

(5) The amperaga was measured on the three phase exhaust end supply fans. The amperage for the supply fan was approximately 34 which was consistent with design criteria. The exhaust fan was measured at approximately 22 amps, this is about 10 percent below design specifications. Speeding up the exhaust fan will help decreese the static pressure in the range.

(6) The plenum wall was constructed of Lexan<sup>™</sup> panels with 3/8 inch diameter holes. The average airflow through the plenum wall was measured to be 2530 FPM and was uniform and laminar.

c. Air Sampling Results. Air samples were collected and analyzed for airborne concentrations of inorganic lead fume and dust. Air sample results can be found in Appendix C. Personal breething zone (BZ) air samples were collected on all four firers. General area (GA) air samples were collected 8 ft. 9

# NGB-AVS-SI Subject: Evaluation of Indoor Firing Range

inches behind the firing line on the plenum wall behind lanes 2 and 3. Air sample results are reported as a time weighted average (TWA) for an 8 hour exposure and have been compared to the OSHA PEL-TWA standard of 0.05 milligrams per cubic centimeter (mg/m<sup>3</sup>), the inorganic lead action level of 0.03 mg/m<sup>3</sup> and the exposure limits listed in All States Memorandum (Log Number P00-0059) Figure 1-1. Air sample results did not exceed either the OSHA standard or the standard listed in the All States Letter. Personnel fired approximately 820 rounds of 5.56 millimeter ammunition from M16A2 rifles. The sampling period was 77 minutes. Sample results can be found in Appendix C.

d. Other Areas of Concern.

(1) Acoustical tile was installed on the ceiling in front of the firing line. This material will not help to eliminate any noise and may harbor dangerous lead dust and other contaminants in the future.

(2) Door sweeps and insulation around the door was installed prior to firing.

(3) A SOP needs to be developed and distributed or made available to all users and maintenance personnel.

(4) Light could be seen at the top of the bullet trap around the 3<sup>rd</sup> and 4<sup>th</sup> firing lanes. The bullet trap needs to be flush with the ceiling.

(5) An adjustable door stop needs to be installed in the door leading to the range. This will help to eliminate the door closing too quickly because of the high static pressure in the range.

(6) Additional signs have to be installed prior to opening the range for continuous use. Signs such as high noise hazard and no dry sweeping of the range should be installed.

(7) The range should be limited to 9 mm ammunition. If individuals are unsure of the caliber of ammunition that can be fired on the range, this office or the NJARNG Safety and Occupational Health Office can be contacted for assistance on the selection of correct ammunition.

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NGB-AVS-SI

Subject: Evaluation of Indoor Firing Range

5. Recommendations.

a. Remove the ceiling acoustical tile in front of the firing line. (RAC 4)

b. Develop a SOP and staff the document through the NJARNG Safety Office and enforce the procedures prescribed within. (RAC 3) [AR 385-63]

c. Ensure the backstop is flush with the ceiling. (RAC 2)

d. Install an adjustable doorstop on the door leading into the range. (RAC 3)

e. Ensure all warning signs are posted as required. (RAC 3)

e. Adjust the speed of the exhaust fan so that the amperage is closer to design specifications. (RAC 3)

6. Request a reply by endorsement on the corrective action taken on the aforementioned deficiencies by 10 July 2001.

7. The point of contact is the undersigned and can be reached at (410) 942-0273, ext. 12.



**Regional Industrial Hygienist** 

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### APPENDIX A REFERENCES

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, October 1998.

2. AR 40-5, Preventive Medicine, 15 October 1990.

3. TB MED 503, Occupational and Environmental Health, The Army Industrial Hygiene Program, February 1985.

4. NG PAM 385-14, Safety Evaluation of Indoor Firing Ranges, (DRAFT).

5. NGB, All States Letter Log Number (P00-0059); Subject: ARNG – Policy and Responsibilities for Inspection, Evaluation and Operation of ARNG Indoor Firing Ranges. 7. NGB Design Guide (DG) 415-1, Design Guide for Armories, Current.

6. Title 29 Code of Federal Regulations, 2001, Revision, Part 1910, Occupational Safety and Health Standards.

7. American Conference of Governmental Industrial Hygienists, Threshold Limit Values (TLVs) for Chemical Substances and Biological Exposure Indices for 2000-2001.

# APPENDIX B DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS (Ref: DOD Instruction 6055.1)

STEP 1. Using the following procedures to assess points, 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

+13 +++++++++++++++++++++++++++++++++				Exposure Conditions		
		<ct< th=""><th></th><th>Occasionally - &gt;CT Always - <std< th=""><th>&gt;CT ≤STD</th><th>&gt;STD</th></std<></th></ct<>		Occasionally - >CT Always - <std< th=""><th>&gt;CT ≤STD</th><th>&gt;STD</th></std<>	>CT ≤STD	>STD
AER	NO		0	3	5	7
POSSIBLE?	YES	1	-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion CT = DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, \ parts per million

STD = DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit

B. Medical Effects Points Assessed Condition	<u>Points</u>
No medical effect, 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 and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	<u>HHSC</u>
13-16	I
9-12	II.
5-8	!!!
0-4	IV

STEP 2. Using the following guides to assess points, 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

		Length	of Exposure	
	_	1-8 hr/wk not continuous		8 hr/wk ntinuous
Гуре	Irregular, intermittent	1-2	4-6	-
of xposure	Regular, periodic	2-3	5-7	8
Numbe	er of Exposed Personnel P	oints Assessed		
	er of Exposed Personnel P <u>umber of Exposed Person</u>		<u>Poin</u>	ts
	•		<u>Poin</u> 1-2	<u>ts</u>
	umber of Exposed Person			<u>ts</u>
	umber of Exposed Person		1-2	

B-2

c. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

<u>Total Points (sum of A and B, above)</u>	<u>MPC</u>
14-16	Α
10-13	8
5-9	С
<5	D

STEP 3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

# MISHAP PROBABILITY

	 А	В	С	ם	
HAZARD SEVERITY	1 2	2 3	2 3 4 5	4 5	

E

#### APPENDIX C

# AIR SAMPLE RESULTS AND ANALYSIS

# Results of Lead Air Sampling During Finng 21 February 2001 Sea Girt, NJ Armory

Finer/Location	Туре	Sample Number	Time (Mins)	Lead	Lead	Lead
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		• •	ug/sample	mg/m <sup>3</sup>	TWA <sub>8 mg/m</sub> 3
Lane 1	BZ	1	77	ND	<0.008	<0.0013
Lane 2	BZ	2	77	ND	<0.007	<0.0011
Lane 3	8Z	3	77	ND	<0.008	<0.0013
Lane 4	BZ	4	77	ND	<0.008	<0.0013
Plenum Lane 3	GA	5	77	<u>ND</u>	<0.008	<0.0013
Plenum Lane 2	GA	6	77		<0.008	<0.0013
Outside Door	GA	7	77	ND	<0.008	<0.0013
Reloader	BZ	8	77	ND	<0.008	<0.0013
Blank	N/A	8	N/A	ND	<u>N/A</u>	<u>N/A</u>

The OSHA PEL-TWAsfor lead is 0.05 mg/m<sup>3</sup>

ND indicates the value is below the reporting limit

# NATIONAL GUARD BUREAU ARMY NATIONAL GUARD REGION NORTH INDUSTRIAL HYGIENE OFFICE ATTN: NGB-ARS-IHNE 301-IH OLD BAY LANE HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f)

16 April 2008

# EXECUTIVE SUMMARY INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) WOODBURY, NJ 20 MARCH 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Woodbury IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Woodbury IFR appeared to be poorly controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

### 3. FINDINGS AND RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, eight were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2. (RAC 3)

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(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). (RAC 4)

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# INDUSTRIAL HYGIENE EVALUATION INDOOR FIRING RANGE (IFR) WOODBURY, NJ 20 MARCH 2008

## 1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

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# 4. METHODOLOGY.

a. <u>Assessment Criteria</u>. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008,

 <u>Methodology</u>. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

## 5. FINDINGS AND DISCUSSION.

## a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, eight were over the recommended 200  $\mu$ g/ft<sup>2</sup> standard.

b. <u>Stored Materials</u>. Multiple items were stored in both the IFR itself and the Plenum behind it (Appendix C, Figures C-1 thru C-11). IAW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). Excluded from cleaning are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

6. RECOMMENDATIONS.

a. <u>Decontamination Requirements</u>. Clean and decontaminate the IFR IAW NG Pam 420-15, Section 3-2 (reference 1b). (RAC 3)

# b. Stored Materials.

(1) Cleaning Requirements. Clean all non-porous stored items with either an mean mean in high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). (RAC 4)

2

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). (RAC 4)

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Woodbury IFR appeared to be poorly controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.



1LT, MS Environmental Engineer

APPROVED BY:



سمحي ومحمد منهى الجمعودة

NGB Regional Industrial Hygienist

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

# APPENDIX A DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, 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.

- **Exposure Conditions** AER Occasionally > AL >AL <AL >OEL POSSIBLE? Always < OEL < = OEL0 NO 3 5 7 YES 1 - 24 6 8
- a. Exposure Points Assessed

AER = Alternate exposure route, such as skin absorption, ingestion.

AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm<sup>2</sup>, dB, parts per million.

OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

# b. Medical Effects Points Assessed.

Condition	Points
No medical effect, 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, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

Total Points (sum of A and B, above)	ннѕс
13-16	
9-12	11
5-8	- 1
0-4	ΪV

c. Determine the HHSC by totaling the points assessed and using the following guide:

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of	ation		
Exposure	1-8 hr/wk	> 8hr/wk, not continuous	Continuous
Irregular, intermittent	1-2	4-6	-
Regular, periodic	2-3	5-7	8

b. Number of Exposed Personnel Points Assessed

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

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	IPC
14-16	А
10-13	В
5-9	С
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

	D ILLNESS PROBABILITY CODE				
SEVERITY CODE	A	B	с	D	
I	1	1	2	3	
11	1	2	3	4	
ill i	2	3	4	5	
IV	3	4	5	5	

From Table 2 of Department of Defense Instruction 6055.1,

. -

Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

# 4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2 3	SERIOUS MODERATE
• 4 ••	MINOR
5	NEGLIGIBLE

A-3

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

# APPENDIX B WIPE SAMPLE RESULTS

### Table B-1. Lead Wipe Sample Results for Woodbury IFR 20 March 2008

Sample Number	Location	Results µg/ft <sup>2</sup> *	Std. µg/ ft <sup>2</sup>	Met Std.
1E	IFR Floor in front of Bullet Trap	1200	200	No
2E	Top of bookshelf near IFR Bullet Trap	<110	200	Yes
3E	IFR Floor near drain	1800	200	No
4E	Top of black filing cabinet along right wall of IFR	<110	200	Yes
5E	IFR Floor along left wall	6600	200	No
6E	IFR Floor along right wall	2600	200	No
7E	Folding Table at firing line	630	200	No
8E	Floor in front of entrance door to IFR	230	200	No
9E	IFR Plenum on Floor	390	200	No
10E	IFR Floor behind firing line	1200	200	No

a: Results are in micrograms per square foot.

< indicates the value is below the detectable limit

B-1

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Figure C-1. Woodbury IFR being used as a storage area.

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Figure C-2. Wipe sample taken on IFR Floor in front of Bullet Trap



Figure C-3. Wipe sample taken on top of bookshelf near IFR Bullet Trap

SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

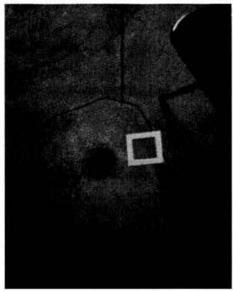


Figure C-4. Wipe sample taken on IFR Floor near drain



Figure C-5. Wipe sample taken on Top of black filing cabinet along right wall of IFR

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Figure C-6. Wipe sample taken on IFR Floor along left wall



Figure C-7. Wipe sample taken on IFR Floor along right wall

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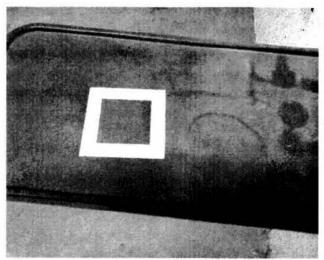


Figure C-8. Wipe sample taken on the folding table at the firing line

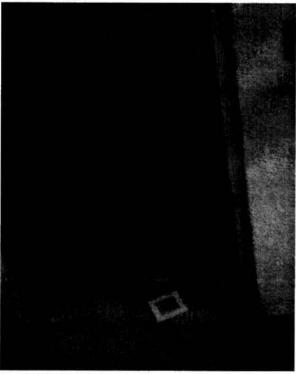


Figure C-9. Wipe sample taken on floor in front of entrance door to IFR.

C-5

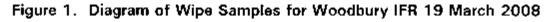
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Woodbury, New Jersey Army National Guard, 20 March 2008.

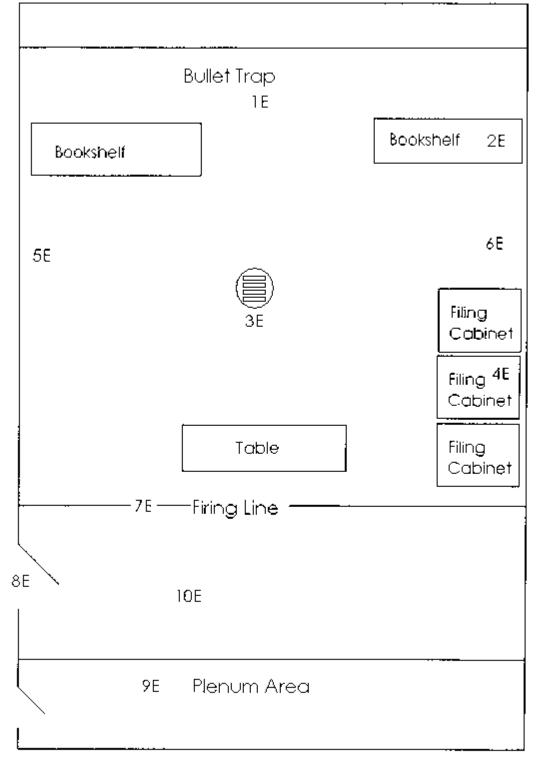


Figure C-10. Wipe sample taken on IFR Plenum on Floor



Figure C-11. Wipe sample taken on IFR Floor behind firing line







#### **Prepared For:**

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 - IH Old Bay Lane Havre De Grace, Maryland 21078

#### **Prepared By:**

**URS** Corporation 5 Industrial Way Salem, New Jersey 03079

FINAL INDUSTRIAL HYGIENE SURVEY REPORT SEAGIRT ARMORY BUILDING 64, MEDICAL FACILITY SEAGIRT, NEW JERSEY

September 2006 PN: 39741509



Office Manager

**Project Manager** 

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# APPENDICES

- Appendix A Facility Drawing
- Appendix B Personnel List
- Appendix C Hazardous Materials List
- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs

# FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code	
Ergonomic			
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3	
Lighting			
On the day of the survey, the illumination in the drill floor, showers, break room, firing range, supply room, office #1 and copier room was inadequate in most circumstances.	Increase lighting in the administrative and drill floor areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4	
Asbestos	and a second		
A site-specific asbestos operations and maintenance plan was not available. No warning labels in janitorial or maintenance areas.	Maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3	
Electrical			
The electrical panel located in the x-ray process area was obstructed.	Clear objects and debris from front of electrical panel and maintain unobstructed (OSHA 1910.303(g)(1)(i)	RAC 5	
Mold			
Water damaged was observed throughout. Mold growth could become an issue if left unattended.	Determine and repair source of water. Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4	

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Seagirt Medical Facility (Building 64), located in Seagirt, New Jersey. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

lon-Responsi\ On March 16, 2004, Mr. an industrial hygienist with URS, conducted a site visit to the Medical Facility in Seagirt, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. No samples of suspect asbestos-containing materials were collected since no damaged materials were observed. SSG Non-Responsive of the New Jersey ARNG was Mr site contact for this survey.

This facility is a one-story stucco building, with an attic. Interior finishes include wood, floor tile, wallboard and suspended ceiling tiles. This facility is built on a concrete slab, with a pitched asphalt roof. The building was constructed in the 1960's. A facility layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

# 2.0 ADMINISTRATIVE AREA

# 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Some computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey. This building also serves as a medical examination and dental clinic.

Chemicals on site include medications and medical solutions in lockers with hazard communication data available in Lt. Col. Burrs Office.

Roof leaks were observed in the cold storage room hall during this survey. Complaints were made by building occupants regarding inadequate heat in the office areas during the winter months.

# 2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in the foyer, dental room, hall outside office 1 and outside. These readings were all made using a TSI Q-Trak <sup>™</sup> (Model 8551).

# 2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 34.9-40.2 % throughout the various building areas with an average of 37.3%. The average reading was below the recommended maximum level of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

# 2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from 410 to 552 parts per million (ppm), with an average of 478 ppm. The outside reading was 356 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 356 ppm on the day of the survey, the ASHRAE limit would be 1,056 ppm.

# 2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0 to 1.5 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments (62.1-2004). Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

# 2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04).

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles	
Foyer	Foyer	34	30	
Records	Storage	32	30	
Office 1	Office	34	50	
Office 2	Office	30	30	
Treatment	Examination	31	50	
Lab	Laboratory	19	50	
EKG	Laboratory	29	50	
Exam 3	Examination	65	50	
Exam 2	Examination	28	50	
Exam 1	Examination	34	50	
Vision	Examination	14	50	
Hearing	Examination	15	50	
Medical Review	Office	27	50	
Lounge	Lounge	50	30	
Computer Room	Computer Room	26	30	
X-Ray	Examination	45	50	
Dental	Examination	34	50	

# 2.2.5 Lead

Wipe testing for lead was conducted in the medical facility using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

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Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (μg/ft <sup>2</sup> )	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Exam #1 – Floor	0316B-01	0.111	11	200
Record Review – Floor	0316B-02	0.111	17	200
Hall – Outside Computer Room – Floor	0316B-03	0.111	16	200
X-Ray Cabinet – Top of Storage Cabinet	0316B-04	0.111	37	200
Office #2 - Center of Floor	0316B-05	0.111	14	200
Blank	0316B-06	N/A	8.1*	N/A

# Table 2-2 Levels of Lead Dust Found in the Medical Facility

\*Note lab reported blank wipe in µg/ft<sup>2</sup>

#### 2.3 Ventilation System Evaluation

Not applicable to this operation.

#### 2.4 **Noise Measurements**

Not applicable to this operation.

#### 2.5 **Personal Protective Equipment**

Not applicable to this operation.

#### 2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible. Electrical boxes were obstructed in the X-ray process area (29 CFR 1910.303 (g)(1)(i)).

ERGONOMICS: The ergonomic issues were minor with regard to the desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey the illumination in the administrative area was inadequate in most offices and generally throughout the facility. URS recommends increasing the area lighting or supplement task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

MOLD: Water leaks were evident within the building. The source of the water should be determined and the building envelope repaired to prevent further damage. Waterdamaged building materials should be removed.

TEMPATURE: Concerns about temperature within the building have been raised. Since temperature is subjective to individuals and is dependent on many factors including air movement and relative humidity it is difficult to assess. In the past ASHRAE recommended a thermal comfort range of 68 to 74 degrees Fahrenheit for winter months with individuals performing light sedentary activities and wearing seasonal clothing. Temperature should be re-assessed during the winter months.

# 3.0 FORMER INDOOR FIRING RANGE

There is no former indoor firing range at this facility.

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# 4.0 DRILL HALL

There is no drill hall at this facility.

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# 5.0 BOILER ROOM

# 5.1 Operation Description

The boiler room is a mechanical space constructed of wooden walls with a concrete floor, containing a furnace and associated piping. Mold growth was observed on drywall in the boiler room.

# 5.2 Chemical and Physical Agents Sampled

No physical or chemical agents were sampled in the boiler room.

# 5.3 Ventilation System Evaluation

Not applicable to this operation.

# 5.4 Noise Measurements

Not applicable to this operation.

# 5.5 Personal Protective Equipment

Not applicable to this operation.

# 5.6 Interpretation of Results

<u>MOLD:</u> Mold was observed on drywall in the boiler room. According to the EPA mold visible mold should be removed to prevent possible health problems.

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# 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

# 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

# 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

# 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

# 6.4 Hazard Communication

A program was found regarding hazard communication. Training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

# 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

# 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U.S. Housing and Urban Development

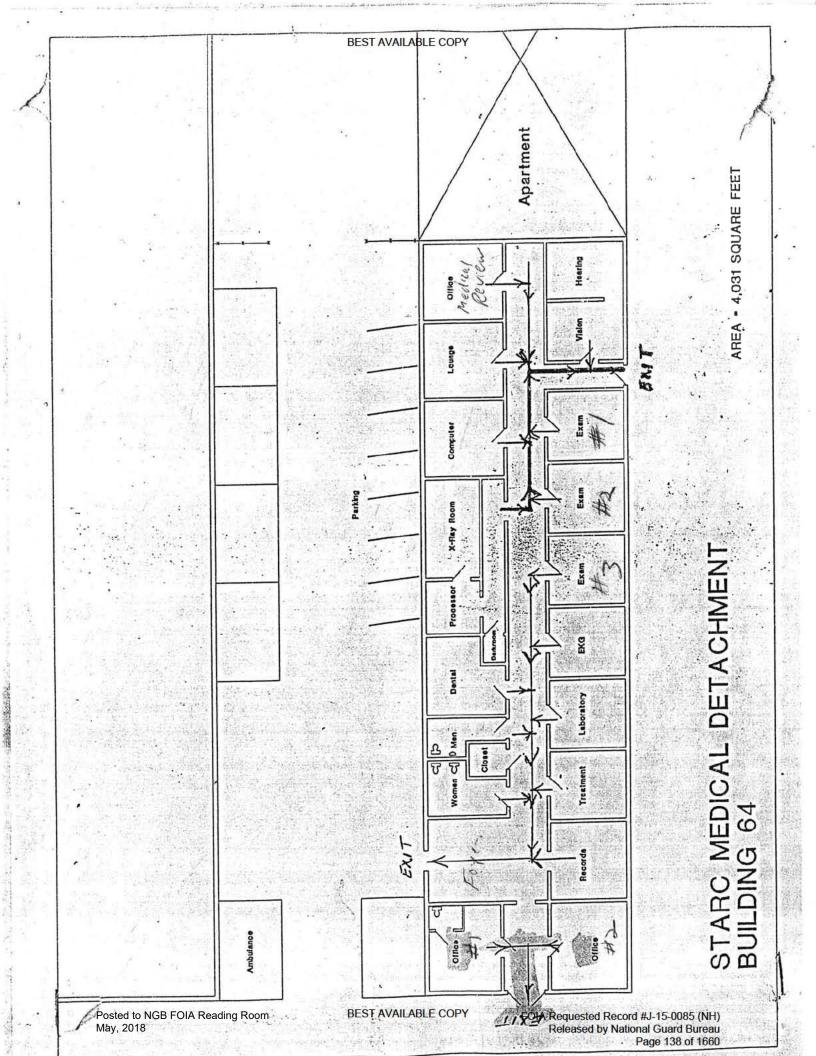
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U.S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

# **APPENDIX A**

# FACILITY DRAWING



# **APPENDIX B**

# PERSONNEL LIST

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# PERSONEL LIST SEA GIRT MEDICAL FACILITY

Non Posponsivo	Rank
Non-Responsive	SSG
	SSG
	LTC

### APPENDIX C

### HAZARDOUS MATERIALS LIST

NOT PROVIDED

### APPENDIX D

### ANALYTICAL RESULTS

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		128458	5/28/2004	North	17-Jun-04			Final Result	11 ug/ft <sup>a</sup>	17 ug/fh*		37 ug/ft	14 ug/ft*	8.1 ug/ff*						P	tual protection to clict sing or publicity math as Labburatorics, we c
		Chain Of Castody:	Date Analyzad:	Perses Submitting:	Report Date:		for Lead		"Wan	ug/ft	ugʻili	ught	ug/it*	ug/ft <sup>2</sup>						Technical Manager	ither pre-ducts. As a cour- in poert, in any adverti- ed by personnel of the itory guidelines, unless the claim, and ducs nel
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An AIHA (#8863), NVLAP (# 101143), & New York KLAP (#10920) Accredited Laboratory 4475 Forbes Bivd. • Lamham, MD 20706 • (301) 459-2640 • Toli Free (800) 346-0961 • Fax (301) 459-2643

### APPENDIX E

### TRAINING CERTIFICATES

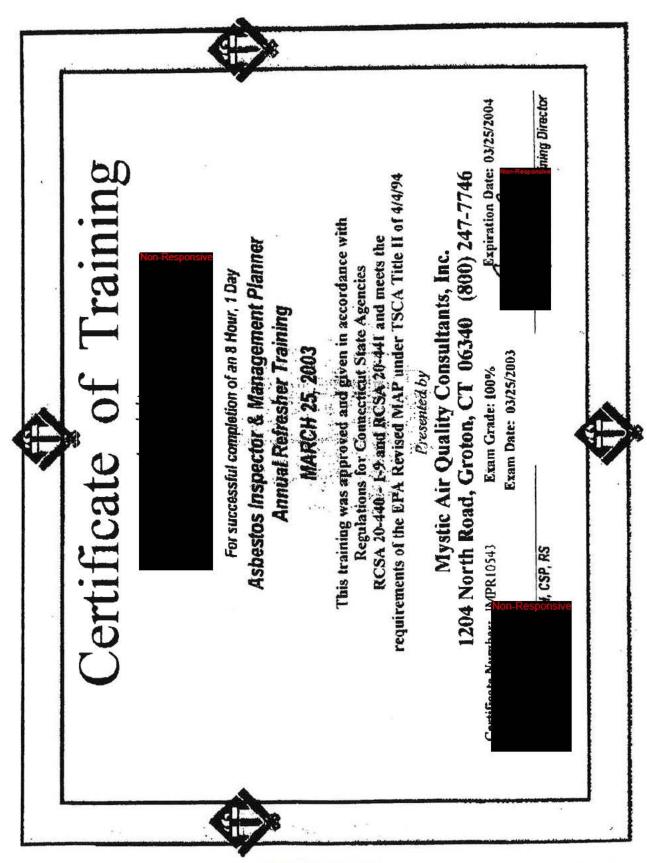
# Non-Responsive

Posted to NGB FOIA Reading Room May, 2018

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FOIA Requested Record #J-15-0085 (NH), NOI LVNO#19222000 Hatio Har Gulard Hoteau Page 147 of 1660 APPENDIX F

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PHOTOGRAPHS



### APPENDIX G

### **RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES**

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40  $\mu$ g/ft<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/ft<sup>2</sup> in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure. 2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

## 

### Prepared For:

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 - IH Old Bay Lane Havre De Grace, Maryland 21078

### Prepared By:

**URS** Corporation 5 Industrial Way Salem, New Jersey 03079

FINAL INDUSTRIAL HYGIENE SURVEY REPORT BURLINGTON ARMORY BURLINGTON, NEW JERSEY

April 2006 PN: 39741509





Project Manager

Posted to NGB FOIA Reading Room May, 2018

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- Appendix A Armory Drawing
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- Appendix E Training Certificates
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- Appendix G Recommendations for Surface Lead Dust in Armories

### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic:		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting	· · ·	
On the day of the survey, the illumination in the administrative offices and kitchen/ mess hall areas was inadequate in most circumstances.	Increase lighting in the administrative and kitchen areas. While work is in progress, the administrative area shall be lighted by et least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		· · · · · · · · · · · · · · · · · · ·
Lead was detected in wipe samples collected from the facility in amounts greater than 200 µg/ft <sup>2</sup>	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quentities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Asbestos	· · · ·	
All suspect asbestos containing materials were observed to be in good condition.	Maintain under asbestos operations and maintenance plan.	RAC 3
No site-specific asbestos operations and maintenance plan available. No warning labels in janitorial or maintenence areas.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3

Findings	Recommendation	Risk Assessment Code	
Hazard Communication			
Chemical Inventory sheet listed all hazardous chemicals on site.	Maintain labeling all secondary containers unless intended for immediate use (OSHA 1910.1200 (f)(4))	RAC 4	
Secondary containers in the janitor's closet did not have labels.	Label all secondary containers not intended for immediate use (OSHA 29CFR1910.1200(f)(5))	RAC 4	
Electrical Safety			
Electrical panels obstructed by a table in the drill hall and electrical room.	Electrical panels must be kept clear of obstructions for a minimum of 3 feet (OSHA 29 CFR 1910.303(g)(1)(i)).	RAC 4	

### FINDINGS AND RECOMMENDATIONS (Cont)

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Burlington Armory located at 559 High Street in Burlington, New Jersey 08016. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 11, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Burlington, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. **ponsive**of the New Jersey ARNG was Mr. Non-Responsive site contact Non-F Armorer for this survey.

This armory is a two-story brick building, with an attached drill hall, that is constructed primarily of brick and mortar. This facility is built on a concrete slab, hardwood floors on the upper level with a pitched asphalt roof. The building was constructed in 1930's. A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

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### 2.0 ADMINISTRATIVE AREA

### 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were expressed concerning workstations at the time of this survey.

Paints and thinners and other chemicals were located in the flammable storage lockers with the appropriate hazard communications data.

An obstructed electrical panel was observed in the electrical room (Photo 0783).

### 2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in the drill hall, mess hall, boiler room, readiness room, classroom, drill floor and outside. These measurements were all made using a TSI Q-Trak <sup>TM</sup> (Model 8551). No indoor air quality complaints were received during this survey.

### 2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 25.5 –39.3 % throughout the various building areas with an average of 30.2%. This average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

### 2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of 540 to a spike of 961 parts per million (ppm), with an average of 730 ppm. The exterior reading was 443 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants. ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 443 ppm on the day of the survey, the ASHRAE limit would be 1,143 ppm.

### 2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0 to 1.5 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

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### 2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting (foot candles)	Recommended Minimum Lighting (foot candles)
Mess Hall Center	Dining	38	50
Club Room	Recreation	20	30
Basement Hall	Hall	16	30
Readiness Room	Storage	21	30
First Sergeants Room	Office	31	50
Headquarters	Office	50	50
Classroom 1	Classroom	31	50
Recruiter's Office	Office	37	50
Drill Floor Center	Drill Floor	21	50

### 2.2.5 Lead

Paint chips were collected in the facility, where peeling paint was observed. Lead levels in paint greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 2-2 below shows the results of the lead paint testing.

Table 2-2Levels of Lead in Paint Found in the Former Firing Range

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Kitchen - Wall near window	0311-14	0.108	0.43
Foyer	0311-17	0.108	0.35

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Wipe testing for lead was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-3 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
2 <sup>nd</sup> Floor Hall - outside Classroom II	0311-08	0.108	. 16	200
Classroom #3 – Top of vending machine	0311-09	0.108	44	200
Kitchen - Stove	0311-10	0.108	20	200
Hall – Outside orderly room	0311-12	0.108	13	200
Blank	0311-13	N/A	8.2 µg	N/A

 Table 2-3

 Levels of Lead Dust Found in the Administrative Area

The analytical report from AMA is contained in Appendix D.

### 2.2.6 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) by Mr. Eric Frederick for a determination of asbestos content. These materials include floor tile and plaster. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116. Table 2-4 below presents the results of the sample analysis.

Table 2-4 Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Kitchen	Skim Coat Plaster	0311-18A	NAD
Foyer	Skim Coat Plaster	0311-18B	NAD
Foyer	Skim Coat Plaster	0311-18C	NAD
Kitchen	Base Coat Plaster	0311-19A	NAD
Foyer	Base Coat Plaster	0311- <b>19</b> B	NAD

### Table 2-4 (Cont) Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Foyer	Base Coat Plaster	0311- <b>1</b> 9C	NAD
Armorer's Office	12" x 12" Brown Floor Tile	0311-20A	NAD
Armorer's Office	12" x 12" Brown Floor Tile	0311-20B	NAD
Armorer's Office	12" x 12" Brown Floor Tile	0311-20C	NAD
Armorer's Office	Floor Tile Mastic	0311-21A	NAD
Armorer's Office	Floor Tile Mastic	0311-21B	NAD
Armorer's Office	Floor Tile Mastic	0311-21C	NAD

NAD: "No Asbestos Detected"

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)).

### 2.3 Ventilation System Evaluation

Not applicable to this operation.

### 2.4 Noise Measurements

Not applicable to this operation.

### 2.5 Personal Protective Equipment

Not applicable to this operation.

### 2.6 Interpretation of Results

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

<u>ERGONOMICS</u>: The ergonomic issues regarding desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

<u>LIGHTING</u>: On the day of the survey illumination in the administrative area was inadequate in most offices and generally throughout the facility. URS recommends increasing the use of area lighting or supplemental task lighting for each workstation in

the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>ASBESTOS:</u> Samples of the floor tile that was present throughout this building area were determined not to contain asbestos in a concentration greater than one percent.

<u>HAZARD COMMUNICATION:</u> Unlabeled containers of paints and thinners were observed in the janitor's closet without material safety data sheets (MSDS).

<u>ELECTRICAL SAFETY:</u> The electrical panel in the electrical room was obstructed. Electrical panels must be kept clear of obstructions for a minimum of 3 feet.

May, 2018

#### 3.0 FORMER INDOOR FIRING RANGE

### 3.1 Operation Description

The indoor firing range has been dismantled and this building area is now primarily used. for storage.

#### 3.2 Chemical and Physical Agents Sampled

### 3.2.1 Lead

Wipe testing for lead was not conducted in the former firing range. At the time of the inspection this area was locked and keys could not be located.

#### 3.3 Ventilation System Evaluation

Not applicable to this operation.

#### 3.4 Noise Measurements

Not applicable to this operation.

#### 3.5 Personal Protective Equipment

Not applicable to this operation.

#### 3.6 Interpretation of Results

<u>LEAD</u>: Lead sampling was not performed in this area.

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### 4.0 DRILL HALL

### 4.1 Operation Description

The drill hall is a 5,000 square foot area with about a 30-foot high ceiling used for assembling personnel. The walls are constructed of cinder blocks with a hardwood floor.

A table obstructed the electrical panel in the drill hall (Photo 0769).

### 4.2 Chemical and Physical Agents Sampled

### 4.2.1 Lighting

Lighting in the drill hall was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 4-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

 Table 4-1

 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting (lux)	Recommended Minimum Lighting (lux)
Drill Floor Center	Drill Floor	21	30

On the day of the survey lighting in the drill hall was inadequate.

### 4.2.2 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes<sup>™</sup>, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 4-2 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/fl²)	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Floor West on Electrical Box	033-03	0.108	35	200
Drill Floor Northwest	0311-04	0.108	630	200
Drill Floor East Near Peeling Paint	0311-05	0.108	51	200
Drill Floor - Southeast	0311-07	0.108	79	200
Blank	0311-06	N/A	0.92	200

Table 4-2Levels of Lead Dust Found in the Drill Hall

Sample numbers and locations can be found on the site map in Appendix A.

Paint chips were collected in two areas where paint was peeling and sent to AMA for analysis. The two samples were found to contain lead in a concentration within the allowable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 4-3 below shows the results of the lead paint testing.

Table 4-3 Levels of Lead in Paint Found in the Drill Hall

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)	
Drill Floor - East Wall Yellow	0311-15	0.01	0.1	
Drill Floor East Wall Brown	0311-16	0.01	0.047	

The analytical report from AMA is contained in Appendix D.

### 4.3 Ventilation System Evaluation

Not applicable to this operation.

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### 4.4 Noise Measurements

Not applicable to this operation.

### 4.5 Personal Protective Equipment

Not applicable to this operation.

### 4.6 Interpretation of Results

<u>LEAD</u>: A wipe sample collected in the drill hall for analysis of lead content was found to be above allowable limits and require cleaning and further testing. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

<u>ELECTRICAL SAFETY:</u> The electrical panel in the drill hall was obstructed by a table. Electrical panels must be kept clear of obstructions for a minimum of 3 feet.

### 5.0 BOILER ROOM

### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

### 5.2 Chemical and Physical Agents Sampled

### 5.2.1 Lead

Wipe testing for lead was conducted in the boiler room using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 5-1 below shows the results of the lead sampling.

Table 5-1 Levels of Lead Dust Found in the Boiler Room

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/fl <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Top of Water Heater	0311-11	0.108	74	200

### 5.2.2 Asbestos

Asbestos-containing pipe insulation was observed in the boiler room and appeared to be in good condition.

The EPA states that any material containing greater than 1% asbestos must be treated as ACM.

### 5.3 Ventilation System Evaluation

Not applicable to this operation.

### 5.4 Noise Measurements

Not applicable to this operation.

### 5.5 Personal Protective Equipment

Not applicable to this operation.

### 5.6 Interpretation of Results

· · ·

<u>ASBESTOS:</u> Asbestos-containing pipe insulation in the boiler room was observed to be in good condition (Photo # 0779).

### 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

### 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

### 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

### 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

### 6.4 Hazard Communication

A program was found regarding hazard communication. Training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

### 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62-2001: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

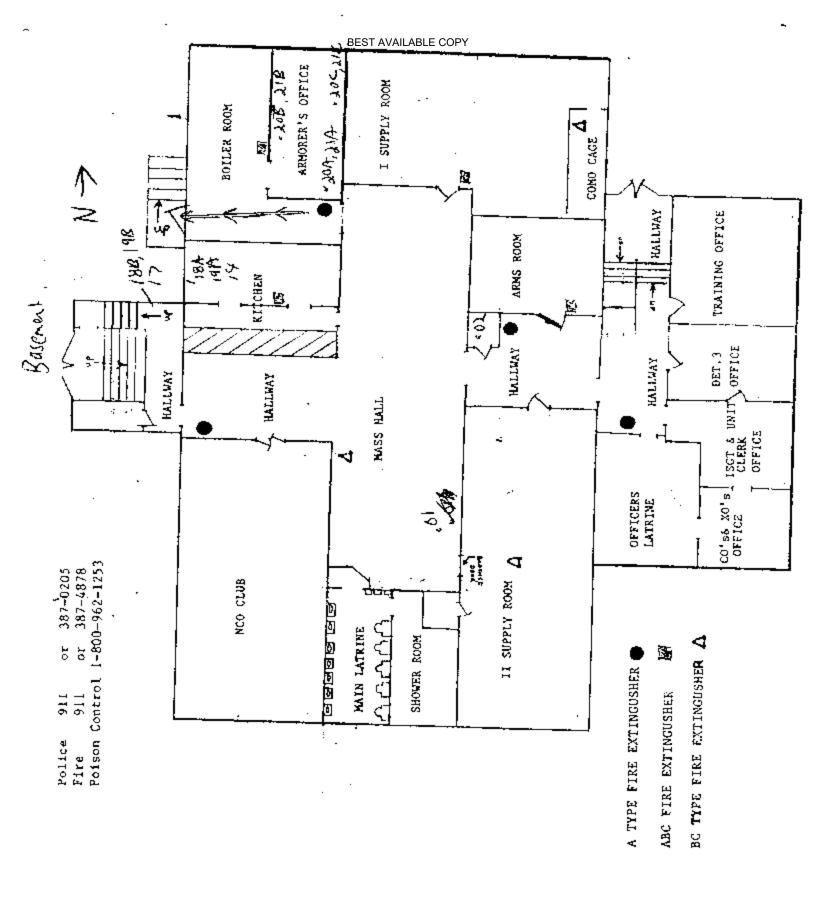
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

### APPENDIX A

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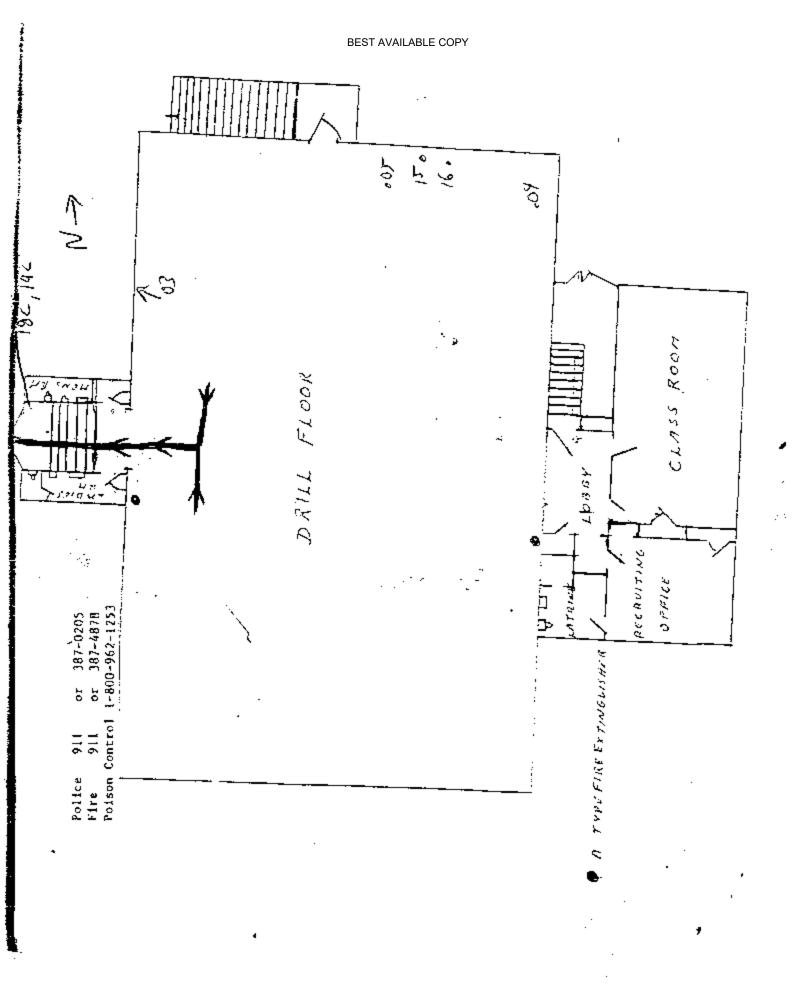
### ARMORY DRAWING



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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 175 of 1660 APPENDIX B

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PERSONNEL LIST

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# PERSONEL LIST BURLINGTON ARMORY

Name	Rank
Non-Responsive	SGT
	SGT
	SGT
	CIV

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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 177 of 1660 APPENDIX C

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HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

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# ANALYTICAL RESULTS

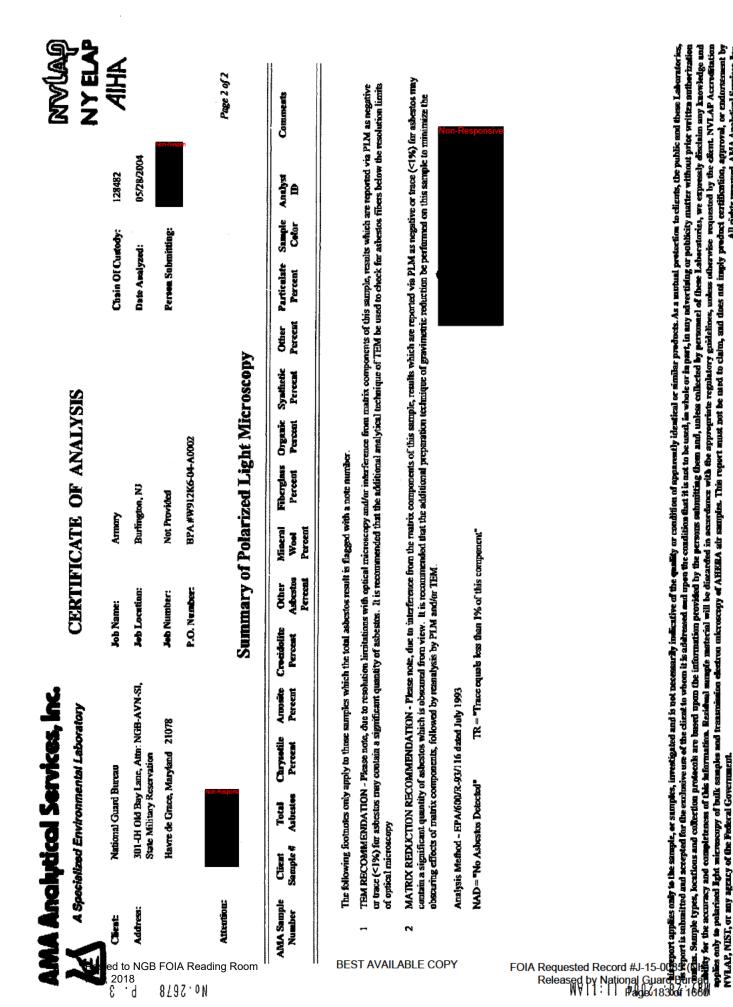
National Guard Bureau 301-IH Old Bay Lane, Ath: NGB-AVN-SI, Job Location: State Military Reservation Havre de Grace, Maryiand 21078 Job Number: P.O. Number:						
n: NGB-AVN-SI, Job Local 1 21078 Job Nami P.O. Num	Armory		Ŭ	Chain Of Castody:	128482	
1 21078 Job Nami P.O. Num	Burlington, NJ		-	Date Analyzed:	6/28/2004	
	Not Provided		-	Person Submitting:		Non-Res
N	BPA #W912K6-04-A0002	A0002	-	Report Date:	10-TID: 497	onen
Sumary o	Summary of Atomic Absorption Analysis for Lead	orption An	alysis	for Lead		Page I of I
Clicent Sample Aualysis Type Sample Type Number	Air Velume Arı (L)	Area Wiped (IP)	Reperting Limit		Pinal Result	Comments
0311-01 Furnace Wite	+114	0.108	2.79	ue/ft²	11 Left	
Fumace		0.108		ue/ft²		
		0.108	13.94	ug/ft*	35 ug/ft	
0311-04 Flame Wipe	1	0.108	111.52	ug/It*	630 ug/ff	
0311-05 Furnance Wipe		0.108	13.94	ug/ft <sup>*</sup>	51 ug/IF	
0311-06 Furnace Wipe	****	NA	020	- Sn	0.92 ug	
0311-14 Flame Paint Chip	11	NIA	10.0	%I%	0.43 %.Ph	
0311-15 Flame Paint Chip		NIA	10.0	%2h	0.1 %Pb	
0311-16 Flame Paint Chip	4124	N/N	10.0	% <b>P</b> 4	0.047 %2%	
0311-17 Flatme Paint Chip	Ī	NA	100	<b>42</b> %	0.35 %Pb	
Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B	0(M)-7420; Water: SM-3	H11B				
Gualysis Memod For Furnace: Ar, Wipes, Paints, and SolifSolids : EPA 6000R-93/200(MJ-7421; Water: SIM-31/38 Auto - MA Automatical Control of the Automatica	u200(M)-7421; Vvater: S	SM-3113B				
JUA = Not Applicable mgKg = parts per milion (ppm) by weight mg/L = parts per milion (ppm)	irls per milion (ppm)					
and the second tead by weight ug = micrograms ugL = parts per bittion (ppb) Manual presents have two significant digits. Any additional digits shown should not be add point of a point of the result. A additional digits shown should not be add the result.	ppb) (be		Non-Res			
	Andys		ponsive	Technical Manage	i,	lon-responsiv

# 4475 Ferrbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643 An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

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Other         Notand Charad Buran         Joh Name         Amony         Casin Of Connegies         Seets         Main         Main <th>Other         Name (Carebiene)         Johner:         Johner:         Name (Carebiene)         Johner:         Name (Carebiene)         Johner:         Name         Name</th> <th>A Sp</th> <th>A Specialized Environmental Laboratory</th> <th>hvironme</th> <th>ntal Labo</th> <th>ratory</th> <th>5</th> <th><b>SKTUP</b></th> <th>EXTLETEE OF ANALYSIS</th> <th>OF A</th> <th>VALYS</th> <th>SI</th> <th></th> <th></th> <th></th> <th></th> <th>NYEL</th>	Other         Name (Carebiene)         Johner:         Johner:         Name (Carebiene)         Johner:         Name (Carebiene)         Johner:         Name	A Sp	A Specialized Environmental Laboratory	hvironme	ntal Labo	ratory	5	<b>SKTUP</b>	EXTLETEE OF ANALYSIS	OF A	VALYS	SI					NYEL
Adverse301-100 (abc) (	Attention       Obstantion       Automation       But indicator       Data Automation       Opstantion       Opstan	Client	Nalio	mal Guand B	ncan		Job Nu		Armory					Chain Of C	ustedy:	128482	AHP
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Atomic         F.A. Number         P.A. NUMBER <t< th=""><th>Atomics       Item term       Atomics       Item term       Atomics       Atomics<!--</th--><th></th><th>Havn</th><th>e de Grace, l</th><th>Varyland 21</th><th>078</th><th>Job N</th><th>uniser:</th><th>Not Pro-</th><th>vided</th><th></th><th></th><th></th><th>Person Sah</th><th>mitting:</th><th>Non-Re</th><th></th></th></t<>	Atomics       Item term       Atomics       Item term       Atomics       Atomics </th <th></th> <th>Havn</th> <th>e de Grace, l</th> <th>Varyland 21</th> <th>078</th> <th>Job N</th> <th>uniser:</th> <th>Not Pro-</th> <th>vided</th> <th></th> <th></th> <th></th> <th>Person Sah</th> <th>mitting:</th> <th>Non-Re</th> <th></th>		Havn	e de Grace, l	Varyland 21	078	Job N	uniser:	Not Pro-	vided				Person Sah	mitting:	Non-Re	
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M. Sample         Clain         Total         Cloanelie         Manualie         Clain         Manualie	M. Sample         Christian         Total         Christian         Chri         Chri         Christian <th></th> <th></th> <th>5</th> <th></th> <th></th> <th>Sum</th> <th>nary of</th> <th>Polariz</th> <th>zed Lig</th> <th>ht Mic</th> <th>roscop</th> <th>&gt;</th> <th></th> <th></th> <th></th> <th>•</th>			5			Sum	nary of	Polariz	zed Lig	ht Mic	roscop	>				•
Maylistic         Olisi-lisit         Nuo         -         -         -         -         -         -         -         -         -         -         -         -         Maylistic         Olisi-lisit         Nuo         -         -         100         Olisivelise         Cit           Maylistic         G11-1818         Nuo         -         -         -         -         -         -         -         100         Olisivelise         Cit           Maylistic         G11-1818         Nuo         -<	H09165         0311-18.1         NMD <t< th=""><th>MA Sample Number</th><th>Client Sample #</th><th>Total Astocatos</th><th>Chrysotile Fercent</th><th></th><th>Crecidolite Percent</th><th>Other Ashestos Percent</th><th>Mineral Weal Percent</th><th>Fiberglass Percent</th><th>11 1</th><th>Synthetic Percent</th><th>Other Percent</th><th>Particulate Percent</th><th>Sample Color</th><th>Analyst ID</th><th>Comments</th></t<>	MA Sample Number	Client Sample #	Total Astocatos	Chrysotile Fercent		Crecidolite Percent	Other Ashestos Percent	Mineral Weal Percent	Fiberglass Percent	11 1	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
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M49168         G311-18C         MAD                10         Off-Wile         CK           M49109         0311-19A         MAD          -         -         -         -         -         -         100         Beige         CK           M49170         0311-19A         MAD         -         -         -         -         -         100         Beige         CK           M49171         0311-19C         MAD         -         <	049168         0311-16         MJ  -	0449167	0311-18 B	QVN	ı	ı	ı	ł	ł	ı	1	1	1	100	Off-White	ర	
M49169         0311-19.1         MAD          -         -         -         -         -         -         -         -         -         -         -         100         Beige         CC           M49170         0311-1916         MAD         -	MM9169         0111-151         NM0                       100         Beijge         CC           M09170         0311-191         NMD	0449168	0311-18 C	NAD	ŀ	I	I	1	ı	ı	1	ł	1	100	Off-White	Х	
M09170         0311-194         MAD                   1         M2           1         M3           1          1          1          1          1          1          1          1          1          1          1          1          1          1          1          1          1          1          1 <t></t>	M00170         G311-19         MAD         -         -         -         TR         -         -         100         Beigs         CK           M00171         G311-19C         MAD         -         -         -         -         -         -         -         -         -         -         -         -         00         Beigs         CK           M0171         G311-30         MAD         -         -         -         1         0         Beigs         CK           M0173         G31-30         MAD         -         -         -         1         -         100         Beigs         CK           M0174         G31-31         MAD         -         -         -         -         -         -         100         Beigs         CK           M0176         G31-31         MAD         -         -         -         -         -         100         Rad         CK           M0176         G31-31         MAD         -         -         -         -         100         Rad         CK           M0176         G31-31         MAD         -         -         -         -         100         Rad	0449169	N91-1160	UAD	ł	ı	ı	ı	ı	I	t	ţ	ł	100	Beige	Я	
311-19C       NAD       -	X40171         0311-19C         XAD         -         -         -         -         -         -         100         Beigs         CK           X40173         0311-301         NAD         -         -         -         -         -         -         -         -         -         -         -         -         97         CmV         CK           X40173         0311-301         NAD         -         -         -         -         -         -         -         -         97         CmV         CK           X40174         0311-31         NAD         -         100         -	0449170	0311-19B	NAD	ı	ı	1	ı	ı	I	Æ	I	ł	001	Brige	сĸ	
M49172       0311-30       MAD       r	M99172         0311-20.4         NAD               91         Gray         CR           M90173         6311-2016         NAD  100         600         CR         CK           M9175         031-21         NAD               100         Red<	171949	0311-19 C	UAD	ı	I	I	ı	1	I	1	ı	ı	001	Beige	ų	
M49173       G31-J0B       NAD       -       -       -       -       -       -       -       -       -       -       -       100       Gay       CK         M49174       0311-J0C       NAD       -       -       -       -       -       1       0       Gay       CK         M49175       0311-J1B       NAD       -       -       -       -       1       0       Gay       CK         M49176       0311-J1B       NAD       -       -       -       -       -       1       0       Red       CK         M49176       0311-J1B       NAD       -       -       -       -       -       -       1       0       Red       CK         M49177       0311-J1C       NAD       -       -       -       -       -       1       0       Red       CK         M49177       0311-J1C       NAD       -       -       -       -       -       1       0       Red       CK         M49177       0311-J1C       NAD       -       -       -       -       -       1       0       Red       CK         M49178 <td>M49173       0311-2018       NAD       -       -       -       -       -       -       -       -       -       100       Gray       CC         M49174       0311-201C       NAD       -       -       -       -       -       -       -       -       -       -       CC         M49175       0311-2118       NAD       -       -       -       -       -       100       Red       CC         M49175       0311-2112       NAD       -       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49178       0311-2112</td> <td>0449172</td> <td>0311-20 A</td> <td><b>UAD</b></td> <td>ı</td> <td>I</td> <td>1</td> <td>I</td> <td>I</td> <td>ı</td> <td>1</td> <td>e)</td> <td>1</td> <td>6</td> <td>Gray</td> <td>R</td> <td></td>	M49173       0311-2018       NAD       -       -       -       -       -       -       -       -       -       100       Gray       CC         M49174       0311-201C       NAD       -       -       -       -       -       -       -       -       -       -       CC         M49175       0311-2118       NAD       -       -       -       -       -       100       Red       CC         M49175       0311-2112       NAD       -       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49177       0311-2112       NAD       -       -       -       -       -       100       Red       CC         M49178       0311-2112	0449172	0311-20 A	<b>UAD</b>	ı	I	1	I	I	ı	1	e)	1	6	Gray	R	
M40174         0311-20C         NAD          -         -         1         -         100         Gay         CK           M40175         0311-21 A         NAD         -         -         -         1         0         Gay         CK           M40175         0311-21 B         NAD         -         -         -         1         0         Red         CK           M40176         0311-21 B         NAD         -         -         -         -         1         0         Red         CK           M40177         0311-21 C         NAD         -	04.0174       0311-30 C       NAD       -       -       -       -       -       -       100       Gray       CK         04.0175       0311-21 L       NAD       -       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       100       Red       CK         04.0177       0311-21 L       NAD       -       -       -       -       100       Red       CK         04.0178       0311-21 L       NAD       -       -       -       -       -       100       Red       CK         04.01	6419173	0311-20 B	UAD	i	ı	ł	ı	1	I	I	ı	ł	100	Gray	ß	
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	t applies only to the samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a matual protection (e clients, the public and these Labor burnle forms. Involves the excitative use of the client to whom it is addressed and upon the condition of the fit is not to be used, in whole or in part, in any advertising or publicity matter without prior written such burnle forms. Involves and continue are and and upon the condition of apparently identical or similar products. As a matual protection (e clients, the public and these Labor	1116556	0311-21 C	<b>UAN</b>	I	I	ı	ı	I	I.	1	i	I	8	Red	ŭ	

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		Report Date:		Comments								See QC Summary for analytical results of quality control samples associated with these samples					Non-Resp		ents, the public and tter without prior w texpressly disclaim red by the client, NY tiffcation, approval,	) teserved, alma and
	140555 · 7/12/2005	\$1/13/2005		Final Result	79 No/fi <sup>2</sup>		44 ug/ft <sup>2</sup>			13 ug/ft²	8.2 ug/ft <sup>2</sup>	esults of quality					anager:		al protection to cli 12 or publicity ma Laboratorics, we 12 therwise request 10 product cert	43
	Chain Of Custody: Date Submitted:	Person Submitting: Date Analyzed:	r Lead	Ea							~	y for analytical r hese sample			Νσ	n-Res	so Sprical Manager:		oducts. As a mutu F, in any advertisin personnel of these udelines, unless o m, and does not i	. <u>aboratory</u> 1x (301) 459-26
SISX	Chain Date S	Persoi Date A	nalysis for	Reporting Limit	13.94 ug/ff <sup>2</sup>		13.94 ug/ft <sup>2</sup>				2.79 ug/ft <sup>2</sup>	See QC Summary for analytical associated with these samulas							iteal or similar pro la whole or in part dess collected by r dest regulatory g of be used to chain	0) Accredited <u>I</u> )) 346-0961 • Fa
CERTIFICATE OF ANALYSIS	nory		of Atomic Absorption Analysis for Lead	Arta Wiped (ft <sup>2</sup> )	0.108	0.108	0.108	0.108	801.0	0 100								•	tion of apparently iden built it is not to be used, builting them said, ur lance with the approp es. This report must n	(# 101143), & New York ELAP (#10920) Accredited Laboratory 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 45
THEICATE	Butlington Armory Burlington, NJ	Not Provided Not Provided	f Atomic A	Air Volume (L)	I	****	***		****	****	CADO MANA	200(M)-7421- Wale	mg/L = parts per million (ppm)	(qd			Analyst:		the quality or condition the upon the condition to the condition to the persons su discarted in accorr f AHERA air sampi	101143), & New 706 • (301) 459-2
CER	Job Name: Job Location:	Job Number: P.O. Number:	Summary o	Sample Type	Wipe	Wipe	Wipe	adra	Wine	Wine	EPA 600/R-93/200/	s: EPA 600/R-93/	eight mg/L = part	ug/L = parts per billion (ppb)	se noted. shown				essarily indicative of a lt is addressed and i information provide aple material will be fectron microscopy o	<u>An AlHA (#8863), NVLAP (#</u> orbes Blvd. • Lauham, <u>MD 20</u>
<b>NİCES, İNC.</b> <sup>1tal Laboratory</sup>	t Atta: NGB-AVN-SI, ion	and 21078		Analysis Type	Furnace	Furnace	Furnace	Furnace	Fumace	Furnace	ints, and Soil/Solids:	Paints, and Soil/Solid	mg/Kg = parts per million (ppm) by weight	ug = micrograms ug/L = ug/L =	Any additional digits the result.	iny blank results			vestigated and is not nec e use of the client to whou bools are based upon the dormation. Residual san uples and fransmission e nent.	An AlHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory 4475 Forbes Bivd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643
MA Analytical Services, Inc.	National Guard Bureau 301-JH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Havre de Grace, Maryiand		Client Sample Number	0311-07	0311-08	01-1160	0311-11	0311-12	0311-13	Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-03/200/M-2420/ Witten State	Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids; EPA 600/R-93/200(MI-7421: Water SM-3111B	w weight up = parts	Note: All samples were received in nord contract	Provide an end of the second  are not corrected for a		ecord #J <sup>1</sup> 15-00 Vational Guard 도라며age 184	<ul> <li>This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a matual protection to clients, the public and these Laboratories, the public and these Laboratories, the public and these Laboratories, the public and the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization is from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowlege and appendicts and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise and increased by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used, in while used to a superstop of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used, in whole or to the sected by the client. NVLAP Accreditation approxed, or superstop of the Federal Government.</li> </ul>		
MA Anol	Cilent: Address:	Attention:		AMA Sample Namber	0551345	0551347	0551348	0551349	0551350	0551351	Analysis Method for I	Analysis Method For	N/A = Not Applicable mg %Pb = percent lead hy weinht	Note: All samples wer	Note: All results have should not be conside	Air and Wipe results (			eport applies only to the port is submitted and a us. Sample types, locati by for the accuracy and 3 only to polarized light P. NIST, or any agency	
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# APPENDIX E

# TRAINING CERTIFICATES

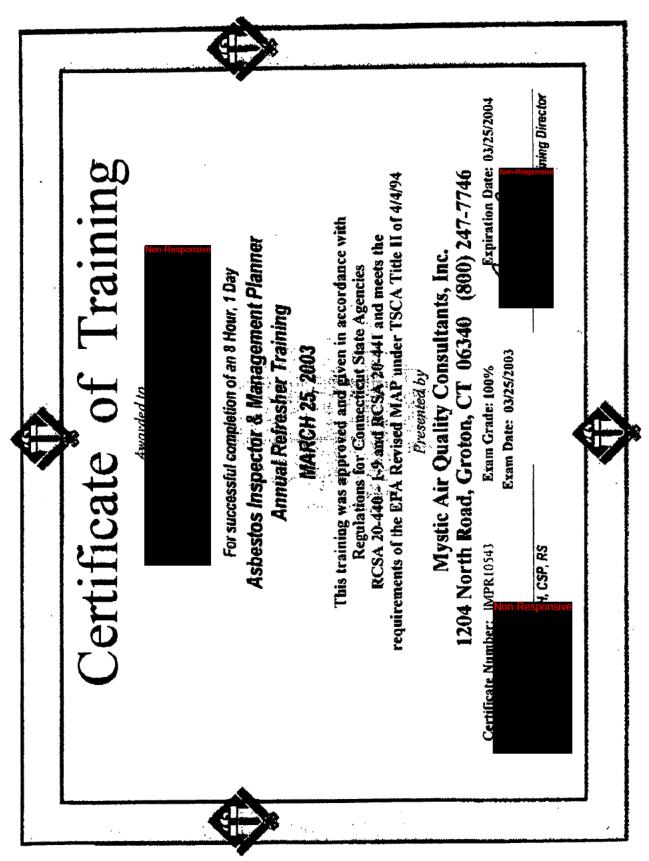
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PHOTOGRAPHS







APPENDIX G

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# **RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES**

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40  $\mu$ g/ft<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/ft<sup>2</sup> in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure. 2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

### **Prepared For:**

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 - IH Old Bay Lane Havre De Grace, Maryland 21078

### Prepared By:

**URS** Corporation 5 Industrial Way Salem, New Hampshire 03079

# INDUSTRIAL HYGIENE SURVEY REPORT CHERRY HILL ARMORY GROVE STREET AND PARK BOULEVARD CHERRY HILL, NEW JERSEY

December 2005 PN: 39741508





**Project Manager** 

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# FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Lighting	and the second second second second second second second second second second second second second second second	
On the day of the survey, the illuminance in the administrative area was inadequate in approximately half the offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from a few offices, from the drill floor, and the boiler room in amounts greater than 200 $\mu$ g/ft <sup>2</sup>	Personnel trained in accordance with the OSHA Lead Standard should clean the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Hazard Communication	14 1 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · · · · · · · · · · · · · · · ·
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Mold		
Watermarks were observed on the ceiling tiles. Mold growth could become an issue if left unattended.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3

# 1.0 SUMMARY

At the request of the National Guard Bureau Region North Industrial Hygiene Office (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Armory located at Grove Street and Park Boulevard in Cherry Hill, New Jersey. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 15, 2004, Ms. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Cherry Hill, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Mr.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

# 2.0 ADMINISTRATIVE AREA

# 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs and armrests were in a fixed position and keyboards could not be adjusted in the Civil Air Patrol Command Office (Photo # 4) and Company A Office E (Photo # 2). Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling in the Company A Office (Photo # 1), 112<sup>th</sup> Field Artillery Office (Photo # 3), and Recruiter's Office (Photo # 7) may indicate the potential for mold growth.

# 2.2 Chemical and Physical Agents Sampled

# 2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). Relative humidity on the day of the survey ranged from 38% to 40% with an average of 39%. This average reading was within the recommended range of 30.0% to 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANS) / ASHRAE Standard 62.1-2004).

# 2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Armory. Carbon dioxide concentrations ranged from 510 to 820 parts per million (ppm), with an average of 665 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is

people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE recommends that levels of carbon dioxide be maintained below 700 ppm above Outdoor level. Given an outdoor level of 503 ppm on the day of the survey, the ASHRAE limit would be 1203 ppm.

# 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Armory. Carbon monoxide concentrations remained at 0 parts per million (ppm) throughout the survey period. This measured level was below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

# 2.2.4 Lighting

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Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP -1-04 American National Standard Practice for Office Lighting).

# Table 2-1 Lighting Measurements and Recommended Lighting Requirements

· · · ·	·····	Measured	· · · · · · · · · · · · · · · · · · ·
			Recommended
Location	Function		illuminance (lux
		(lux / foot	/ foot candles)
		candles)	
Company A Office	Administrative Duties	430/39.9	500/50
Conference Area			500 / 50
Company A Office A	Administrative Duties	450/41.8	500 / 50
Company A Office B	Administrative Duties	387 / 36.0	500 / 50
Company A Office C	Administrative Duties	791/73.5	500 / 50
Company A Office D	Administrative Duties	350 / 32.5	500/50
Company A Office E	Administrative Duties	472/43.8	500 / 50
Company A Office F	Administrative Duties	286 / 26.6	500 / 50
Company A Office G	Administrative Duties	1447 / 134.4	500 / 50
Company A Office H	Administrative Duties	803 / 74.6	500 / 50
Delta Battery Office	Administrative Duties	468 / 43.5	500 / 50
Delta Battery Office A	Administrative Duties	281/26.1	500 / 50
Delta Battery Office B	Administrative Duties	293/27.2	500 / 50
Delta Battery Office C	Administrative Duties	219/20.3	500 / 50
Delta Battery Office D	Administrative Duties	195 / 18.1	500 / 50
Delta Battery Office E	Administrative Duties	187 / 17.4	500 / 50
Delta Battery Office F	Administrative Duties	351/32.6	500 / 50
Delta Battery	Administrative Duties	485 / 45.1	500 / 50
Commander Office G			
Delta Battery Office H	Administrative Duties	471/43.8	500 / 50
Delta Battery Copy Room	Administrative Duties	773/71.8	500 / 50
Civil Air Patrol Office	Administrative Duties	334/31.0	500 / 50
Civil Air Patrol	Administrative Duties	753/70.0	500 / 50
Commander Office			
Civil Air Patrol Supply	Supply Area	512/47.6	300 / 30
112 <sup>th</sup> Field Artillery	Administrative Duties	963 / 89.5	500 / 50
Offices Conference			
Room			[
112 <sup>th</sup> Field Artillery Office	Administrative Duties	1190 / 110.6	500 / 50
A			
Armorer's Office	Administrative Duties	890 / 82.7	500 / 50
Armorer's Office	Administrative Duties	622/57.8	500 / 50
Conference Room			
Armorer's Office B	Administrative Duties	570 / 53.0	500 / 50
Family Support Group	Administrative Duties	570/53.0	500 / 50
Room			••••
Family Support Office A	Administrative Duties	577 / 53.6	500750
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May, 2018

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
Family Support Office B	Administrative Duties	150 / 13.9	500 / 50
Det 1 HHB 3/112	Administrative Duties	447 / 41.5	500750
Conference Room			
Det 1 HHB 3/112 Office A	Administrative Duties	772/71.7	500 / 50
Det 1 HHB 3/112 Office B	Administrative Duties	648 / 60.2	500 / 50
Medic's Supply	Supply Area	432/40.1	500 / 50
Recruiter's Office	Administrative Duties	753/70.0	500 / 50
Recruiter's Office A	Administrative Duties	1240 / 115.2	500 / 50
Kitchen	Kitcheл	459/42.6	500 / 50
Classroom	Learning Center	113 / 10.5	500 / 50
Supply Cages	Supply Area	186 / 17.3	300 / 30
Chemical	Supply Area	386/35.9	300 / 30
Supply/Armorer's Room			

 Table 2-1 (Cont)

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey the illuminance in the administrative area was inadequate in several offices.

# 2.2.5 Lead

Wipe testing for lead dust was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-3 below shows the results of the lead sampling.

Table 2-3Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (fl <sup>2</sup> )	Result (µg/ft²)	Maximum Safe Surface Contamination Level (μg/ft <sup>2</sup> )
Company A Office – Windowsill	WS-01	0.111	55	200
Company A Office G - Box	WS-02	0.111	1100	200

Table 2-3 (Cont)
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft²)	Result (µg/ft²)	Maximum Safe Surface Contamination Level (μg/ft <sup>2</sup> )
Delta Battery Office C – Windowsili	WS-03	0.111	14	200
Delta Battery Office G – Table	WS-04	0.111	19	200
Delta Battery Office H – Table	W\$-05	0.111	16	200
Artillery Conference Room – Radiator	WS-06	0.111	73	200
Civil Air Patrol Commander – Cabinet	WS-07	0.111	220	200
Det 1 HHB Conference Room – Radiator	WS-08	0.111	13	200
Family Support – Bookcase	WS-09	0.111	13	200
Recruiter's Office – Radiator	WS-10	0.111	110	200 [
Kitchen – Electrical Box	WS-11	0.111	33	200
Future Museum – Table	WS-13	0.111	60	200
Hall Outside Mail Room	RWS-01	0.111	180	200
Armorer's Conference Room – Lock Box	RWS-02	0.111	670	200
Kid's Golf Room – Windowsill	RWS-05	0.111	830	200

Lead dust levels were found to exceed the NGB recommended level in several locations.

# 2.2.6 Asbestos

Not applicable to this operation.

# 2.3 Ventilation System Evaluation

Not applicable to this operation.

# 2.4 Noise Measurements

Not applicable to this operation.

# 2.5 Personal Protective Equipment

Not applicable to this operation.

# 2.6 Interpretation of Results

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

<u>ERGONOMICS</u>: The ergonomic issues with desks, chairs and monitors should be corrected by fitting the workplace to the workers.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in several offices. URS recommends increasing lighting in the few administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD:</u> Four of the fifteen surface wipe samples collected in the administrative area were found to contain lead dust levels above the maximum limit set by the National Guard Bureau. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

# 3.0 FORMER FIRING RANGE

#### 3.1 **Operation Description**

The firing range has been dismantled and this building area is now primarily used for storage and a fitness center.

#### 3.2 Chemical and Physical Agents Sampled

# 3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which The analytical report from AMA is contained in meet ASTM E 1792 standards. Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1				
Levels of Lead Dust Found in the Former Firing Range				

Sample Location	URS Sample Number	Area Wiped (ft²)	Result (µg/ft²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range- Flammable Cabinet	FR-01	0.111	25	200
Former Firing Range- Radiator	FR-02	0.111	16	200
Former Firing Range-Floor	FR-03	0.111	19	200
Former Firing Range- Exhaust Fan	FR-04	0.111	51	200
Former Firing Range- Weight Machine	FR-05	0.111	58	200

#### 3.3 Ventilation System Evaluation

Not applicable to this operation.

#### 3.4 Noise Measurements

Not applicable to this operation.

#### 3.5 Personal Protective Equipment

Not applicable to this operation.

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# 3.6 Interpretation of Results

<u>LEAD</u>: The five surface wipe samples collected in the former firing range were found to contain lead dust levels below the maximum limit set by the National Guard Bureau.

# 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is an area with about a 30-foot high ceiling used for assembling personnel. and storing equipment. The walls are constructed of cinder-block with a concrete floor.

#### 4.2 Chemical and Physical Agents Sampled

# 4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (fl <sup>2</sup> )	Result (µg/ft²)	Maximum Safe Surface Contamination Level (μg/ft <sup>2</sup> )
Drill Hall – Electrical Box	WS-12	0.111	60	200
Drill Hall - Floor	RWS-04	0.111	350000	200

Table 4-1 Levels of Lead Dust Found in the Drill Hall

The level of laad dust found on the drill hall floor exceeded the NGB recommended. level.

#### 4.3 Ventilation System Evaluation

Not applicable to this operation.

#### 4.4 Noise Measurements

Not applicable to this operation.

#### 4.5 Personal Protective Equipment

Not applicable to this operation.

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# 4.6 Interpretation of Results

LEAD: The wipe sample collected from the floor in the drill hall was found to contain lead at a level above the NGB recommended level. URS recommends cleaning the drill hall floor where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025). The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Additional lead wipes collected will be analyzed and a supplemental letter will report results.

# 5.0 BOILER ROOM

# 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace, associated piping, and the electrical panels.

# 5.2 Chemical and Physical Agents Sampled

# 5.2.1 Lead

Wipe testing for lead dust was conducted in the boiler room using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 5-1 Level of Lead Dust Found in the Boiler Room

Sample Location	URS Sample Number	Area Wiped (ft²)	Result (µg/ft²)	Maximum Safe Surface Contamination Level (μg/ft <sup>2</sup> )
Boiler Room – Temperature Indicator	RWS-03	0.111	710	200

# 5.2.2 Asbestos

Not applicable to this operation.

# 5.3 Ventilation System Evaluation

Not applicable to this operation.

# 5.4 Noise Measurements

Not applicable to this operation.

# 5.5 Personal Protective Equipment

Not applicable to this operation.

# 5.6 Interpretation of Results

.

<u>LEAD:</u> The one surface tested in the boiler room area for lead was found to contain levels above the NGB guidelines.

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# 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

# 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

# 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

# 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

# 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

# 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

## 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62-2001: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

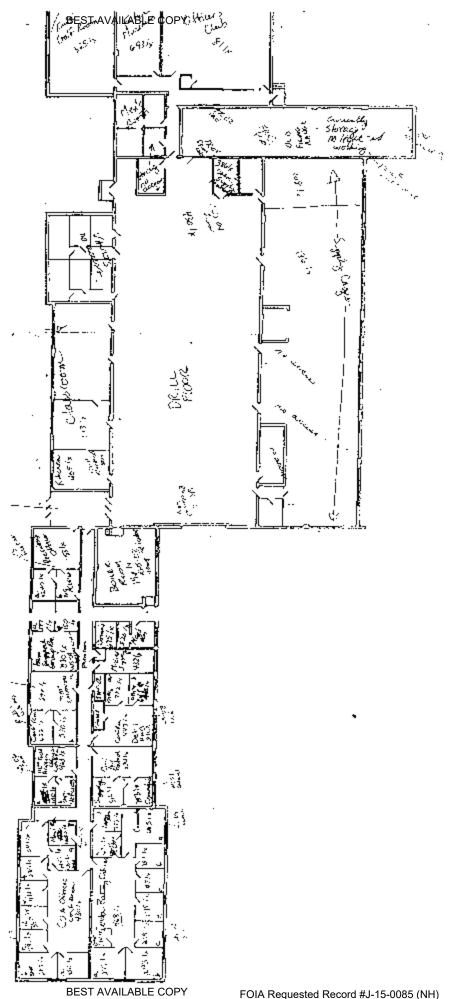
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

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SHOP DRAWING



FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 215 of 1660 APPENDIX B

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PERSONNEL LIST

#### CHERRY HILL ARMORY PERSONNEL

Non-Responsive	NAME

Ranks not provided.

APPENDIX C

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# HAZARDOUS MATERIALS LIST

## NOT PROVIDED

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.

APPENDIX D

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# ANALYTICAL RESULTS

		AHA
Chain Of Castody:	128491	
Date Analyzed:	07/01/2004	
Person Sabraitting:	Non-R	
Report Date:	01-Jul-04	
Summary of Atomic Absorption Analysis for Lead		Page I of 2
Reporting Fin Lämit	al Result	Comments
-11,gu 02.61	51 ug/fr	
-1)-gu 02.61	58 ug/îř	
13.50 ug/ft²	55 ug/fP	
2.70 ug/ft <sup>1</sup>	14 ug/ît*	
2.70 ug/ft*	19 ug/ft	
2.70 ug/ft*	16 ug/fr	
13.50 ug/ft*		
2.70 ug/fP		
2.70 ug/fP		
13.50 ug/ît*		
13.50 ng/ft*		
13.50 ug/ft <sup>2</sup>	45 ug/h	
"Jj.an	-10 ug/ft-	
1 ug/0*	-1/8n 013	
allysis Beparing 2.70 2.70 2.70 2.70 08.01 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.50	s for Lead	Final Result 16 16 11 10 11 11

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CERTIFICATE OF ANALYSIS NY ELAP	Chain Of Costody: 128491		Persee Submitting:	FA0002 Report Date: 01-Jul-04 Prove 2 rd 2	Summary of Atomic Absorption Analysis for Lead	Area Wrpeel Reporting Filoal Result Comments (ft <sup>*</sup> ) Limit	0.111 108.01 us/ft 710 us/ft	ug/if 350000	108.01 us/ft <sup>4</sup> 830		Technical Manag	OIA Requested Record #J-15-0 Released by National Gua	of appenently identical or similar preducts. As a mutual protection to clients, the public and these Labers it is not to be used, in whole or in part, in any advertioning or poblicity matter without prior written and how itting them and, unless collected by personnel of these Laboratories, we expressly distribution wry knowthy we with the appropriate regulatory guidelines, unless otherwise, requested by the client, NYLAP Accretion
UFICATE C	Armory	Cherry Hill, NJ	Not Provided	BPA #W912K6-04-A0002	Atomic Abs	Air Volume A (L)	11.	1	I	DOR-93/200(M)-7420; Water: SM. A 600/R-93/200(M)-7424; Water. mg/L = parts per milion (ppm) per bilion (ppb) should not be	كرادمه		te quality or condition pour the condition that i i by the persons solvai finearded in accourtance AHFRA air escendes ?
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A Specialized Environmental Laboratory	_	Attn: NGB-AVN-S1, ion	and 21078			Analysii Type	Plame	Flame	Flame	: Air, Wipes, Paints, and Soil/Sofids: EPA 64 toe: Air, Wipes, Paints, and Soil/Solids : EP mg/Kg = parts per million (ppm) by weight ght ug = micrograms ug/L = parts ignificant digits. Any additional digits shown ng the result.			rredigated and is not ne ve use of the client to whe ecols are based upon th dormation. Residual as mples and transmission
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APPENDIX E

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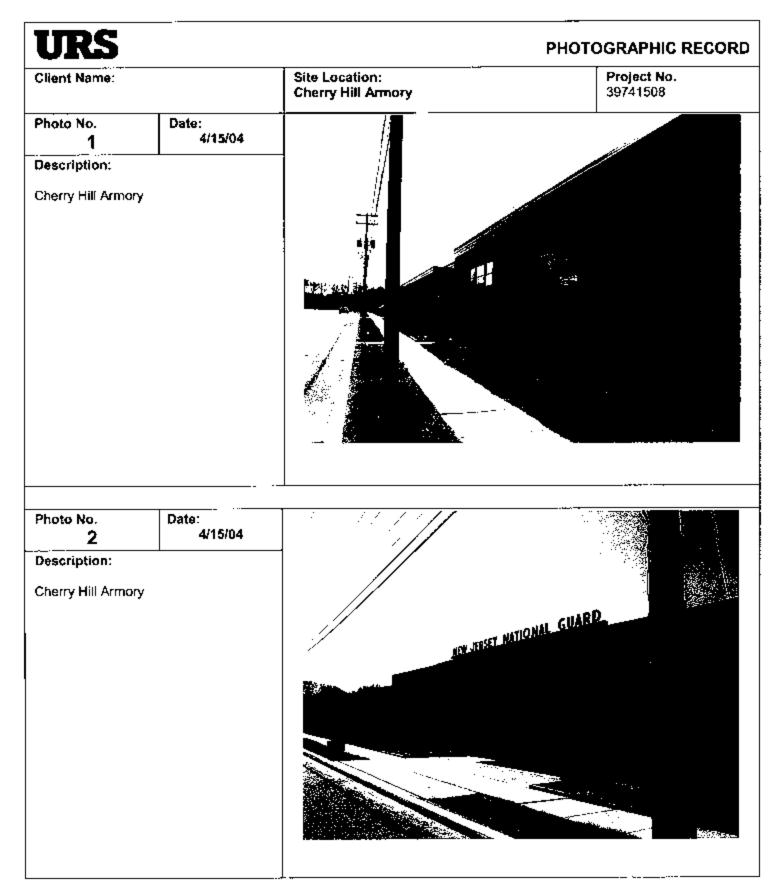
# TRAINING CERTIFICATES

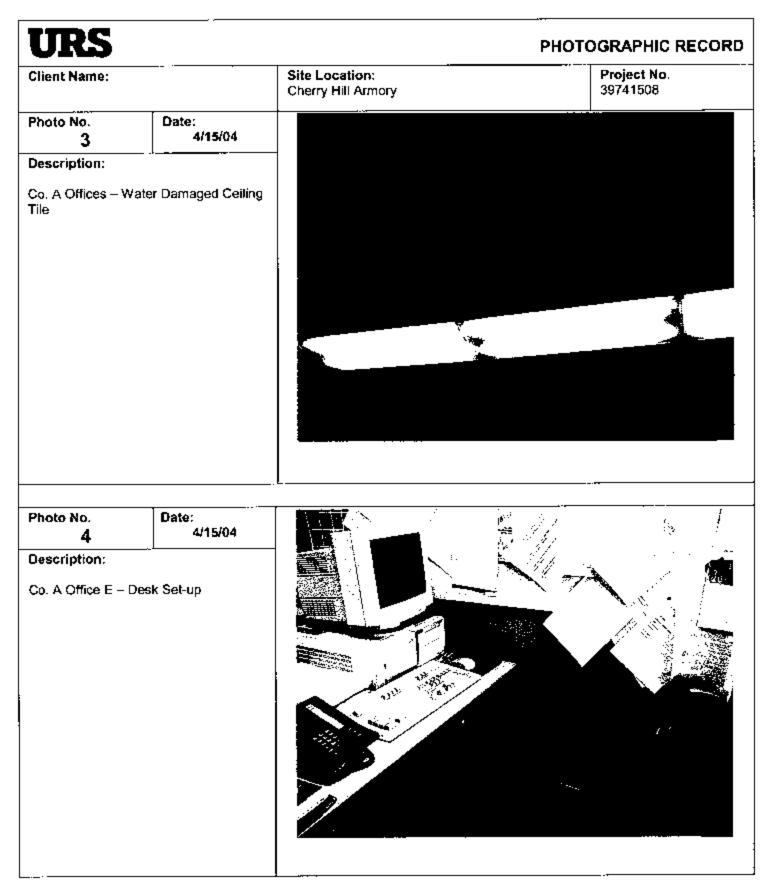
Certificate of Training	For successful completion of a 4 Hour, 1/2 Day Asbestos Building Inspector Annual Refresher Training DECEMBER 5, 2003	This training was approved and given in accordance with the Regulations for Connecticut State Agencies         RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.         Presented by         Mystic Air Quality Consultants, Inc.         1204 North Road, Groton, CT 06340 (800) 247-7746         Certificate Number: ABIRF11392 Exam Grade: 87%         Exam Date: 12/05/2003	

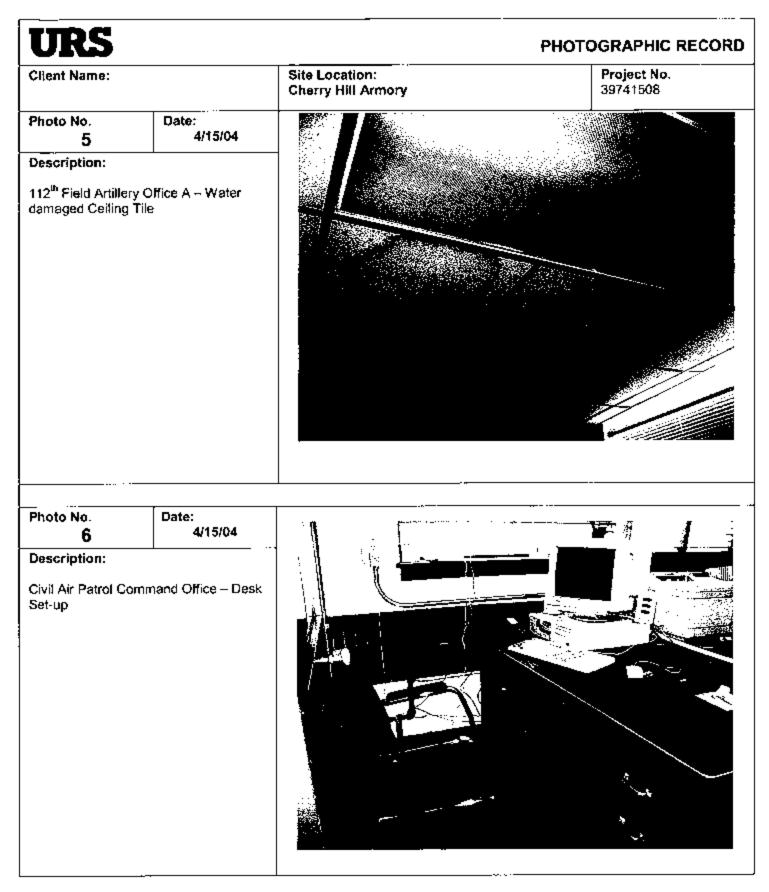
FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 224 of 1660 APPENDIX F

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# PHOTOGRAPHS







URS			PHOTOGRAPHIC RECOR
Client Name:		Site Location: Cherry Hill Armory	Project No. 39741508
Photo No. 7	Date: 4/15/04		
Description: Det HHB Office A – Desk Set-up			
Photo No. <b>B</b> Date: 4/15/04 Description: Men's Room Cleaning Cart- Chemical			
Storage			

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URS			PHOTOGRAPHIC RECOR
Client Name:		Site Location: Cherry Hill Armory	Project No. 39741508
Photo No.	Date:		· ·
9	4/15/04		
Description: Recruiter's Office – Water Damaged Ceiling Tile			
Photo No. 10 Description:	Date: 4/15/04		
Recruiter's Office – Electrical Equipment Tagged Out			DANGER Manager Colored and the second

URS			PHOTOGRAPHIC RECORD
Client Name:		Site Location: Cherry Hill Armory	Project No. 39741508
Photo No. 11 Description: Drill Hall	Date: 4/15/04		
Photo No. 12 Description: Boiler Room	Date: 4/15/04		

URS			PHOTOGRAPHIC RECO
Client Name:		Site Location: Cherry Hill Armory	Project No. 39741508
Photo No. 13	Date: 4/15/04		
Description: Boiler Room – Ele	ectrical Panels		
Photo No. 14 Description:	Date: 4/15/04		
	e – Chemical Storage		

URS			РНОТ	OGRAPHIC RECO
Client Name:		Site Location: Cherry Hill Armory		<b>Project No.</b> 39741508
Photo No. 15	Date: 4/15/04			1
15 4/15/04 Description: Norkshop/Storage – Flammable Cabinets				
Photo No. 16	Date: 4/15/04			
Description: Drill Hall - Vaults				
			· · ·	

URS			PHOTOGRAPHIC RECORD
Client Name:	<b>.</b> .	Site Location: Cherry Hill Armory	Project No. 39741508
Photo No. 17 Description:	Date: 4/15/04		
Drill Hall – Flammable Cabinets			
Photo No. <b>18</b>	Date: 4/15/04		
<b>Description:</b> Former Firing Ra	inge		

URS			РНОТ	OGRAPHIC RECOR	
Client Name:		Site Location: Cherry Hilt Armory		Project No. 39741508	
Photo No. 19	Date: 4/15/04				
Description:	<b>F</b>		A.".		
Former Firing Rar Cabinet	nge 0 Flammable		ν γα		
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APPENDIX G

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# RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/ft<sup>2</sup> in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

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a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,



1215 Manor Drive, Suite 205 Mechanicsburg, PA 17055 Phone: 717.590.7031 Fax: 717.590.7936 www.complianceplace.com

# **Industrial Hygiene Survey Report**

National Guard Facility Cherry Hill

Prepared For:	National Guard Bureau Region North IH 301-IH Old Bay Lane Havre de Grace, MD 21078
Survey Location:	Cherry Hill Readiness Center
	Grove Street & Park Boulevard
	Cherry Hill, NJ 08002
Prepared By:	<b>Compliance Management International, Inc.</b>
	1215 Manor Drive
	Suite 205
	Mechanicsburg, PA 17055
Survey Date:	January 25, 2013
<b>Report Date:</b>	February 27, 2013
lon-Respons	sive

Manager, Industrial Hygiene Services

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### **Section 1.0 Executive Summary**

An industrial hygiene survey was conducted on January 25, 2013, at the Cherry Hill Readiness Center located at Grove Street & Park Boulevard. The survey was performed by Mr. Non-Responsive.

- 1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot  $(ug/ft^2)$  in three locations. Air samples were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter  $(ug/m^3)$ . See Section 3.0 for detailed report findings.
- 2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in one location. See Section 4.0 for detailed report findings.
- 3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during this survey.
  - a. Temperature levels were less than the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommended guideline of 68-79 degrees F in some indoor locations evaluated.
  - b. Relative humidity levels were less than the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in indoor locations evaluated.
  - c. Carbon dioxide levels did not exceed the ASHRAE recommended limit. This is an indication that outdoor air ventilation is adequate.
  - d. Carbon monoxide levels measured were less that the recommended guideline.

See Section 5.0 for detailed report findings.

- 4. Water infiltration is currently occurring over the Offices Wing and the Drill Hall. See Section 5.0 for detailed report findings.
- 5. Suspect asbestos containing materials were observed. All materials were observed to be intact and in good condition. See Section 6.0 for detailed report findings.

## Section 2.0 Operation Description & Observations

The Cherry Hill Readiness Center is mainly an administrative facility with a drill hall, offices, classrooms and storage areas. There were approximately 12 full-time employees stationed at this facility at the time of this survey.

The building was initially constructed in 1952. The building is one story with a brick exterior. The interior walls are primarily concrete block, drywall, plaster and metal. The floors are concrete, vinyl floor tile, terrazzo and carpet.

There is a detached three bay garage that is used for storage. No vehicle maintenance is performed at this facility. There is an overhead vehicle exhaust system in place.

There is no central Heating Ventilation & Air-conditioning (HVAC) system present in the facility. Heat is proved by a gas fired hot water boiler, and some areas of the building have portable air conditioning units.

The area of the building that was once a firing range has been converted into a storage room. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were good. Areas were clean and well kept.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

Sgt. Non-Responsive and Sgt. Non-Responsive from the Army National Guard Safety Office were onsite during the survey.

## Section 3.0 Lead Testing

Due to the age of the building (1952) there is the potential for lead based paint to be present. Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Sample #	Location	Air ug/m <sup>3</sup>	Surface ug/ft <sup>2</sup>
1	Drill Hall	<5.4	*
2	Converted Firing Range/Storage	<5.4	*
3	Converted Firing Range/Storage – Floor	*	<110
4	Converted Firing Range/Storage – Exhaust Fan	*	510
5	Converted Firing Range/Storage Top of Wall Locker	*	210
6	Drill Hall – Floor	*	<110
7	Drill Hall – Top of Water Fountain	*	<110
8	Drill Hall – Floor by Entrance to Converted Firing Range/Storage	*	130
9	Drill Hall – Top of AED Station	*	<110
10	Kitchen – Top of Paper Towel Dispenser	*	<110
11	Kitchen – Top of Control Box	*	220
12	S-1 Office – Book Shelf	*	<110
13	Armory Office – Top of Book Shelf	*	<110
14	Mail Room – Top of File Cabinet	*	<110
15	Orderly Office – Top of Table	*	<110
16	Recruiting Office – Top of Electrical Box	*	<110
17	S-3 Office – Top of Desk	*	<110
18	Dining Room – Top of UV Supply Grill	*	<110
19	Radio Vault – Top of Metal Rack	*	<110
20	Lounge – Top of AV Cart	*	<110
21	Detached Garage/Storage – Floor	*	120
22	Blank Wipe	*	<12 ug
23	Blank Air	<3 ug	*
-	Criteria	50	200

#### Lead Testing Results Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3.  $ug/ft^2$  = micrograms per square foot

- 4.  $ug/m^3 = micrograms per cubic meter$
- 5. **ug** = micrograms

Sources:

- 1. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)
- 2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes  $200 \text{ ug/ft}^2$  as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft<sup>2</sup> on floors and 250 ug/ft<sup>2</sup> on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were at or above the recommended guideline of 200 ug/ft<sup>2</sup> in the following locations:
  - Converted Firing Range/Storage Exhaust Fan
  - Converted Firing Range/Storage Top of Wall Locker
  - Kitchen Top of Control Box

Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of  $200 \text{ ug/ft}^2$ .

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 ug/m<sup>3</sup>.
- No peeling paint was observed.

## **Section 4.0 Lighting**

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Location	Foot Candles	Recommended	Sufficient	
	(FC)	Lighting (FC)	Lighting	
Classroom Four	47.6	30-50	Yes	
Lounge	32.8	10	Yes	
Men's Bathroom	46.8	5	Yes	
Drill Hall	43.6	30-50	Yes	
Radio Vault	30.1	30	Yes	
Dining Room	76.7	10	Yes	
Kitchen	60.1	50	Yes	
Recruiting Office	65.1	30-50	Yes	
Men's Bathroom #2	56.1	5	Yes	
Women's Bathroom	50.2	5	Yes	
Homeland Response Office	47.6	30-50	Yes	
Orderly Office	52.1	30-50	Yes	
Armory Office	52.2	30-50	Yes	
Conference Room	73.0	50	Yes	
Training Office	93.7	30-50	Yes	
S-2 Office	66.5	30-50	Yes	
119 <sup>th</sup> S-1 Office	50.1	30-50	Yes	
Copy Room	80.4	10	Yes	
<b>Detached Garage/Storage</b>	20.2	30	No	

#### Light Survey Assessment Summary

Table Notes:

1. FC = Foot Candles

2. Bolded results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the Detached Garage/Storage Area. Lighting should be improved in this area.

## Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 8554 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation and Recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Radio Vault	63.7	13.0	647	0.4
Dining Room	61.7	8.7	517	0.7
Kitchen	59.2	7.1	403	0.6
Recruiting Office	68.5	10.0	625	0.0
Orderly Office	71.4	7.4	565	0.0
Conference Room	72.3	7.0	549	0.1
Training Office	73.4	8.0	656	0.1
S-2 Office	74.5	7.7	599	0.1
119 <sup>th</sup> S-1 Office	73.8	8.0	638	0.3
Copy Room	61.1	8.8	381	0.0
Detached Garage	33.1	20.1	313	0.0
Outdoors	30.7	24.5	297	0.0
Criteria	68-79	30-60	<997	<9

#### IAQ Assessment Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3. (%) = percent relative humidity
- 4.  $\mathbf{F} =$ degrees Fahrenheit

Source: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010 & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature levels were below recommended guideline in five sampled locations. For comfort, we recommend that the temperature levels be maintained within the ASHRAE recommended guideline of 68-79 degrees F during occupied periods.
- Relative humidity measurements were below the recommended guideline in all locations sampled. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Maintain relative humidity at 30-60%.
- Carbon dioxide levels measured did not exceed the recommended ceiling of 997 parts per million (ppm). This indicates that outdoor air ventilation is adequate in sampled areas. The recommended ceiling for carbon dioxide of 997 ppm is obtained by adding 700 ppm to the outdoor measured level (297 ppm) of carbon dioxide in this survey.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling in this survey of 9 ppm is based on the National Ambient Air Quality Standard of 9 ppm.
- A visual inspection was conducted throughout visually accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observations were noted:
  - This facility has ongoing roof leaks most notably in the drill hall and office wing of the building.
  - There were many water stained, damaged or missing ceiling tiles due to roof leaks.

Identify and repair the sources of the water infiltration. Replace any water stained ceiling tiles.

#### **Section 6.0 Ventilation Survey**

There is a three bay detached garage at this facility. It is used primarily for storage. There is no regular vehicle maintenance performed in this area.

There are a total of three above floor exhausts located in the garage of the Cherry Hill Readiness Center. All measurements were conducted at the face of each exhaust using a Velocicalc Plus Model 9555-P. Measurements were compared to the ACGIH Industrial Ventilation Manual requirements for above floor exhaust systems. The table below details measurement findings.

Location	Type of Hood	Exhaust Diameter	Measured Flow Rate (CFM)
Exhaust 1	Above Floor	6.75"	121
Exhaust 2	Above Floor	6.75"	124
Exhaust 3	Above Floor	6.75"	125

#### ABOVE FLOOR EXHAUST VENTILATION RATE SUMMARY

Reference: Industrial Ventilation, A Manual of Recommended Practice for Design, 27th Edition, ACGIH.

Vehicle Nomenclature	Tailpipe Temp. (°F)	Engine Displacement (ft3)	Engine RPMs*	Exhaust Flow † (CFM)
M35A2, 2.5 Ton Cargo Truck	300	0.277	2,500	1,192
M1008 CUCV, SUV	267	0.219	3,800	1,370
M923A2, 5 Ton Cargo Truck	300	0.293	1,700	857
M996 HMMWV, All Terrain Vehicle	297	0.219	3,300	1,294

#### EXAMPLES OF VEHICLE LEV SYSTEM REQUIREMENTS

\* Revolutions per Minute

The actual flow rate that is required in an overhead vehicle exhaust system varies depending on the engine tail pipe temperature, whether or not the vehicle is "under load" or idling, engine displacement, engine size, etc. As an example, a 15 Liter Engine running at 1,000 rpm with an exhaust gas temperature of 1,300 F (heavy load) would require an exhaust flow of 2,110 CFM. If vehicle maintenance is performed at this facility we recommend the vehicle exhaust system be utilized. Based on this evaluation the flow rate currently provided does not meet the minimum recommended flow rate for even the smallest of military vehicles. Action should be taken to improve the flow rates of this system to meet the minimum requirements as recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation: A Manual of Recommended Practice for Design (27th Edition).

<sup>†</sup> Includes 20% Safety Factor

#### Section 7.0 Suspect Asbestos Containing Building Materials

Based on the age of the building (e.g., constructed in 1952) asbestos-containing materials (ACM) could be present in the facility. The following suspect asbestos-containing materials were noted to be present. All materials were found to be intact and in good condition. Inaccessible or hidden areas were not inspected.

- 1. Pipe insulation above the drop ceiling throughout the facility.
- 2. Approximately 100 ft<sup>2</sup> of 9"X9" red floor tile and associated mastic in the lounge bar area and hallway closet.
- 3. Mudded joint fittings throughout the facility and the detached garage.

## **Section 8.0 Equipment**

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	<b>Calibration Date</b>	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
TSI Velocicalc Plus	0733030	8/2012	NA
SKC Air Sampling Pump	647610	1/25/13	2.51 LPM
SKC Air Sampling Pump	647631	1/25/13	2.54 LPM

#### **Section 9.0 Limitations**

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates. Appendix A. Laboratory Analysis Report

# AMA Analytical Services, Inc.

#### A Specialized Environmental Laboratory

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#### CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAD **& ENVIRONMENTAL MICROBIOLOGY** ISONEC 17625-2005 www.alhancoreditedlabs.org

LAS #100470

Client:	National Guard Bureau	Job Name:	NJ	Chain Of Custody:	515066	
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Cherry Hill RC	Date Submitted:	1/30/2013	
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive	
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	2/5/2013 Report Date: 2/6/201	3

Attention:

#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		porting Limit	Total ug	Final Res	ult	Comments
13033976	1	Flame	Air	552	N/A	5.4	ug/m³	<3	<5.4	ug/m³	
13033977	2	Flame	Air	559	N/A	5.4	ug/m³	<3	<5.4	ug/m³	
13033978	3	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033979	4	Flame	Wipe	****	0.108	110	ug/ft²	55	510	ug/ft²	
13033980	5	Flame	Wipe	****	0.108	110	ug/ft²	23	210	ug/ft²	
13033981	6	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033982	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033983	8	Flame	Wipe	****	0.108	110	ug/ft²	14	130	ug/fl2	
13033984	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
13033985	10	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
13033986	11	Flame	Wipe	****	0.108	110	ug/ft²	23	220	ug/ft²	
13033987	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033988	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033989	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033990	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033991	16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13033992	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13033993	18	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033994	19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# AMA Analytical Services, Inc.

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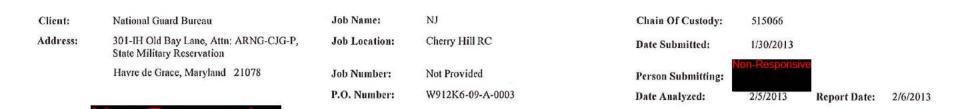
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LAS#100470



#### Summary of Atomic Absorption Analysis for Lead

Page 2 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		oorting Jimit	Total ug	Final Res	ult	Comments
13033995	20	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13033996	21	Flame	Wipe	****	0.108	110	ug/fl²	13	120	ug/ft²	
13033997	22	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13033998	23	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
alysis Method fo	r Flame: Air, Wipes,	Paints, and Soil/S	olids: EPA 600/F	-93/200(M)-7000	B; Water: SM-31	11B		Summary for an	alvtical results	10000	ntrol samples

Analysis Method for Flame: Air, Wipes, Paints, and Soll/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.



associated with these

samples.



This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approvat, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# Appendix B. Photographs



Exterior of facility



Exterior of detached garage/storage



Inside detached garage/storage with overhead vehicle exhaust system



Main hallway water damage from roof leaks and suspect asbestos pipe insulation above ceiling tiles



Suspect mudded joint fittings throughout the facility

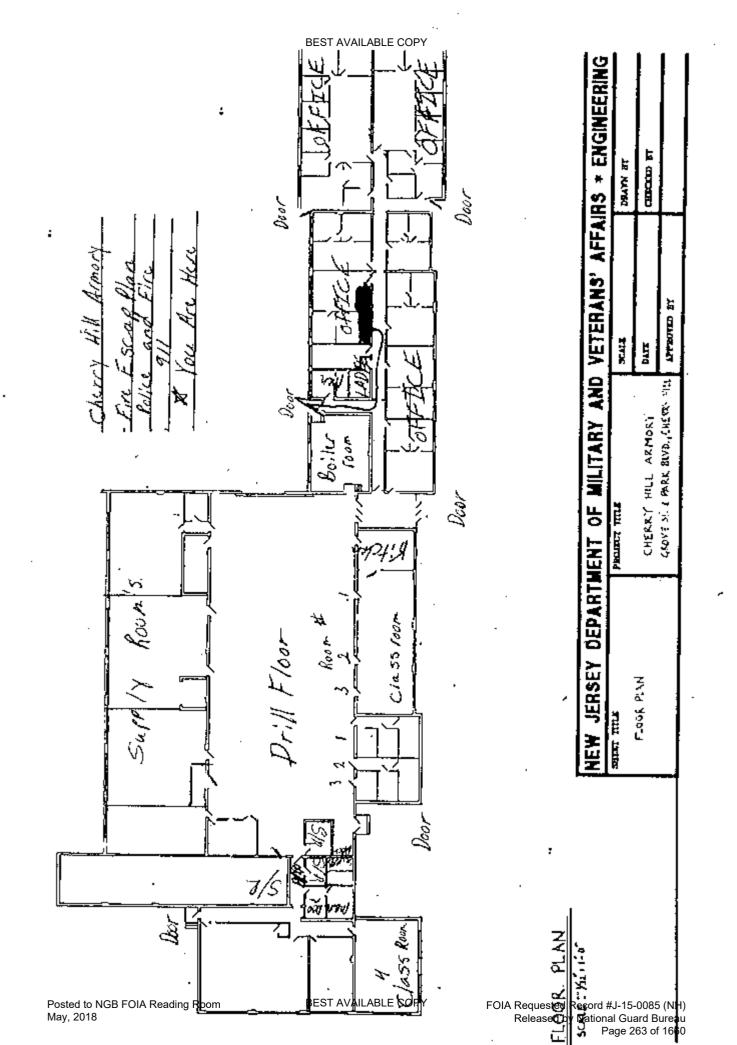


Boiler room water damage from roof leaks



Drill hall

# **Appendix C. Floor Plan**



#### **Appendix D. References**

- 1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.
- 2. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices, 2012 Edition.
- 3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27<sup>th</sup> Edition.
- 4. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Ventilation for Acceptable Indoor Air Quality, 62.1-2010.
- 5. ANSI/IESNA RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America.
- 6. ANSI/IESNA RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America.
- 7. National Emission Standard Hazardous Air Pollutants (NESHAP) The standards for asbestos are contained in 40 CFR 61.140 through 61.157.
- 8. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].
- 9. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM), 1999.
- 10. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, Feb 2002.
- 11. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 2006.
- 12. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

6 2

#### **Prepared For:**

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 – IH Old Bay Lane Havre De Grace, Maryland 21078

#### Prepared By:

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#### INDUSTRIAL HYGIENE SURVEY REPORT FLEMINGTON ARMORY FLEMINGTON, NEW JERSEY

January 2006 PN: 39741509





**Project Manager** 

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- Appendix C Hazardous Materials List
- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories
- Appendix H Policy and Responsibilities for Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

## FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
On the day of the survey, the illumination in several of the administrative offices was inadequate.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead	·····	
Lead was detected in wipe samples collected from the facility in amounts greater than 200 µg/ft <sup>2</sup>	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Asbestos		
A site-specific asbestos operations and maintenance plan was available. No warning labels in janitorial or maintenance areas.	Maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Hazard Communication		1
A site specific hazard communication plan available.	Implement the site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Fire Safety		
An obstructed fire extinguisher was found in the administrative area.	Fire extinguishers must be made available when needed and that employees are not subjected to injury hazards when they try to obtain an extinguisher (OSHA 29 CFR 1910.157(c)(1)).	RAC 2

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Flemington Armory located at State Highway 12 in Flemington, New Jersey. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On April 16, 2004, Ms an industrial hygienist with URS, conducted a site visit to the Armory in Flemington, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Armorer of the New Jersey ARNG was Ms.

This armory is a one story brick building, with an attached drill hall that is constructed primarily of brick and mortar. This facility is built on a concrete slab with a flat asphalt roof. An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

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## 2.0 ADMINISTRATIVE AREA

## 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Some computer workstation chairs could not be adjusted for height and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey.

Cleaning supplies were observed in the Chemical Storage Room with hazardous communications data. Right to Know Center was observed on a desk.

## 2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in boiler room, drill floor, firing range orderly room, armorer's room and outside. These readings were ell measured using a TSI Q-Trak <sup>™</sup> (Model 8551). No indoor air quality complaints were received during this survey.

#### 2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 36-38 % throughout the various building areas with an average of 37%. The average reading was within the recommended comfort range of 30.0% to 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

# 2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from e low of 758 to a spike of 983 parts per million (ppm), with an average of 870.5 ppm. The outside reading was 405 ppm.

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Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given a background level of 405 ppm on the day of the survey, the suggested ASHRAE limit would be 1,105 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0 to 0.6 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline (62.1-2004) for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

# 2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles
Supply Room (cages)	Warehouse	24	10
Supply Room Office	Administrative Duties	73	50
Kitchen Storage	Warehouse	21	10
Classroom/Break room	Administrative Duties	19	50
Admin Office	Administrative Duties	41	50
Admin Office #1	Administrative Duties	78	50
Admin Office #2	Administrative Duties	46	50
Classroom #2	Administrative Duties	36	50
Office #3	Administrative Duties	32	50

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey, lighting levels were inadequate in several of the offices.

# 2.2.5 Lead

Wipe testing for lead was conducted throughout the facility using Ghost Wipes<sup>™</sup>, which meet ASTM E 1792 standards. One Surface within the administrative areas was found to contain lead dust levels, which exceeded the maximum limit. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Maximum URS Sample Area Result Surface Sample Location Number. Contamination Wiped  $(\mu g/ft^2)$ Level (µg/ft<sup>2</sup>) WS-1 Admin Office (Shelf) 16 in<sup>2</sup> 19 200 Storage (Electric Panel) WS-2 16 in<sup>2</sup> 160 200 Kitchen Storage (Shelf) W\$-3 16 in<sup>2</sup> 15 200 Supply (Cabinet) WS-4 16 in<sup>2</sup> 15 200 Classroom #2 (Sill) RWS-1 16 in<sup>2</sup> 41 200 Scullery (Floor) RWS-2  $16 \text{ in}^2$ 220 200

Table 2-2Levels of Lead Dust Found in the Administrative Area

Sample numbers and locations can be found on the site map in appendix A.

RWS-5

Lobby (Floor)

16 in<sup>2</sup>

25

200

# 2.3 Ventilation System Evaluation

Not applicable to this operation.

#### 2.4 Noise Measurements

Not applicable to this operation.

#### 2.5 Personal Protective Equipment

Not applicable to this operation.

#### 2.6 Interpretation of Results

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits were well marked and easily accessible. Fire extinguishers were observed blocked during the site visit.

<u>ERGONOMICS</u>: The ergonomic issues were minor with the desks, chairs and monitors but should be corrected by fitting the workplace to the workers.

<u>LIGHTING</u>: On the day of the survey the illumination in the administrative area was inadequate in most offices. URS recommends increasing the area lighting or supplement task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD</u>: One dust wipe samples collected from the administrative area was above 200 micrograms/ square foot. This is the level recommended by the region north Industrial Hygiene office (Appendix G). Currently, there are no federal or state regulations that require removal of these materials prior to building demolition or renovation. The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead from lead-based paint. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 273 of 1660 HAZARD COMMUNICATION: Listed containers of cleaning supplies were observed in the chemical storage room with MSDS forms located on site in the desktop guide. Right To Know Center should be affixed to a wall.

May, 2018

URS

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## 3.0 FORMER INDOOR FIRING RANGE

#### 3.1 Operation Description

The former indoor firing range is currently used as a classroom. The bullet trap and firing lanes are still present. During the site visit, the former firing range was being set up for a book sale.

#### 3.2 Chemical and Physical Agents Sampled

#### 3.2.1 Lead

Wipe testing for lead was conducted in the former indoor firing range using Ghost Wipes<sup>TM</sup>, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Levels of Lead Dust Found in the Former Firing Range										
Sample Location	URS Sample Number	Area Wiped	Result (µg/ft²)	Maximum Surface Contamination						

Table 3-1 Levels of Lead Dust Found in the Former Firing Range

16 in<sup>2</sup>

16 i**n**<sup>2</sup>

16 i**n**<sup>2</sup>

16 in<sup>2</sup>

1600

420

720

5200

Former Target HangerFR-516 in²1700200

Sample numbers and locations can be found on the site map in appendix A.

FR-1

FR-2

FR-3

FR-4

#### 3.3 Ventilation System Evaluation

Not applicable to this operation.

#### 3.4 Noise Measurements

Former Shooting Bay

Former Bullet Trap

Floor

Floor

Not applicable to this operation.

#### 3.5 Personal Protective Equipment

Not applicable to this operation.

Level (µg/ft<sup>2</sup>)

200

200

200

200

#### 3.6 Interpretation of Results

<u>LEAD</u>: Lead wipe sampling was performed in this area. Results indicated elevated levels of lead in dust on the floor and bullet trap. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Guidance for the cleanup and rehabilitation of former indoor firing ranges is provided on Appendix H

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## 4.0 DRILL HALL

## 4.1 Operation Description

The drill hall is a 5,000 square foot area with about a 30-foot high ceiling used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor, with roll up doors.

# 4.2 Chemical and Physical Agents Sampled

#### 4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes<sup>™</sup>, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1 Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped	Result (µg/ft²)	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Floor (Floor)	RWS-3	16 іл <sup>2</sup>	120	200
Drill Floor (Floor)	RWS-4	16 in <sup>2</sup>	51	200

Sample numbers and locations can be found on the site map in Appendix A.

#### 4.3 Ventilation System Evaluation

Not applicable to this operation.

# 4.4 Noise Measurements

Not applicable to this operation.

# 4.5 Personal Protective Equipment

Not applicable to this operation.

#### 4.6 Interpretation of Results

<u>LEAD:</u> Wipe samples collected from Drill Hall floor for lead were found to be below allowable limits. No further action is required at this time. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

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# 5.0 BOILER ROOM

# 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

# 5.2 Chemical and Physical Agents Sampled

No chemical or physical agents were sampled in this area.

# 5.3 Ventilation System Evaluation

Not applicable to this operation.

# 5.4 Noise Measurements

Not applicable to this operation.

# 5.5 Personal Protective Equipment

Not applicable to this operation.

# 5.6 Interpretation of Results

Not applicable to this operation.

## 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

#### 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

#### 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

#### 6.4 Hazard Communication

A program was found regarding hazard communication. Training records were not found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

#### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

## 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions for Human Occupancy

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities for Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

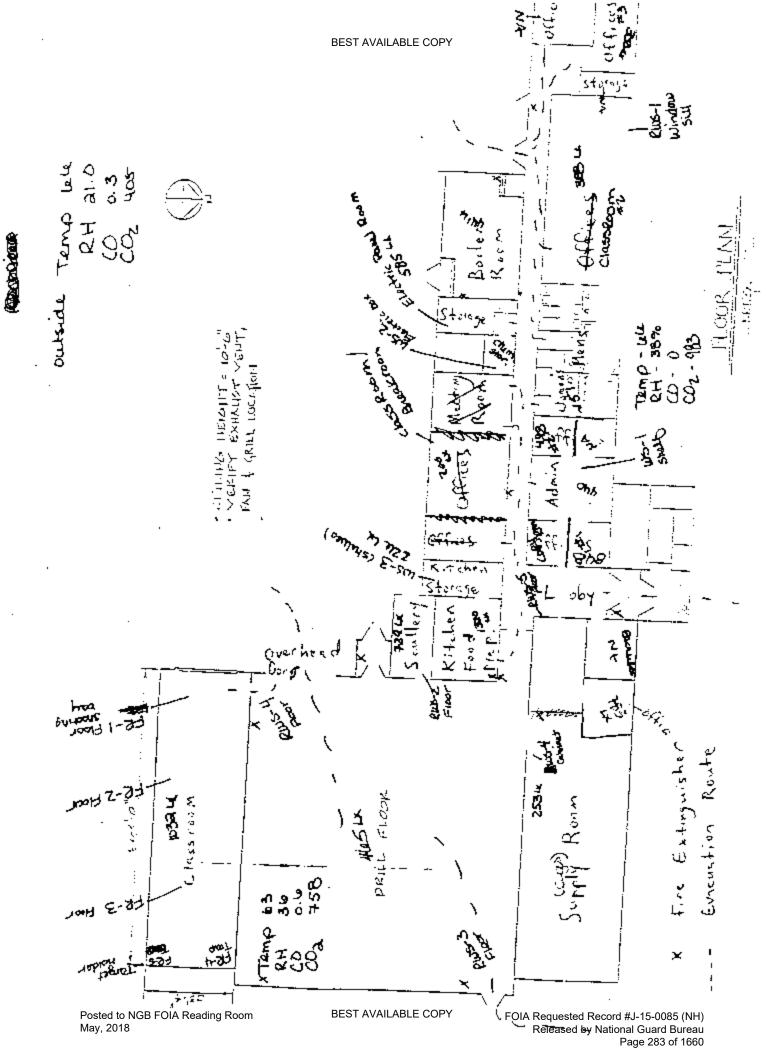
Standard for General Industry: 29 CFR 1910

APPENDIX A

.

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## ARMORY DRAWING



APPENDIX B

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PERSONNEL LIST

# PERSONEL LIST FLEMINGTON ARMORY

Name	Rank
Non-Responsive	CPT
	SFC
	SFC
	SGT
	PFC
	CIV - Armorer

.

APPENDIX C

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HAZARDOUS MATERIALS LIST

# NOT PROVIDED

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# APPENDIX D

# ANALYTICAL RESULTS

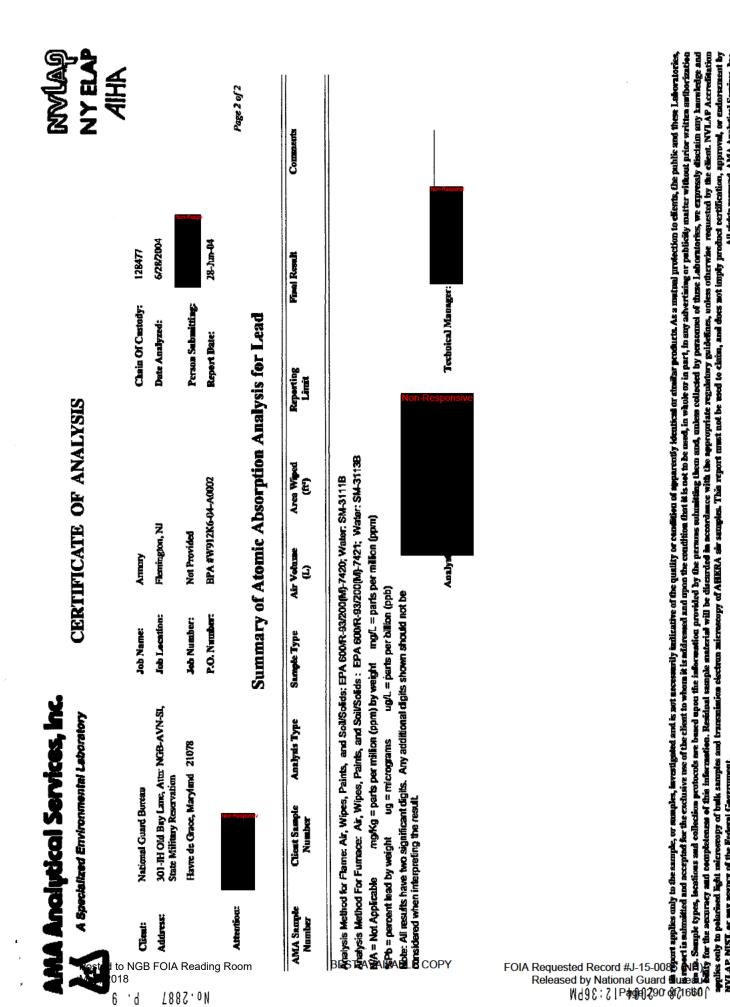
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Summary of Atomic Absorption Analysis for Lead

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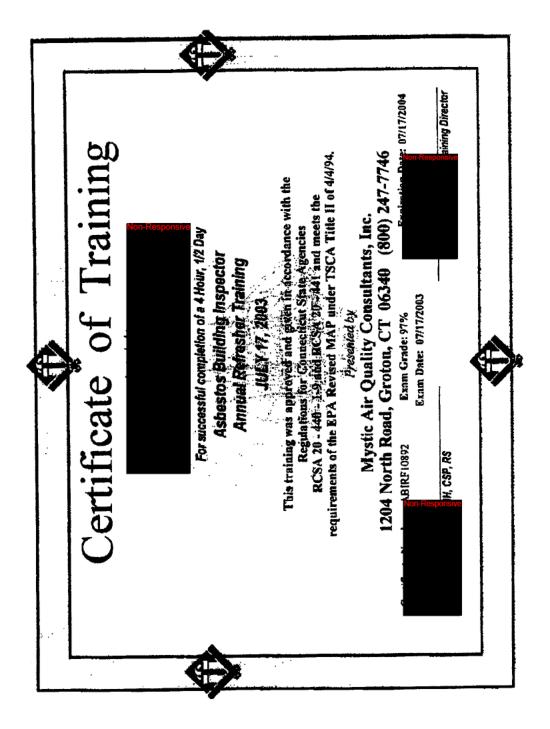
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# APPENDIX E

# TRAINING CERTIFICATES

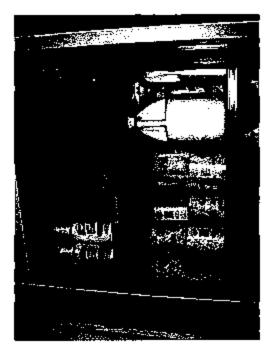
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APPENDIX F

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PHOTOGRAPHS



# Photo 2: Chemical Storage



Photo 4: Unobstructed Fire Extinguisher



Photo 1: Chemical Storage

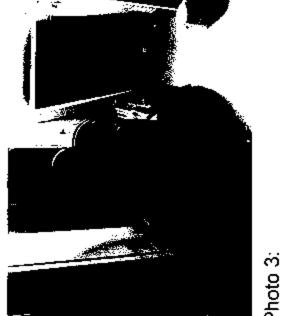


Photo 3: Obstructed Electric Panel



Photo 6: Obstructed Fire Extinguishers

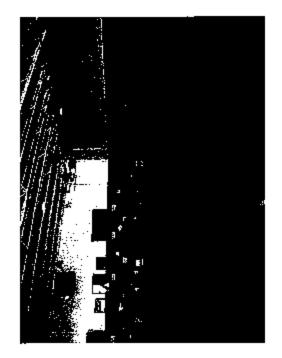


Photo 8: Drill Floor Layout



Photo 5: Boiler

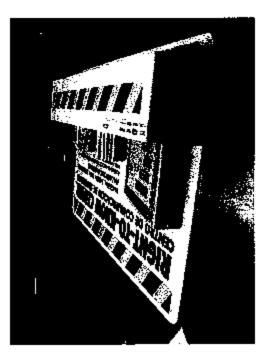


Photo 7: "Right to Know" Center laying on Table



Photo 10: Former Firing Range-Bays



Photo 9: Former Firing Range

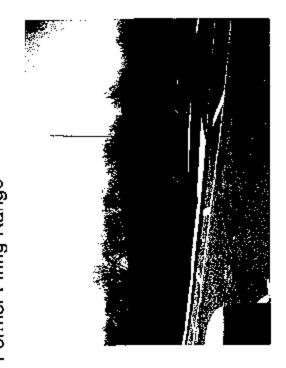


Photo 11: Exterior

APPENDIX G

# RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/fl<sup>2</sup> in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant bazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure. 2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 μg/ft<sup>2</sup> on floors and 250 μg/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

# APPENDIX H

# POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15 30, DECEMBER 2002)

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

### ADDENDUM

### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Paragraph

Purpose References Explanation of Abbreviations and Terms Policy and Procedures Goal Background Wipe Sample Media Wipe Sample Media Wipe Sample Media Wipe Sampling Protocol Range Cleaning Instructions Cleaning Stored Contaminated Equipment Contaminated Sand and Lead Waste Medical Surveillance Worker Education Personal Protection Equipment Housekeeping Maintenance Range Rehabilitation Conversion of Indoor Firing Ranges	1 2 3 4 5 6 7 8 9 10 11 12 3 4 5 11 11 11 11 11 11 11 11 11 11 11 11 1
Range Rehabilitation Conversion of Indoor Firing Ranges	17 18
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### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Load Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

### Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

### 2. References

Related publications are listed below.

- a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program),
- b. AR 11-34 (The Army Respiratory Protection Program).
- c. AR 40-5 (Preventive Medicine).

d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).

e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards.

- f. OSHA Technical Manual, Edition VII.
- g. DHEW NIOSH 70-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this publication are listed in the glossary.

### 4. Policy and Procedures

Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, <sup>5th</sup> Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously slored in the range must be decontaminated and cleaned to acceptable levels,

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

### 5. Goal

To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

### 6. Background

The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative polson. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

### 7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At teast one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of -

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre-moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

### 

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

(2) Unacceptable Media consists of but is not limited to—

(a) Cotton balls

(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol

See Appendix A.

### 9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span<sup>™</sup> has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

©. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and tinoleum or life floors should be waxed.

I. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

I. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

### 10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

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### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidence.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

### 11. Contaminated Sand and Lead Waste

Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

### 12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

- (1) A detailed work and medical history
- (2) A thorough physical examination
- (3) A respirator use evaluation
- (4) A blood pressure measurement
- (5) Blood sample analysis to include:
  - (a) A baseline blood lead level
  - (b) A complete blood count (CBC)
  - (c) Blood urea nitrogen (BUN)
- (6) Serum creatinine
- (7) Zinc protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hyglene Office for additional information pertaining to air sampling.

### 13. Worker Education

OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be Instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is Informed of the following:

- a. The content of the standard and its appendices.
- b. The specific nature of operations that could result in exposure to lead above the action level.
- c. The purpose, proper selection, litting, use and limitations of respirators.
- d. The purpose and a description of medical surveillance program,
- e. Eating and drinking are prohibited in lead contaminated areas.
- f. Smoking and smoking materials will not be permitted in contaminated areas.

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Realth Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

g. Employees must wash their hands and other exposed skin whenever they leave the work area.

h. The engineering controls and work practices associated with the individuel's job essignment.

i. The contents of any compliance plan in effect.

### 14. Personal Protective Equipment

For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall Institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coverails with hood and shoe covers or disposable Tyvek <sup>TH</sup> full body suit.

(2) Disposable rubber gloves; and disposable shoe coveriets (if necessary).

(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective dothing or equipment of the potentially harmful effects of exposure to lead.

### 15. Housekeeping

This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

### 16. Maintenance

The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvere, if applicable, to ensure they are opening fully.

 Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the bap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

### 17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

### 18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target relrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

### 19. Deviation

Deviations from this guidance will require a writtlen exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NG8-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

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### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

### APPENDIX A GENERAL PROCEOURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the erea(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, lear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whalman<sup>™</sup> filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

### APPENDIX B

### SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

### APPENDIX C

### INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS

If all sample results are 200-micrograms/sq It or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sg ft.

Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

### C-3 Over 200,000 micrograms/sq ft

Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq fl, and should be considered suspect.

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### **APPENDIX C (Continued)**

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or splited solvents onto the surface Regional industriel Hygiene Office for specific guidance.

### APPENOIX D

### INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

O-1 200 micrograms/sq. ft or less

If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

### APPENDIX E

### RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hyglene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (8Z) and general area (GA) air samples.

Order From Catalog Number

- a. Millipore Corp. MAWP-037-A0 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380
- b. Geiman Sciences 64678 (GN-4) 600 South Wagner Rd Ann Arbor, Mi 48106 313-665-0651 800-521-1520
- c. Supelco, inc. 2-3368M Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From Catalog Number

a. Supelco Inc. 2-3381IM
 Supelco Park
 Bellefonte, PA 16823

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### APPENDIX E (Continued)

800-247-6628 800-359-3041

b. Millipore Corp. AAWP-037-00 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380

c. SKC, inc. 225-5
 334 Valley View Rd.
 Eighty Four, PA 15330
 412-941-9701
 800-752-8472

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E-5, Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

- a. Pierce Chemical Co. 13219 (screw cap) P.O. Box 117 Rockford, IL 61105 815-968-0747 800-874-3723
- Alltech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Waukegan Rd. Deerfield, IL 60015 312-948-8600

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### APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From Catalog Number

Environmental Express SC4200 490 Wando Park Bivd, Mt. Pleasant, SC 29464 1-800-343-5319

E-7. Ghost Wipe™ Containers

Order From Calalog Number

Environmental Express SC499 490 Wando Park Bivd. ML Pleasant, SC 29464 1-600-343-5319

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately \$1.25. Deionized water can be obtained at local and state water labs or a hospital.

### APPENDIX F EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below;

<u>75 ug</u>	92	29 cm <sup>2</sup>	
100 cm <sup>2</sup>		1 sq ft	
<u>75 x 929</u> 100	=	<u>69675</u> 100	= 696.75ug/sq fl

ug – Microgram

Cm2 - Centimeters squared

Sq ft - Square fool

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### APPENDIX G SURFACE WIPE SAMPLING SHEET

	Industrial i	lygiene Surfa							
Ratum Address			Point of Contact (name & phone #)						
			Samples Collected By						
Sampled Facility		City	State	Location (bidg/area)					
Description of O	peration		Date Collected	Date Shipped					
Analysis Desired			<u>.t</u>	L-					
iampling Data									
ab Use Only	Sample #	Results		Remarks					
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### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

### APPENDIX H AIR SAMPLING SHEET

		Industrial Hy	rgiene Ai	r Sample	e Sheet	
Return Add	1855		Point of (	Contact (na	me/phone #)	
			Samples	Collected E	3y	
Sampled Fa	cility	City	State	Location	(bldg/ares)	· · · ·
<b>Description</b>	of Operation	Porsons Exposed	Hns/Day		d of Collection	
Analysis De	berled			•		
Sampling D	ata	······	···· <b>·</b>		· ·	
Sample No.						
Pump No.						B
Time On						L _
Time Ofi						A
Total Time (min)						N
Flow Rate (LPM)						к
Volume (iftera)						
GA/BZ						
Employee Name//D						
Laboratory No.						
Calibration		<u> </u>	,		· · · · ·	
Pump No.	Calli Pre-Use	bration (LPM) Post-Use	Rolameta	r Setting	Data	
	, ria-240					
				_	<u> </u>	
		<u>.</u>				
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Name of Callb		Calibration Date	Ритр Ма	nufacturer	······································	
Comments to	Lab:					

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APPENDIX I ABBREVIATIONS AND TERMS

### Section I Abbreviations

ARNG Army National Guard

BUN Blood urea nitrogen

**8Z** Breathing zone

CBC Complete blood count

CFR Code of Federal Regulations

*cm* Centimeter

DHEW Department of Health, Education and Welfare

EPA Environmental Protection Agency

GA General area

OMPF Official Military Personnel File

**OPF** Official Personnel File

OSHA Occupational Safety and Health Administration

TCLP Toxic Characteristic Leaching Procedures

ug/sq ff Micrograms per square foot

Posted to NGB FOIA Reading Room May, 2018

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### APPENDIX I (Continued)

### Section II Terms

### HEPA

Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

### Leed-Contaminated Range

It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

### Wipe Sample

The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

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1215 Manor Drive, Suite 205 Mechanicsburg, PA 17055 Phone: 717.590.7031 Fax: 717.590.7936 www.complianceplace.com

# **Industrial Hygiene Survey Report**

National Guard Facility Flemington Readiness Center

Prepared For:	National Guard Bureau Region North IH 301-IH Old Bay Lane
	Havre de Grace, MD 21078
Survey Location:	Flemington Readiness Center
25	422 State Highway 12
	Flemington, NJ, 08822-9511
Prepared By:	Compliance Management International, Inc.
	1215 Manor Drive
	Suite 205
	Mechanicsburg, PA 17055
Survey Date:	February 26, 2013
<b>Report Date:</b>	April 4, 2013



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## **Section 1.0 Executive Summary**

An industrial hygiene survey was conducted on February 26, 2013, at the Flemington Readiness Center located at 422 State Highway 12, Flemington, NJ 08822. The survey was performed by Mr. Non-Responsive.

- 1. Lead surface and air samples were collected. Surface levels of lead did not exceeded 200 micrograms per square foot  $(ug/ft^2)$ . See Section 3.0 for sampling results.
- 2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in four locations. See Section 4.0 for detailed findings.
- 3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.
  - a. Relative humidity levels were less than the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 177 recommended guideline of 30-60% in all locations.
  - b. Temperature levels were below the ASHRAE recommended guideline of 68-79 degrees F in all locations.

See Section 5.0 for detailed sampling results

- 4. Several conditions or factors that could affect indoor air quality were observed at the time of this survey. This includes:
  - a. Reported roof leaks.
  - b. Some water damaged ceiling tiles were observed in several locations in the facility.

# **Section 2.0 Operation Description & Observations**

The Flemington Readiness Center is mainly an administrative facility with a drill hall, offices, classroom, and converted firing range/storage areas. There were approximately 7 full-time employees stationed at this facility at the time of this survey.

The building was initially constructed in the 1951. Two additional additions were constructed during the 1960s and 1980s. The building is a single-story structure with a brick exterior. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, floor tile, and carpet.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of an oil-fired forced water furnace for heat, and 3 roof-top units for air conditioning.

The area of the building that was once a firing range has been converted into a storage area. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were adequate.

No ergonomic concerns were reported.

# Section 3.0 Lead Testing

Due to the age of the building there is a high potential for lead based paint to be present. Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Sample #	Location	Air ug/m <sup>3</sup>	Surface ug/ft <sup>2</sup>
1	Drill Hall	<7.5	*
2	Conference Room 118	<7.5	*
3	Blank	<3	*
4	Drill Hall Floor	*	<110
5	Drill Hall Amnesty Box	*	<110
6	Kitchen Stove Shelf	*	<110
7	Converted Firing Range – Floor	*	<110
8	Converted Firing Range – Table	*	<110
9	Outside Converted Firing Range - Floor	*	<110
10	Supply Room – Table	*	<110
11	Office 120 – Shelf	*	<110
12	Exercise Room – Heater	*	<110
13	Office 131 – Shelf	*	<110
14	Office 150 - Cabinet	*	<110
15	Conference Room 112 – TV Stand	*	<110
16	Office 112 – Supply Diffuser	*	<110
17	Blank	*	<12
-	Criteria	50	200

### Lead Testing Results Summary

Table Notes:

- 1. Bolded results exceed listed criteria
- 2. **ppm** = parts per million
- 3.  $ug/ft^2$  = micrograms per square foot
- 4.  $ug/m^3$  = micrograms per cubic meter
- 5. **ug** = micrograms

Sources:

- 1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
- 2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot  $(ug/ft^2)$  as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft<sup>2</sup> on floors and 250 ug/ft<sup>2</sup> on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were below the recommended guideline of 200 ug/ft<sup>2</sup>.
- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m<sup>3</sup>).

#### **Section 4.0 Lighting**

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Converted Firing Range -	(FC)	Lighting (FC)	
Storage	38.4	10	Yes
Supply Room	33.3	30	Yes
Food Services - Prep	9.0	50	No
Conference Room 118 - Meet	35.3	30	Yes
Office 120	64.4	30 - 50	Yes
Conference Room 112 –			
Meet, Front	7.8	30	No
Conference Room 112 – Meet,			
Rear	30.2	30	Yes
Exercise Room	36.7	30	Yes
Men's Toilet	22.2	5	Yes
Women's Toilet	34.4	5	Yes
Office 150	86.4	30 - 50	Yes
Office 607714	64.6	30 - 50	Yes
Office 131	84.2	30 - 50	Yes
Conference Room 130 - Meet	31.5	30	Yes
Office 152	51.8	30 - 50	Yes
Storage 115	15.7	10	Yes
Main Hall	14.2	5	Yes
HVAC	72.1	30	Yes
Electrical Room	24.5	30	No
Office 105	26.4	30 - 50	No
Weapons Vault	119.4	30	Yes

#### Light Survey Assessment Summary

Table Notes:

1. FC = Foot Candles

2. Bolded results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the food services preparation area, front half of conference room 112, electrical room, and office 105. Lighting should be improved in these areas.

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#### Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Office 120	63.5	26.4	843	0.0
Office 131	60.4	25.2	476	0.0
Outdoors	39.2	62.0	385	0.5
Criteria	68-79	30-60	<1,085	<9

IAQ Assessment Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3. (%) = percent relative humidity
- 4.  $\mathbf{F}$  = degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

 Temperature measurements were below the recommended 68°F in all areas. Relative humidity levels were outside the recommended guidelines in all sampled areas. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels measured did not exceed the recommended ceiling of 1,085 parts per million (ppm). This indicates that outdoor air ventilation is adequate in all areas.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm.
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observations were noted:
  - It was reported that roof leaks had occurred in the past. Several waterstained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.
  - Overall housekeeping was adequate.

#### **Section 6.0 Suspect Asbestos Containing Building Materials**

Due to the age of the facility (built in 1951) it is likely that asbestos-containing materials (ACM) are present in the facility. The following suspect ACM was noted at the time of this survey:

1. Floor tiles (9" x 9") and associated mastic are present in the Commander's Office and Executive Officer's Room. These appear intact and undamaged at time of this survey.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

#### **Section 7.0 Equipment**

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	2/26/13	2.13 LPM
SKC Air Sampling Pump	647610	2/26/13	2.10 LPM

#### **Section 8.0 Limitations**

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

### Appendix A. Laboratory Analysis Report



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Attention:

A Specialized Environmental Laboratory

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### **CERTIFICATE OF ANALYSIS**

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL RYGENE. DV/NORMENTALLAD & ENVIRONMENTAL MICROBIOLOGY ISONED 3 DV/SECOND UNIVERSITY AND A DV/SECOND UNIVERSITY AND A DV/SECOND UNIVERSITY AND A DV/SECOND

LAS \$100470

Client:	National Guard Bureau	Job Name:	ARNG, 3KNJ	Chain Of Custody:	515232
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Flemington, NJ	Date Submitted:	2/28/2013
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	3/4/2013 Report Date: 3/4/2013
	Non Peeneneive				

#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft <sup>e</sup> )		po <b>rting</b> Limit	Total ug	Final Res	n lt	Comments
13041135	1	Flame	Air	402	N/A	7.5	ug/m³	<3	<7.5	ug/m³	
13041136	2	Flame	Air	400	N/A	7.5	ug/m³	<3	<7.5	ug/m³	
13041137	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13041138	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041139	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041140	6	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
13041141	7	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
13041142	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041143	9	Flame	Wipe	****	0.108	110	սց/Ո²	<12	<110	ug/fl²	
13041144	10	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041145	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041146	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041147	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041148	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041149	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041150	16	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
13041151	17	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

This report applies only to the samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# AMA Analytical Services, Inc.



A Specialized Environmental Laboratory

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#### **CERTIFICATE OF ANALYSIS**



							LAB #100470
Client:	National Guard Bureau	Job Name:	ARNG, 3KNJ	Chain Of Custody:	515232		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Flemington, NJ	Date Submitted:	2/28/2013		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Respon	sive	
	Non-Responsive	P.O. Number:	W912K6-09-A-0003	Date Analyzed:	3/4/2013	Report Date:	3/4/2013
Attention:		Summary o	f Atomic Absorption Ana	lysis for Lead			Page 2 of 2
MA Sample Number	Client Sample Analysis Type S Number		Volume Area Wiped Reporting (L) (ft²) Limit	Total ug F	inal Result	Com	nents
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# Appendix B. Photographs



Flemington Main Entrance

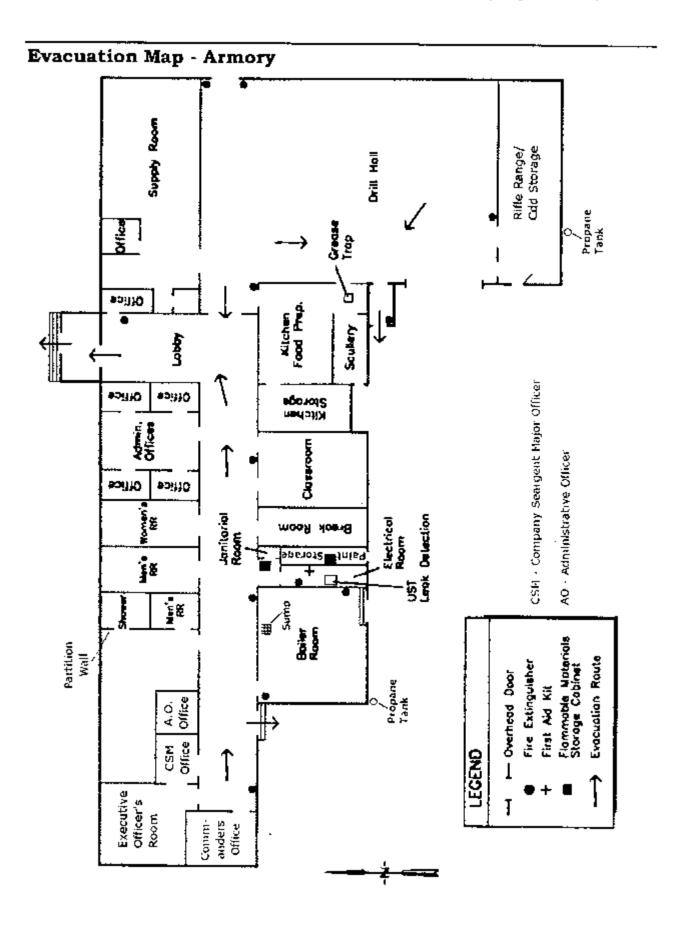


Classroom 112 Lights Disconnected in Front Half



Detached Maintenance Building

## **Appendix C. Floor Plan**



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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 337 of 1660 !

#### **Appendix D. References**

- 1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.
- 2. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices, 2011 Edition.
- 3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27<sup>th</sup> Edition.
- 4. American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.
- 5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.
- 6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.
- 7. National Emission Standard Hazardous Air Pollutants (NESHAP) The standards for asbestos are contained in 40 CFR 61.140 through 61.157.
- 8. National Ambient Air Quality Standards (NAAQS) National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.
- 9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].
- 10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).
- 11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.
- 12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 NOV 06.
- 13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

#### **Prepared For:**

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 – IH Old Bay Lane Havre De Grace, Maryland 21078

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FINAL INDUSTRIAL HYGIENE SURVEY REPORT FREEHOLD ARMORY FREEHOLD, NEW JERSEY

March 2006 PN: 39741509







Project Manager

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- Appendix D Analytical Results
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- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories
- Appendix H Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

#### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		<u>en an /u>
On the day of the survey, the illumination in the administrative offices and foyer was adequate in most circumstances.	Maintain lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from the facility in amounts greater than $200 \ \mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Asbestos		
Exposed asbestos-containing pipe fitting insulation was present in the boiler room.	Repair or remove exposed ends or damaged asbestos-containing pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001)	RAC 3

FINDINGS AND RECOMMENDATIONS	(Cont)
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Findings Asbestos	Recommendation	Risk Assessment Code
A site-specific asbestos operations and maintenance plan was available during site visit. No warning labels in janitorial or maintenance areas.	Develop or maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Hazard Communication	alan terdaki katikatika	a de la compañía de l
Secondary containers in the Armorer's Supply were not labeled	Label all secondary containers unless intended for immediate use (OSHA 1910.1200)	RAC 4
No site specific hazard communication plan was available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200)	RAC 4

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Bureau, URS Corporation (URS) conducted an industrial hygiene survey at the Armory located at 635 Park Avenue (State Highway 33) in Freehold, New Jersey 07728. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 20, 2004, Ms. an industrial hygienist with URS, conducted a site visit to the Armory in Freehold, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of bulk samples, lighting measurements, and a review of site health and safety procedures. Sgt of the New Jersey ARNG was Ms site contact for this survey.

An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

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#### 2.0 ADMINISTRATIVE AREA

#### 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer monitors and keyboards could not be adjusted for different individuals working at the work stations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

No complaints were received by URS concerning workstations at the time of this survey.

Unlabeled secondary containers were observed in the Armorer's Supply (Photo # 4). MSDS sheets were not found on site.

#### 2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in the Main Hall, Hall outside the Garage, and the Drill Floor, and outside. These readings were all measured using a TSI Q-Trak <sup>™</sup> (Model 8551). No indoor air quality complaints were received during this survey.

#### 2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 40-56 % throughout the various building areas with an average of 48%. This average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

#### 2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of from 638 to a spike of 766 parts per million (ppm), with an average of 696 ppm. The outside reading was 397 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given a background level of 397 ppm on the day of the survey, the ASHRAE limit would be 1,097 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0.2 to 1.4 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured lavels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxida within indoor environmants may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

#### 2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the

recommended lighting requirement (ANSI / IESNA RP ~1-04 American National Standard Practice for Office Lighting).

Location	Function	Lighting foot	Recommended Lighting foot
Co D Office #1	Administrative Duties	74	50
Co D Office #2	Administrative Duties	70	50
Co D Office #3	Administrative Duties	105	50
Co D Office #4	Administrative Duties	82	50
Co D Office #5	Administrative Duties	60	50
Co B Office #2	Administrative Duties	99	50
Co B Office #3	Administrative Duties	91	50
Co B Office #5	Administrative Duties	68	50
Recruiter's Office	Administrative Duties	61	50
Copy Room	Work Area-General	65	30
Classroom	Work Area	124	30
Classroom #15	Work Area	86	30
Classroom #16	Work Area	126	30
Office #22	Administrative Duties	66	50
Armorer's Supply	Warehouse	39	10
Co D Supply	Warehouse	11.3	10
Family Readiness Center	Administrative Duties	50	50
Motor Pool	Parking Area	2	3

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey the illuminance in the administrative area was adequate in most offices.

#### 2.2.5 Lead

Wipe testing for lead was conducted in the administration areas using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead wipe sampling.

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Sample Location	URS Sample Number	Area Wiped	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
D Co. Supply (shelf)	WS-1	16in <sup>2</sup>	260	200
Maintenance Room (shelf)	WS-2	16in <sup>2</sup>	51	200
B Co. Supply (floor)	WS-3	16in <sup>2</sup>	2700	200
Family Readiness Office (floor)	WS-4	16in <sup>2</sup>	22	200
Kitchen Storage (floor)	WS-5	16in <sup>2</sup>	71	200
D Co. Office #5 (sill)	WS-7	16in <sup>2</sup>	77	200
B Co. Office #5 (sill)	WS-8	16in <sup>2</sup>	26	200
Recruiter's Office (floor)	WS-9	16in <sup>2</sup>	480	200
Classroom #16 (sill)	WS-10	16in <sup>2</sup>	35	200
Garage (floor)	RWS-01	16in <sup>2</sup>	4200	200
Main Hallway (radiator)	RWS-03	16in <sup>2</sup>	25	200
Women's Room Entryway (floor)	RWS-04	16in <sup>2</sup>	350	200
Main Hallway (floor)	RWS-05	16in <sup>2</sup>	5.4	200

# Table 2-2Levels of Lead Dust Found in the Administration Area

The analytical report from AMA is contained in Appendix D.

#### 2.2.6 Asbestos

Observed suspect asbestos-containing materials (ACM) were found to be in good condition. An asbestos survey had been conducted by ARNG personnel prior to the site visit and an Operations and Maintenance (O&M) plan is in place.

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D.

Ms asbestos inspector training certificate is provided in Appendix E.

#### 2.3 Ventilation System Evaluation

Not applicable to this operation.

#### 2.4 Noise Measurements

Not applicable to this operation.

#### 2.5 Personal Protective Equipment

Not applicable to this operation.

#### 2.6 Interpretation of Results

<u>GENERAL:</u> In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

<u>ERGONOMICS</u>: The ergonomic issues were minor with regard to the monitors and keyboards. Monitors and keyboards need to be corrected by fitting the workplace to the workers.

<u>LIGHTING:</u> On the day of the survey the illumination in the administrative area was adequate generally throughout the facility. URS recommends maintaining the area lighting in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Five dust wipe samples collected from the administrative area were above 200 micrograms per square foot. This is the level recommended by the NGB Region North Industrial Hygiene Office (appendix G). The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead from lead-based paint. The NGB Region North IH Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

<u>ASBESTOS:</u> If an asbestos-containing material should become damaged, it is recommended that the damaged material be repaired or replaced with new, non-asbestos material by an appropriately trained professional.

HAZARD COMMUNICATION: Unlabeled secondary containers were observed in the Armorer's Supply. Secondary containers of hazardous materials should be labeled. It is best management practice to label all secondary containers.

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#### 3.0 FORMER INDOOR FIRING RANGE

#### 3.1 Operation Description

The firing range has been dismantled and this building area is now primarily used as a gymnasium. There are plans to turn half of the space into a dining area.

#### 3.2 Chemical and Physical Agents Sampled

#### 3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (in <sup>2</sup> )	Result (µg/in²)	Maximum Surface Contamination Level (µg/ff <sup>2</sup> )
Firing Range-Floor	FR-01	16	2000	200
Firing Range-Floor	FR-02	16	700	200
Firing Range-Lockers	FR-03	16	120	200
Firing Range-Floor	FR-04	16	420	200
Firing Range-Floor	FR-05	16	360	200

Table 3-1 Levels of Lead Dust Found in the Former Firing Range

A paint chip was collected in one area where paint was peeling and sent to AMA for analysis. The paint chip sample was found to contain lead in a concentration below the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 3-2 below shows the results of the lead paint testing

# Table 3-2Levels of Lead in Paint Found in the Former Firing Range

Sample Location	URS Sample	Reporting Limit (% by Weight)	Final Result (% by Weight)
Firing Range-Back Wall	LBP-01	0.01	0.031

The analytical report from AMA is contained in Appendix D.

#### 3.3 Ventilation System Evaluation

Not applicable to this operation.

#### 3.4 Noise Measurements

Not applicable to this operation.

#### 3.5 Personal Protective Equipment

Not applicable to this operation.

#### 3.6 Interpretation of Results

<u>LEAD</u>: Surfaces within the former firing range were found to contain lead dust levels which exceeded the maximum limit set by the NGB Region North Industrial Hygiene Office (Appendix G). URS recommends that the former firing range be cleaned by an appropriately licensed contractor. Guidelines for the cleaning and rehabilitation of former indoor firing ranges is provided in Appendix H.

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#### 4.0 DRILL HALL

#### 4.1 Operation Description

The Drill Hall is a 7,500 square foot area with about a 30 foot high ceiling used for assembling personnel. The walls are constructed of cinder blocks with a concrete floor.

#### 4.2 Chemical and Physical Agents Sampled

#### 4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1 Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (în²)	Result (µg/ft²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall-Floor	WS-06	16	220	200
Drill Hall-Electric Panel	RWS-02	16	68	200

The analytical report from AMA is contained in Appendix D.

#### 4.2.2 Asbestos

Observed suspect asbestos-containing materials (ACM) were found to be in good condition. An asbestos survey had been conducted by ARNG personnel prior to the site visit and an Operations and Maintenance (O&M) plan is in place.

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D.

#### 4.3 Ventilation System Evaluation

Not applicable to this operation.

#### 4.4 Noise Measurements

Not applicable to this operation.

#### 4.5 Personal Protective Equipment

Not applicable to this operation.

#### 4.6 Interpretation of Results

<u>LEAD:</u> A dust wipe sample collected from the drill hall was above 200 micrograms per square foot. This is the level recommended by the Region North Industrial Hygiene Office (appendix G). The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead from lead-based paint. The NGB Region North IH Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

#### 5.0 BOILER ROOM

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

#### 5.2 Chemical and Physical Agents Sampled

#### 5.2.1 Asbestos

Exposed mudded pipe fitting insulation was observed in the Boiler Room. Bulk samples were not collected in the boiler room of suspect ACM. An asbestos survey had been conducted by ARNG personnel prior to the site visit. The material in the boiler room is known to be an asbestos-containing material.

#### 5.3 Ventilation System Evaluation

Not applicable to this operation.

#### 5.4 Noise Measurements

Not applicable to this operation.

#### 5.5 Personal Protective Equipment

Not applicable to this operation.

#### 5.6 Interpretation of Results

<u>ASBESTOS:</u> The observed ACM mudded pipe fitting insulation was exposed and should be repaired. These repairs need to be performed by an appropriately trained technician.

#### 8.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

#### 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

#### 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

#### 6.4 Hazard Communication

A program was not found regarding hazardous communications. Training records were not found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

#### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

#### 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U.S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

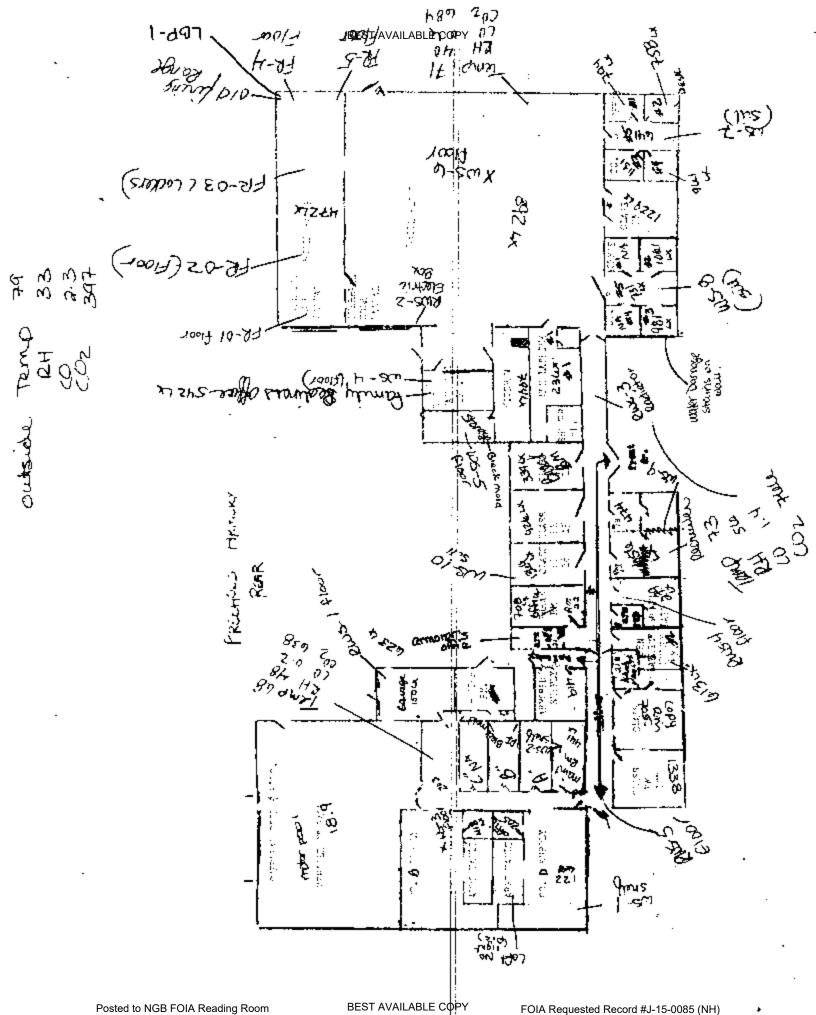
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

#### APPENDIX A

#### ARMORY DRAWING



May, 2018

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APPENDIX B

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PERSONNEL LIST

#### PERSONEL LIST FREEHOLD ARMORY

	Rank
Non-Responsive	SFC
	SFC
	SFC
	SSG
	SSG

#### APPENDIX C

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#### HAZARDOUS MATERIALS LIST

NOT PROVIDED

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APPENDIX D

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#### ANALYTICAL RESULTS

										AHP
Client:	National Guard Bureau	au	Job Name:	Armory			Chain Of Custody:	128481		
Address:	301-IH Old Bay Lane, Attr State Military Reservation	301-IH Old Bay Lane, Attr: NGB-AVN-SI, State Military Reservation	Job Location:	Freehold, NJ			Date Analyzed:	06/29/2004	2004	
	Havre de Grace, Maryland 21078	yland 21078	Job Number:	Not Provided			Person Submitting:		Non-Rei	
			P.O. Number:	BPA #W912K6-04-A0002	(6-04-A0002		Report Date:	29-Jun-04	-04	
Attention:	Non-Files		Summary of Atomic Absorption Analysis for Lead	f Atomic A	Absorption	Analysi	s for Lead			Page 1 of 2
AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (fi <sup>2</sup> )	Repo		Final Result		Comments
0449135	WS-01	Furmace	Wipe	***	0.111	67.51	ug/ft²	260	ug/ft²	
0449136	WS-02	Fumace	Wipe	***	0.111	33.75	ug/ft²	51	ug/ft²	
0449137	WS-03	Flame	Wipe	****	0.111	108.01	ug/ft²	2700	ug/ft²	
0449138	WS-04	Fumace	Wipe	****	0.111	13.50	ug/ft²	22	ug/ft²	
0449139	WS-05	Furnace	Wipe	****	0.111	33.75	ug/ft²	71	ug/ft²	
0449140	WS-06	Furnace	Wipe	***	0.111	67.51	ug/ft²	220	ug/ft²	
0449141	WS-07	Furnace	Wipe	***	0.111	33.75	ug/ft²	11	ug/ft²	
0449142	WS-08	Furnace	Wipe	****	0.111	13.50	ug/ft²	26	ug/ft²	
0449143	60-SM	Flame	Wipe	****	0.111	108.01	ug/ft²	480	ug/ft²	
0449144	WS-10	Furnace	Wipe	***	0.111	13.50	ug/ft²	35	ug/ft²	
0449145	RWS-01	Flame	Wipe	****	0.111	108.01	ug/ft²	4200	ug/ft²	
0449146	RWS-02	Furnace	Wipe	****	0.111	33.75	ug/ft²	68	ug/ft²	
0449147	RWS-03	Fumace	Wipe	***	0.111	13.50	ug/ft²	25	ug/fi²	
0449148	RWS-04	Flame	Wipe	****	0.111	108.01	ug/ft²	350	ug/ft²	
0449149	RWS-05	Furnace	Wipe	***	0.111	2.70	ug/ft²	5.4	ug/ft²	
0449150	FR-01	Flame	Wipe	****	0.111	108.01	_îî∕ĝn	2000	ug/ft²	
0449151	FR-02	Flame	Wipe	****	0.111	108.01	ug/ît²	200	ug/fi²	
0449152	FR-03	Furnace	Wipe	****	0.111	67.51	ug∕∩²	120	ug/ft²	
0449153	FR-04	Flame	Wipe	****	0.111	108.01	ug/ft²	420	ug/ft²	
0449154	FR-05	Flame	Wipe	***	0.111	108.01	ug/ft²	360	ug/ft²	

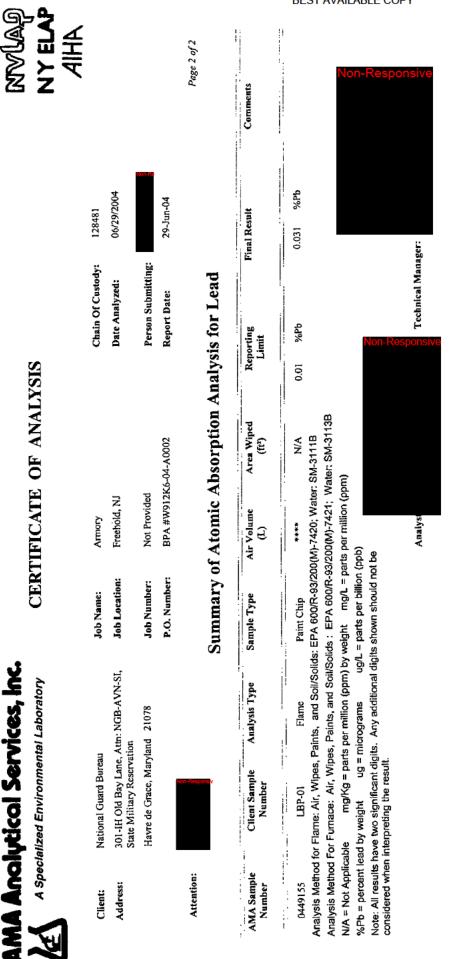
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liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product ccritification, approval, or endorscment by NVLAP, NIST, or any agency of the federal Government. this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and This report applies only to the samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories,

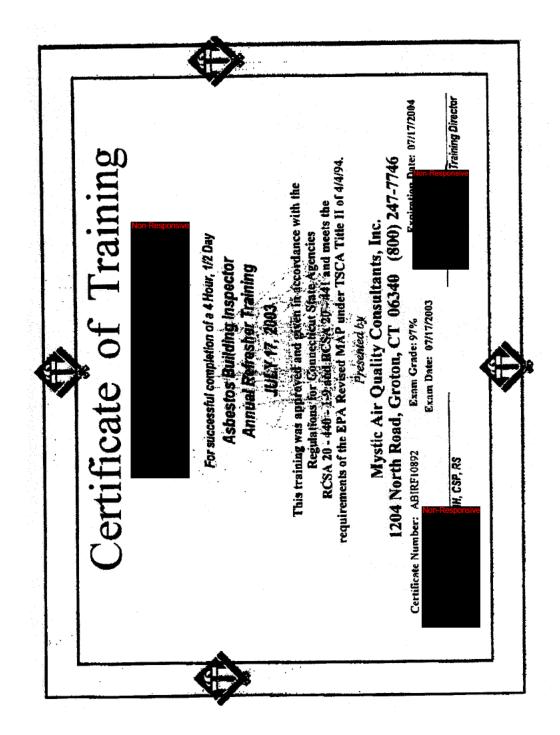
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#### APPENDIX E

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#### TRAINING CERTIFICATES



APPENDIX F

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PHOTOGRAPHS



## Photo 1: Armorer's Supply

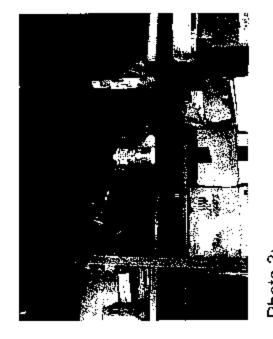


Photo 3: Break Fluid on Shelf in Armorer's Supply



Photo 2: Armorer's Supply



Photo 4: Unlabeled Bottles in Armorer's Supply

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## Photo 5: Armorer's Supply-Fire Extinguisher on Floor

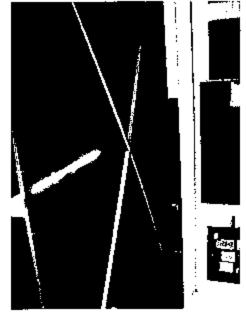
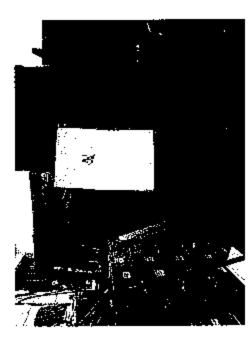


Photo 7: Co D Supply-Loft w/ No Light



# Photo 6: Blocked Flammable Cabinets



# Photo 8: Storage A-Mold Growth on Pipe Insulation

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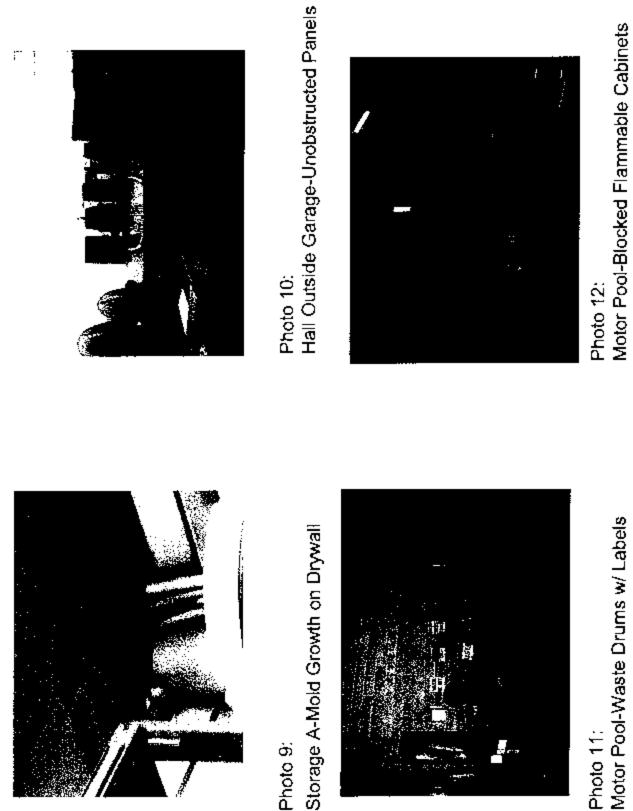


Photo 11: Motor Pool-Waste Drums w/ Labels

Photo 9:

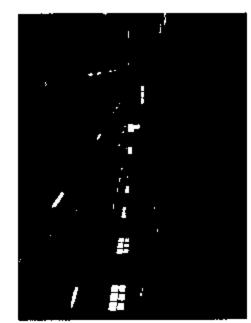


Photo 13: Motor Pool Layout

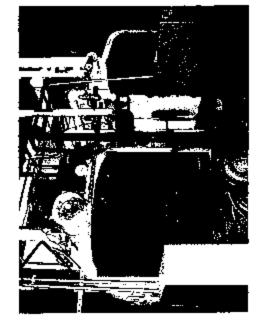


Photo 15: Boilers

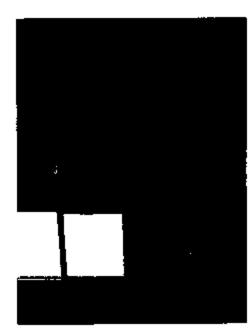


Photo 14: Motor Pool-Marked Fire Extinguisher



Photo 16: Boiler Room-Oil Soaked Pads

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Photo 17: Boiler Room-Exposed Mudded Fitting



Photo 19: Kitchen Storage-Water Damaged Ceiling Tile with Mold Growth

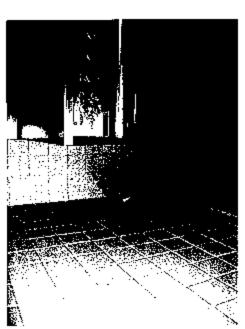


Photo 18: Kitchen-Fire Extinguisher, Not Clearly Visible



Photo 20: Drill Hall Layout

APPENDIX G

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#### RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu$ g/ft<sup>2</sup>). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/ft<sup>2</sup> in their Technical Menual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure. 2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

#### APPENDIX H

#### POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### ADDENDUM

#### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

#### Paragraph

Purpose	1
References	2
Explanation of Abbreviations and Terms	3
Policy and Procedures	4
Goal	5
Background	6
Wipe Sample Media	7
Wipe Sampling Protocol	8
Range Cleaning Instructions	9
Cleaning Stored Contaminated Equipment	10
Contaminated Sand and Lead Waste	11
Medical Surveillance	12
Worker Education	13
Personal Protection Equipment	14
Housekeeping	15
Maintenance	16
Range Rehabilitation	17
Conversion of Indoor Firing Ranges	18
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#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

#### Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

#### 2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program)

- b. AR 11-34 (The Army Respiratory Protection Program).
- c. AR 40-5 (Preventive Medicine).

d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).

e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards.

- f. OSHA Technical Manual, Edition VII.
- g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

#### SUBJECT: All States (Log Number 201-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this publication are listed in the glossary.

#### 4. Policy and Procedures

Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following -

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, <sup>sh</sup> Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/Items previously stored in the range must be decontaminated and cleaned to acceptable tevels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

#### 5. Goal

To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

#### 6. Background

The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative polson. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

#### 7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate ory sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same fol, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of -

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre-moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

#### 用理論的目的,是目前可能的問題的是非常能的目的。是相目的意思了

#### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

(2) Unacceptable Media consists of but is not limited to—

- (a) Cotton balls
- (b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol See Appendix A.

#### 9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span<sup>TM</sup> has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

 Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are property sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoteum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the builet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the tast surface cleaned, starting at the built trap and ending behind the fitting line.

k, After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

I. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

#### 10. Cleaning Stored Contaminated Equipment

 Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

#### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the well wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

#### 11. Contaminated Sand and Lead Waste

Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

#### 12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

- (1) A detailed work and medical history
- (2) A thorough physical examination
- (3) A respirator use evaluation
- (4) A blood pressure measurement.
- (5) Blood sample analysis to include:
  - (a) A baseline blood lead level
  - (b) A complete blood count (CBC)
  - (c) Blood urea nitrogen (BUN)
- (6) Serum creatinine
- (7) Zine protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hyglene Office for additional Information pertaining to air sampling.

#### 13. Worker Education

OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye Iritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 6, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

- a. The content of the standard and its appendices.
- b. The specific nature of operations that could result in exposure to lead above the action level.
- c. The purpose, proper selection, fitting, use and limitations of respirators.
- d. The purpose and a description of medical surveillance program.
- e. Eating and drinking are prohibited in lead contaminated areas.
- Smoking and smoking materials will not be permitted in contaminated areas.

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g. Employees must wash their hands and other exposed skin whenever they leave the work area.

h. The engineering controls and work practices associated with the individual's job assignment.

i. The contents of any compliance plan in effect.

#### 14, Personal Protective Equipment

For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall Institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.

(2) Disposable rubber gloves; and disposable shoe coverlets (If necessary).

(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protoctive clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

#### 15. Housekeeping

This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Alr) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

#### 16. Maintenance

The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of beits to ensure that they are not frayed or slipping.

М.

#### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps,

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

(. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet lrap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be laken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

#### 18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges stated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and lumed in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

 h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

#### 19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Anington, VA 22204-1382.

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#### APPENDIX A GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes<sup>™</sup>, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or doionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitionod area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same (ashion but without wiping, should be submitted to the laboratory.

#### APPENDIX B

#### SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

#### APPENDIX C

#### INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS

If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft

Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline

#### C-3 Over 200,000 micrograms/sq ft

Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sg ft, and should be considered suspect.

#### APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

#### APPENDIX D

#### INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less

If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

#### APPENDIX E

#### RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hyglene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From Catalog Number

- a. Millipore Corp. MAWP-037-A0 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380
- b. Gelman Sciences 64678 (GN-4)
   600 South Wagner Rd
   Ann Arbor, MI 48106
   313-665-0651
   800-521-1520
- c. Supelco, Inc. 2-3368M Supelco Park Beilefonte, PA 16823 800-247-6628 800-359-3041

E-3.37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

#### Order From Catalog Number

a. Supelco Inc. 2-3381/M Supelco Park Bellefonto, PA 16823 NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONS/BILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### APPENDIX E (Continued)

800-247-8628 600-359-3041

- b. Millipore Corp. AAWP-037-00 Ashdy Road Bedford, MA 01730 617-275-9200 600-225-1380
- c. SKC, Inc. 225-5 334 Valley View Rd. Eighty Four, PA 15330 412-941-9701 800-752-8472

#### 

E-5. Glass container (25 milliliter) for collection and shipment of media.

#### Order From Catalog Number

- a. Plerce Chemical Co. 13219 (screw cap) P.O. Box 117 Rockford, IL 61105 815-968-0747 800-874-3723
- b. Alitech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Waukegan Rd. Deerfield, IL 60015 312-948-8600

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#### APPENOIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From Cetalog Number

Environmental Express SC4200 490 Wando Park Blvd. Ml. Pleasant, SC 29464 1-800-343-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

Environmental Express SC499 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319

E-8. Plastle ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately \$1.25. Defonized water can be obtained at local and state water labs or a hospital.

#### APPENDIX F EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

<u>75 ug</u>	- 92	29 cm*		
100 cm2		1 \$q ft		
<u>75 x 929</u> 100	-	<u>69675</u> 100	=	696.75ug/sq fl

ug – Microgram

Cm2 - Centimaters squared

Sq ft - Square foot

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Return Address			Point of Conta	ct (name & phone #)		
			Samples Colfected By			
Sampled Facility		City	State	Location (bldg/arsa)		
Description of Op	eration		Date Collected	Date Shipped		
Analysi's Desired				<u></u>		
Sampling Data			· · · · · · · · · · · · · · · · · · ·			
Lab Use Only	Sample #	Reşuits		Remarks		
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#### APPENDIX G SURFACE WIPE SAMPLING SHEET

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Return Add	ress	Industrial H		Contact (nan			
			Samples Collected By				
Sampled F	ampled Facility City		State	Location (	(bldg/area)		
Description of Operation Persons Exposed		Hrs/Day	Hrs/Day				
Analysis D	esired						
Sampling I	Data		••			_	
Sample No.		i					
Pump No.						В	
Time On						L	
Time Off				Î		A	
Total Time (min)						N	
Flow Rate (LPM)				į		ĸ	
Volume (litters)							
GA/8Z							
Employee Name/IO	······································						
Laboratory No.							
Calibration	Information					<b></b>	
Pump No.		mation (LPM)	Rotamole	r Setting	Date		
	Pre-Use	Post-Use			· · •••		
	<b>_</b>	· _ <u>!</u> ·					
	<u> </u>					••••••••••••••••••••••••••••••••••••••	
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	i	·		<del>أ</del>			
			<i></i>				
Name of Callb	i rator	Calibration Date	Pump Mar	nufacturer	<u>_</u>		

#### APPENDIX H AIR SAMPLING SHEET

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#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program ~ POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX I ABBREVIATIONS AND TERMS

#### Section I Abbreviations

ARNG Army National Guard

BUN Blood urea nitrogen

**BZ** Breathing zone

CBC Complete blood count

CFR Code of Federal Regulations

*cm* Centimeter

DHEW Department of Health, Education and Welfare

EPA Environmental Protection Agency

**GA** General area

OMPF Official Military Personnel File

OPF Official Personnel File

**OSHA** Occupational Safety and Health Administration

**TCLP** Toxic Characteristic Leaching Procedures

ug/sq ft Micrograms per square foot

### SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### APPENDIX I (Continued)

#### Section II Terms

#### HEPA

Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

#### Leed-Contaminated Range

It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

#### Wipe Sample

The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

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1215 Manor Drive, Suite 205 Mechanicsburg, PA 17055 Phone: 717.590.7031 Fax: 717.590.7936 www.complianceplace.com

# **Industrial Hygiene Survey Report**

National Guard Facility Freehold Readiness Center

Prepared For:	National Guard Bureau Region North IH 301-IH Old Bay Lane
	Havre de Grace, MD 21078
Survey Location:	Freehold Readiness Center
2	635 State Highway
	Freehold, NJ 07728
Prepared By:	<b>Compliance Management International</b>
2009 X059	1215 Manor Drive
	Suite 205
	Mechanicsburg, PA 17055
Survey Date:	February 7, 2013

**Report Date:** 

April 4, 2013



### **Table of Contents**

Section 1.0 Executive Summary
Section 2.0 Operation Description & Observations
Section 3.0 Lead Testing
Section 4.0 Lighting
Section 5.0 Indoor Air Quality
Section 6.0 Suspect Asbestos Containing Building Materials
Section 7.0 Equipment 11
Section 8.0 Limitations
Appendix A. Laboratory Analysis Report
Appendix B. Photographs
Appendix C. Floor Plan
Appendix D. References

#### Section 1.0 Executive Summary

An industrial hygiene survey was conducted on February 7, 2013, at the Freehold Readiness Center located at 635 State Highway Freehold, NJ 07728. The survey was performed by Mr Non-Responsive.

- 1. Lead bulk, surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot  $(ug/ft^2)$  in one location. Cleaning procedures should be improved and remedial action should be taken to maintain lead levels below 200 ug/ft<sup>2</sup>. See Section 3.0 for detailed findings.
- 2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in two locations tested. See Section 4.0 for detailed findings.
- 3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.
  - a. Relative humidity levels were less than the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in indoor locations evaluated.
  - b. Carbon dioxide, carbon monoxide, and temperature levels measured were within recommended guidelines.
  - c. A military vehicle was observed idling in the Garage Area without proper ventilation. This could result in the release and buildup of potentially hazardous gases in the area (e.g., carbon monoxide).

See Section 5.0 for detailed findings.

4. Suspected asbestos containing materials were found to be intact and in good condition. See Section 6.0 for detailed findings.

#### **Section 2.0 Operation Description & Observations**

The Freehold Readiness Center is mainly an administrative facility with a drill hall, offices, classroom, and converted firing range/storage areas, and two garages/storage areas. There were approximately 2 full-time employees stationed at this facility at the time of this survey.

The exact age of the building was unknown however it is believed to have been built in the 1950's. The building is one story with a brick exterior. The interior walls are concrete block, metal or brick, and drywall. The floors are concrete or vinyl floor tile.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consisted of an oil-fired hot water furnace for heat and window units for air conditioning.

The area of the building that was once a firing range has been converted into a storage area. No firing range components remain. It was reported that lead abatement had occurred in this area in 2011.

There is no child-care facility in the building.

Overall housekeeping practices were adequate.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

Sgt. Non-Responsive and Sgt. Non-Responsive from the Army National Guard Safety office were onsite during the survey.

#### Section 3.0 Lead Testing

Due to the age of the building there is a potential for lead based paint to be present. Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Sample #	# Location		Air Ug/m <sup>3</sup>	Surface ug/ft <sup>2</sup>
1	Drill Hall	*	<5.5	*
2	Converted Firing Range/Storage Area	*	<5.4	*
3	Drill Hall – Floor	*	*	<110
4	Drill Hall – Window Sill	*	*	<110
5	Drill Hall – Top of Candy Machine	*	*	<110
6	Drill Hall – Floor by Entrance to Converted Firing Range/Storage Area	*	*	<110
7	Converted Firing Range/Storage – Floor	*	*	<110
8	Converted Firing Range/Storage – Top of Wall Locker	*	*	<110
9	Converted Firing Range/Storage – Top of Metal Storage Rack	*	*	<110
10	Kitchen – Top of Refrigerator	*	*	<110
11	Kitchen – Top of Metal Storage Rack	*	*	<110
12	Vehicle Storage Area/Storage Area – Floor	*	*	170
13	Garage/Storage Area - Floor	*	*	600
14	Classroom – Top of Desk	*	*	<110
15	Orderly Office – Top of Cubical Storage Bin	*	*	<110
16	Recruiting Office – Top of Book Shelf	*	*	<110
17	Second Platoon Office – Top of File Cabinet	*	*	120
18	Blank - Wipe	*	*	<12 ug
19	Blank - Air	*	<3 ug	*
20	Bulk Paint Chip – Garage/Storage Area Wall	0.026	*	*
-	Criteria	0.5	50	200
Table Note				

#### Lead Testing Results Summary

Table Notes:

- 1. Bolded results exceed listed criteria
- 2. **ppm** = parts per million
- 3.  $ug/ft^2$  = micrograms per square foot
- 4.  $ug/m^3$  = micrograms per cubic meter
- 5. **ug** = micrograms

Sources:

- 1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
- 2. Occupational Safety and Health Administration (OSHA) 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot  $(ug/ft^2)$  as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft<sup>2</sup> on floors and 250 ug/ft<sup>2</sup> on windowsills should be observed. There is no child care provided at this facility.

Lead bulk, surface and air samples were collected. The following is a summary of the sample results from this survey.

Surface levels of lead were above the recommended guideline of 200 ug/ft<sup>2</sup> in the Garage/Storage Area – Floor. All other locations were less than 200 ug/ft<sup>2</sup>.

Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of  $200 \text{ ug/ft}^2$ .

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m<sup>3</sup>).
- Paint was observed to be peeling in the garage/storage area wall. A bulk sample were collected and determined to contain 0.026% Pb. This is less than the Environmental Protection Agency (EPA) definition of lead based paint = 0.5%. However, all areas of peeling paint should be repaired.

#### **Section 4.0 Lighting**

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to American National Standards Institute (ANSI)/Illuminating Engineering Society of North America (IESNA) RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Drill Hall	69.3	10	Yes
Converted Firing	0.3	30	No
Range/Storage Area			
Recruiting Office	81.4	30-50	Yes
Weight Room	93.8	30	Yes
FRG Office	35.1	30-50	Yes
Kitchen	68.1	50	Yes
Office 24-A	53.7	30-50	Yes
Counseling Office	35.7	30-50	Yes
Orderly Office	72.2	30-50	Yes
Women's Bathroom	36.1	5	Yes
Office 24-C	71.1	30-50	Yes
Men's Bathroom	49.2	5	Yes
Second Platoon Office	92.8	30-50	Yes
Classroom	0.9	30-50	No
Vehicle Storage/Storage Area	13	10	Yes
Garage/Storage Area	35.4	10	Yes

#### Light Survey Assessment Summary

Table Notes:

1. FC = Foot Candles

2. Bolded results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level measured did not meet the minimum recommended guideline in the classroom and converted firing range/storage area. Increase lighting in these areas.

#### Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 8554 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Office 24-A	68.7	16	558	0
Orderly Office	69.3	16	568	0
Vehicle Storage/Storage Area	55.9	17.6	549	2.4
Garage	52.7	21.9	324	0
Outdoors	41.0	23.6	305	0
Criteria	68-79	30-60	<1,005	<9

IAQ Assessment Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3. (%) = percent relative humidity
- 4.  $\mathbf{F} =$ degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

 Relative humidity levels were less than the recommended guideline of 30-60%. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels measured did not exceed the recommended ceiling of 1,005 parts per million (ppm). This indicates that outdoor air ventilation is adequate in all areas.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm.
- Temperature levels measured were within the recommended guideline of 68-79 degrees F.
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The only notable observation was the presence of a military truck idling in the Garage Area. The garage was used only for the storage of vehicles, no maintenance was performed in the garage. There is no overhead vehicle exhaust system present in this area. It was reported that the vehicles are routinely started and left to idle for an hour. Vehicles should not be permitted to idle in this area due to the release of potentially hazardous chemicals (e.g., carbon monoxide) in the vehicle exhaust. If necessary, install an overhead vehicle exhaust ventilation system in this area.

#### **Section 6.0 Suspect Asbestos Containing Building Materials**

Based on the age of the building (e.g., constructed in 1950'S) asbestos-containing materials (ACM) could be present in the facility. The following suspect asbestos-containing material was observed:

- 1. 9" x 9" vinyl floor tile located in the hallway storage closet and the FRG office. Approximately 180 ft<sup>2</sup> was observed.
- 2. Inaccessible areas such as behind walls or crawlspaces were not inspected. Other ACM could be present in these areas.

All ACM was observed to be intact and in good condition.

#### **Section 7.0 Equipment**

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	<b>Calibration Date</b>	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647610	2/7/2013	2.48 LPM
SKC Air Sampling Pump	647631	2/7/2013	2.50 LPM

#### **Section 8.0 Limitations**

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

### Appendix A. Laboratory Analysis Report

## AMA Analytical Services, Inc.

National Guard Bureau

State Military Reservation Havre de Grace, Maryland 21078

301-IH Old Bay Lane, Attn: ARNG-CJG-P,

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Freehold-RC

Not Provided

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#### CERTIFICATE OF ANALYSIS

A Specialized Environmental Laboratory

Job Name:

Job Location:

Job Number:

P.O. Number:

ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD 8 ENVIRONMENTAL MICROBIOLOGY ISONEC 17025-2005 www.aihaacoreditedlabs.org LAB #100470 Chain Of Custody: 515135 2/12/2013 Date Submitted:

**Person Submitting:** Date Analyzed:

2/18/2013

Report Date: 2/18/2013

#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AIHA LAP, LLC

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		oorting Jimit	Total ug	Final Res	ult	Comments
13037345	1	Flame	Air	550	N/A	5.5	ug/m³	<3	<5.5	ug/m³	
13037346	2	Flame	Air	552	N/A	5.4	ug/m³	<3	<5.4	ug/m³	
13037347	3	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037348	4	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/fl²	
13037349	5	Flame	Wipe	***	0.108	110	ug/ft <sup>2</sup>	<12	<110	ug/ft²	
13037350	6	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037351	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037352	8	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037353	9	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
13037354	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037355	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037356	12	Flame	Wipe	****	0.108	110	ug/ft²	18	170	ug/ft²	
13037357	13	Flame	Wipe	****	0.108	110	ug/fl <sup>2</sup>	65	600	ug/ft²	
13037358	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037359	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037360	16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037361	17	Flame	Wipe	****	0.108	110	ug/ft²	13	120	ug/ft²	
13037362	18	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13037363	19	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	

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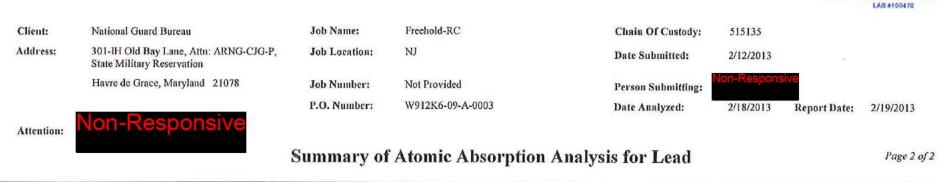
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NDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17025 2005 www.aibascoredicatiabs.org



AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	2 ANA 2010 2 2	orting imit	Total ug	Final Resu	lt Comments
13037364	20	Flame	Paint Chip	****	N/A	0.0075	%Pb		0.026	%Pb
Analysis Method Fo N/A = Not Applicab %Pb = percent lead Note: All samples v Note: All results ha	r Flame: Air, Wipes, I or Furnace: Air, Wipe le mg/Kg = part d on a dry weight bas were received in good ve two significant digi idered when interpret	es, Paints, and So ts per million (ppm is ug = microg I condition unless its. Any additional	il/Solids: EPA 60 ) on a dry weight rams ug/L = otherwise noted.	00/R-93/200(M)-7	7010; Water: SM parts per million	A-3113B		ed with these		of quality control samples
Final results for air	s are not corrected fo and wipe samples are n nor verified by this l	e based on client	S		Non-	Respo	nsive			Non-Responsi
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## Appendix B. Photographs



Exterior of the facility



Drill Hall



Converted firing range/storage area

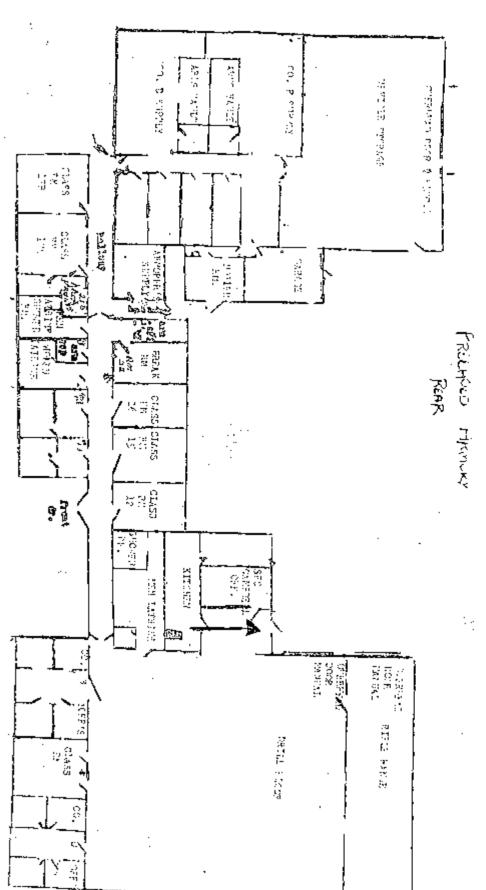


Garage/Storage area peeling paint on walls



Storage closet 9"X9" floor tile

### **Appendix C. Floor Plan**



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#### **Appendix D. References**

- 1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.
- 2. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices, 2012 Edition.
- 3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27<sup>th</sup> Edition.
- 4. American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.
- 5. American National Standards Institute (ANSI)/Illuminating Engineering Society of North America (IESNA) RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America.
- 6. ANSI/IESNA RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America.
- 7. National Emission Standard Hazardous Air Pollutants (NESHAP) The standards for asbestos are contained in 40 CFR 61.140 through 61.157.
- 8. National Ambient Air Quality Standards (NAAQS) National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.
- 9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].
- 10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).
- 11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.
- 12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.
- 13. ANSSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

#### **Prepared For:**

National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 - IH Old Bay Lane Havre De Grace, Maryland 21078

#### **Prepared By:**

**URS** Corporation 5 Industrial Way Salem, New Jersey 03079

FINAL INDUSTRIAL HYGIENE SURVEY REPORT HACKETTSTOWN ARMORY HACKETTSTOWN, NEW JERSEY

June 2006 PN: 39741509





Project Manager

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- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories
- Appendix H Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

#### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
	California da California de California de California de California de California de California de California de	······
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4- 3)	RAC 3
Lighting		
On the day of the survey, the illumination in the administrative offices and foyer was inadequate in most circumstances.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from the facility in amounts greater than 200 µg/ft <sup>2</sup>	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Asbestos	· · ·	
A site-specific asbestos operations and maintenance plan was not available.	Maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Mold		
Water damaged was observed throughout. Mold growth could become an issue if left unattended.	Determine and repair source of water. Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Hackettstown Armory located at 901 Willow Grove Street in Hackettstown, New Jersey 07840. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 25, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Hackettstown, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Armore Non-Responsive of the New Jersey ARNG was Mr. Non-Responsive site contact for this survey.

This armory is a one story brick building, with an attached drill hall that is constructed primarily of brick and mortar. This facility is built on a concrete slab. with a pitched asphalt roof. The building was constructed in the 1960's with an addition constructed in 1987. A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A. The risk assessment codes associated with this project are contained in Table 1.

#### 2.0 ADMINISTRATIVE AREA

#### 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Some computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuels working at the workstations. If more than one person is using that station, then adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey.

Paints, lubricants, alcohol, brake fluid and antifreeze were located in the flammable lockers with hazard communication data.

#### 2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in boiler room, drill floor, firing range orderly room, armorer's room and outside. These readings were all made using a TSI Q-Trak <sup>™</sup> (Model 8551). No indoor air quality complaints were received during this survey.

#### 2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 34-45.1 % throughout the various building areas with an average of 41.36%. The average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

#### 2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of 453 to a spike of 958 parts per million (ppm), with an average of 641.8 ppm. The outside reading was 535 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants. ASHRAE recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 535 ppm on the day of the survey, the ASHRAE limit would be 1,235 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0.1 to 2.3 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

#### 2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting – Table B-1).

Location	Function	Measured Lighting	Recommended Lighting
		Footcandles	Footcandles
Drill Floor	Tool IIInd	27	.30
Foyer/ Hall	Hall	7	30
Orderly Room	Office	18	50
Room 12	Office	73	50
Room 13	Office	54	50
Room 14	Office	81	50
Room 11	Office	66	50
Retention Center	Office	34	50
Armorer's Office	Office	70	50
Recruiter's Office	( Office	30	50
Classroom 1	Classroom	85	50

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Lighting levels were below the recommended levels in approximately half of the offices.

### 2.2.5 Lead

One paint chip was collected in the administrative area, where peeling paint was observed. Analytical results show that the peeling paint contains 0.017% lead indicating that it is not lead-based. Lead paint levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)).

Wipe testing for lead was conducted in the administration area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Table 2-2 Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Room 11 (X-O) – Floor	0325-11	0.108	11	200
Retention Room – Window Sill	0325-12	0.108	16	200

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Classroom (Room 2) - Floor	0325-13	0.108	24	200
Blank	0325-14	N/A	<0.3 μg	N/A

# Table 2-2 (Continued) Levels of Lead Dust Found in the Former Firing Range

#### 2.3 Ventilation System Evaluation

Not applicable to this operation

#### 2.4 Noise Measurements

Not applicable to this operation.

### 2.5 Personal Protective Equipment

Not applicable to this operation.

#### 2.6 Interpretation of Results

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

<u>ERGONOMICS</u>: The minor ergonomic issues with the desks, chairs and monitors should be corrected by fitting the workplace to the workers.

<u>LIGHTING</u>: On the day of the survey the illumination in the administrative area was inadequate in most offices and generally throughout the facility. URS recommends increasing the area lighting or supplement task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>ASBESTOS:</u> All suspect asbestos-containing material was observed to be in good condition with no damage.

<u>HAZARD COMMUNICATION:</u> Listed containers of paints and thinners were observed in the flammable cabinets with MSDS forms located on site in the desktop guide.

#### 3.0 FORMER INDOOR FIRING RANGE

#### 3.1 Operation Description

The site has dismantled the former indoor firing range and the space is now used for storage.

#### 3.2 Chemical and Physical Agents Sampled

#### 3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped	Result (μg/ft²)	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Firing Range-Floor Center	0325-01	0.108	490	200
Firing Range-Bullet Trap	0325-02	0.108	18000	200
Firing Range –Firing End	0325-07	0.108	98	200
Firing Range – Angle Iron Support	0325-08	0.108	7100	200
Firing Range – Firing End – Top of Heater	0325-09	0.108	25	200
Blank	0325-06	N/A	7.8 μg	N/A

Table 3-1 Levels of Lead Dust Found in the Facility

### 3.3 Ventilation System Evaluation

Not Applicable to this operation.

#### 3.4 Noise Measurements

Not applicable to this operation.

#### 3.5 Personal Protective Equipment

Not applicable to this operation.

#### 3.6 Interpretation of Results

<u>LEAD</u>: Lead sampling was performed in this area. Results indicated elevated levels of lead in dust on the floor, bullet trap angle iron support. The former firing range should be cleaned by an appropriately trained technician. The NGB Region North Industrial Hygiene Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Appendix H contains guidelines for the clean-up and rehabilitation of former firing ranges.

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## 4.0 DRILL HALL

## 4.1 Operation Description

Located at the east end of the building the drill hall is an open area used for storage and assembly of personnel.

# 4.2 Chemical and Physical Agents Sampled

## 4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes<sup>™</sup>, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Floor-Floor Southwest	0325-03	0.108	4.3	200
Drill Floor-Floor Center	0325-04	0.108	1 <b>1</b>	200
Drill Floor-Locker Top Near Exit	0325-05	0.108	14	200
Drill Floor – Outside Range - Floor	0325-10	0.108	<70	200
Blank	0325-06	N/A	7.8 μg	N/A

Table 4-1 Levels of Lead Dust Found in the Drill Hall

Sample numbers and locations can be found on the site map in Appendix A.

## 4.3 Ventilation System Evaluation

Not applicable to this operation.

## 4.4 Noise Measurements

Not applicable to this operation.

## 4.5 Personal Protective Equipment

Not applicable to this operation.

## 4.6 Interpretation of Results

<u>LEAD:</u> Wipe sample for lead were all within the NGB acceptable limit of 200 micrograms per square foot (See Appendix G). No further action is required at this time.

#### 5.0 BOILER ROOM

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

#### 5.2 Chemical and Physical Agents Sampled

No chemical or physical agents were sampled in this area.

#### 5.3 Ventilation System Evaluation

Not applicable to this operation.

#### 5.4 Noise Measurements

Not applicable to this operation.

#### 5.5 Personal Protective Equipment

Not applicable to this operation.

#### 5.6 Interpretation of Results

Not applicable to this operation.

## 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

## 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

## 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

## 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

## 6.4 Hazard Communication

A program was found regarding hazard communication. Training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

## 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

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## 7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U.S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

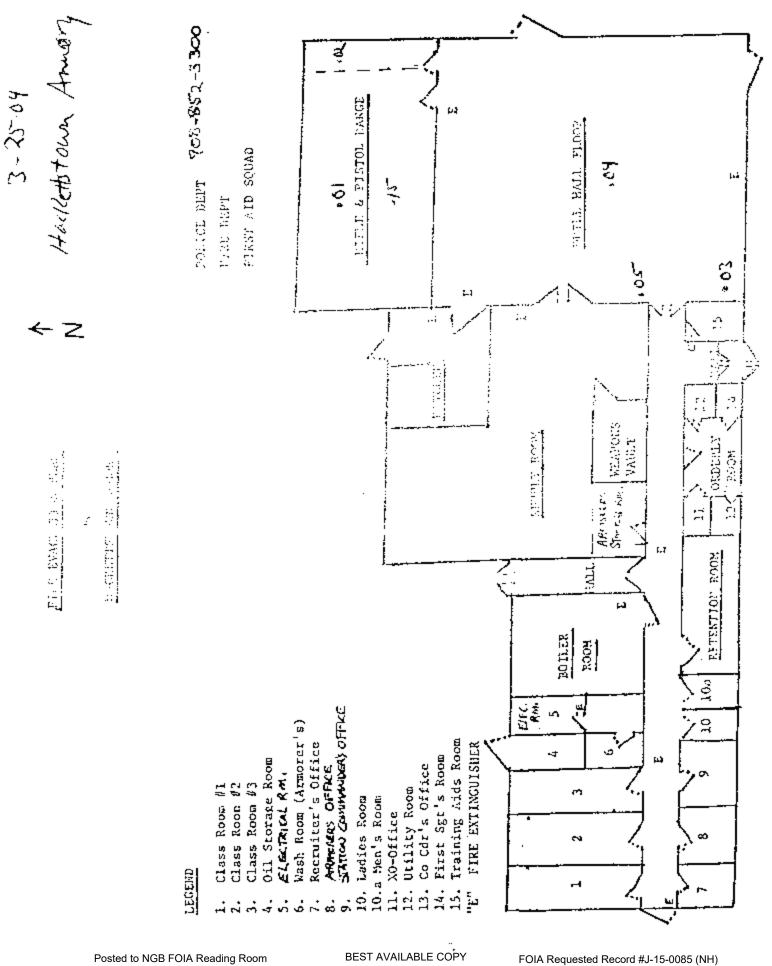
Standard for General Industry: 29 CFR 1910

APPENDIX A

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# ARMORY DRAWING

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May, 2018

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APPENDIX B

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PERSONNEL LIST

## PERSONEL LIST HACKETTSTOWN ARMORY

Name	Rank
-Non-Responsive n Commander)	SFC
Supply Sgt.)	SGT
(Recruiter)	SSG
egional Supervisor)	CIV
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APPENDIX C

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HAZARDOUS MATERIALS LIST

GENERAL PURPOSE FORM (AMCCOMP 5-2)

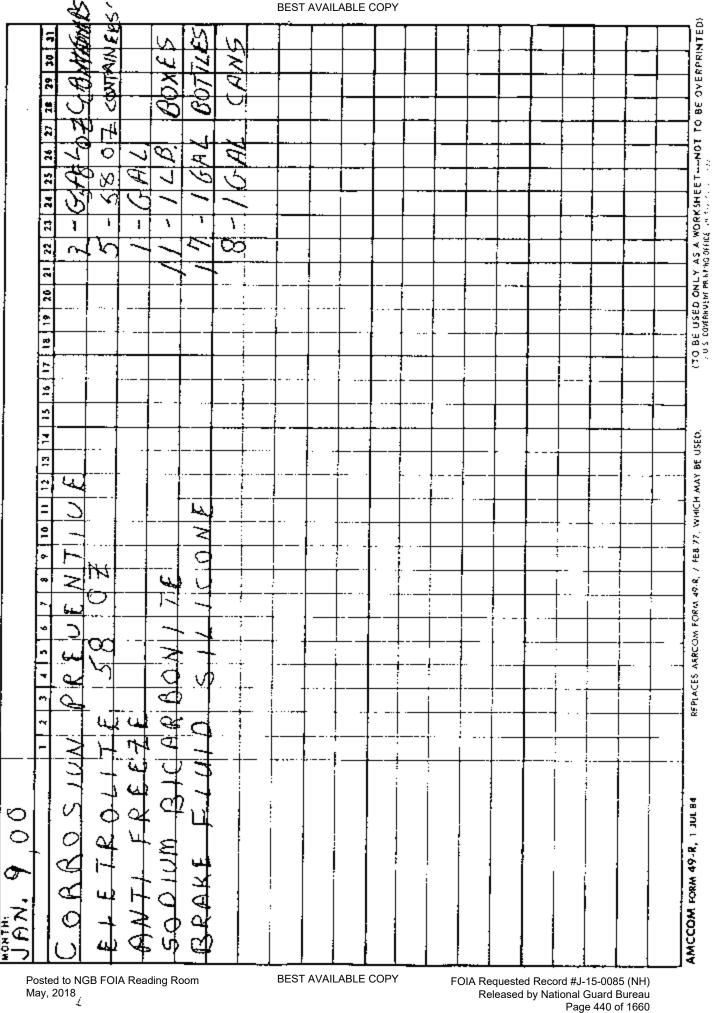
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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 441 of 1660 APPENDIX D

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# ANALYTICAL RESULTS

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# APPENDIX E

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# TRAINING CERTIFICATES

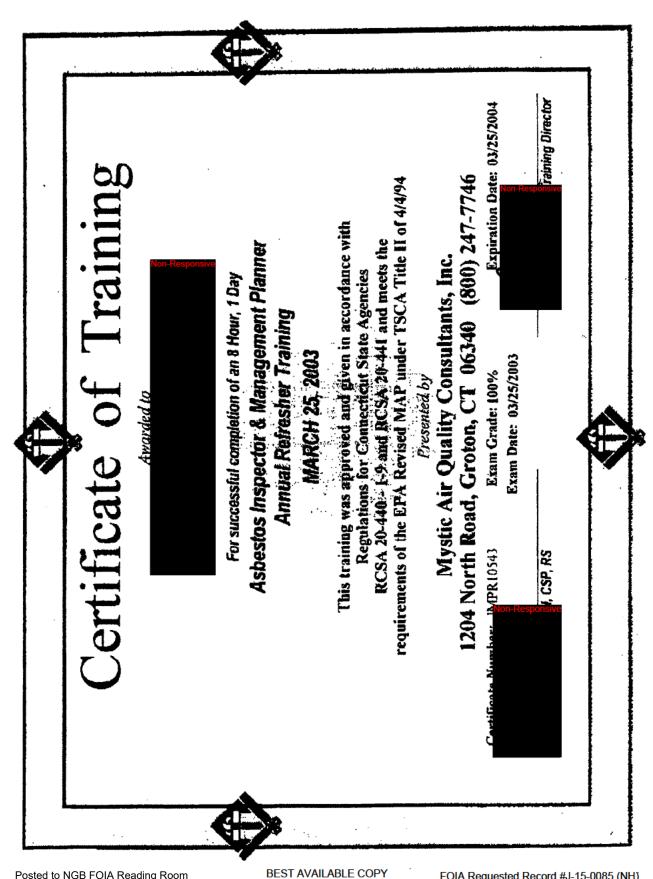
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Posted to NGB FOIA Reading Room May, 2018

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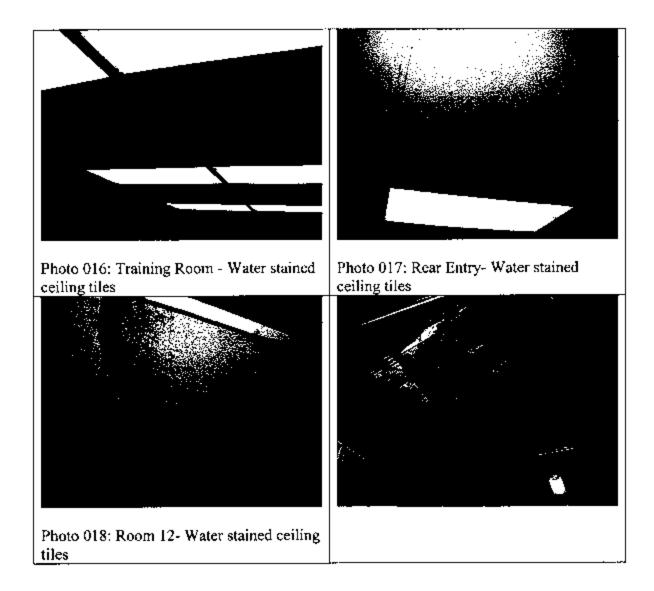
FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 446 of 1660 i



APPENDIX F

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**PHOTOGRAPHS** 



APPENDIX G

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# **RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES**

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\Box g/ft^2$ ). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\Box g/ft^2$  in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\pm$ g/ft<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure. 2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

## APPENDIX H

## POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARO INDOOR FIRING RANGES

#### ADDENDUM

#### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Paragraph

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Policy and Procedures	4
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Wipe Sample Media	7
Wipe Sampling Protocol	8
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Conversion of Indoor Firing Ranges	18
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#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipo Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor fitting ranges.

#### 2. References

Related publications are listed befow.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program)

- b. AR 11-34 (The Army Respiratory Protection Program).
- c. AR 40-5 (Preventive Medicine)

d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).

e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards.

f OSHA Technical Manual, Edition VII.

g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Induor Firing Ranges).

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3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this publication are listed in the glossary,

#### 4. Policy and Procedures

Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following -

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual,<sup>50</sup> Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

 Equipment/Items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items slored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

#### 5. Goal

To ensure every indoor firing range is free of lead dust, and to reduce the number of unsale ARNG induor firing ranges.

#### 6. Background

The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disordors, delays in neurological and physical development, cognitive and behavioral changes, and hypertension Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

#### 7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At teast one flot blank filter must be sobmitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of --

(a) Ghost Wipes \*\*\* (PREFERRED METHOD)- Pre-moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters with or without the cassettes.

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(2) Unacceptable Media consists of but is not limited to-

(a) Cotton balls

(b) Baby wipes or wel wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol

See Appendix A.

#### 9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span <sup>ref</sup> has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wipleg will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mopheads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substration and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

 Wood floors should receive a coat of deck enamel or urothane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from bahind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the buttet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) lest for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the builtet trap and ending behind the firing time.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

 A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

in. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

## 10. Cleaning Slored Contaminated Equipment

 Equipment containinated (sample result is higher than 200 micrograms/so ft) with lead dust must be decontaminated before it is removed from the range

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b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

#### 11. Contaminated Sand and Lead Waste

Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

#### 12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

- (1) A detailed work and modical history
- (2) A thorough physical examination
- (3) A respirator use evaluation
- (4) A blood pressure measurement
- (5) Blood sample analysis to include:
  - (a) A baseline blood lead level
  - (b) A complete blood count (CBC)
  - (c) Blood urea nitrogen (BUN)
- (6) Sorum creatinine
- (7) Zine protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Alt Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnol involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

#### 13. Worker Education

OSMA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye initiations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plas 30 years." The employer will assure that each employee is informed of the following:

- a. The content of the standard and its appendices
- b. The specific nature of operations that could result in exposure to lead above the action level.
- c. The purpose, proper selection, filling, use and limitations of respirators
- d. The purpose and a description of medical surveillance program
- e. Eating and drinking are prohibited in lead contaminated areas.
- f. Smoking and smoking materials will not be permitted in contaminated areas

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- g. Employees must wash their hands and other exposed skin whenever they feave the work area.
- h. The engineering controls and work practices associated with the individual's job assignment.
- i. The contents of any compliance plan in effect.

#### 14. Personal Protective Equipment

For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralts with hood and shoe covers or disposable Tyvok \*\* full body suit.

(2) Disposable rubber gloves; and disposable shoe coverlets (If necessary).

(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to omployees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protoctive clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or laundors protective clothing or equipment of the potentially harmful effects of exposure to lead.

#### 15. Housekeeping

This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating property and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate toaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be wern at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

#### 16. Maintenance

The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

 Inspect the ventitation system fan for condition of belts to ensure that they are not frayed or stipping.

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b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

I. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved rospirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and lurned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

 Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

#### 18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Foderal, State, and local regulations. To onsure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

 Cover all openings of any component previously docontaminated prior to start of interior decontamination of the firing range.

#### 19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Artington, VA 22204-1382

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#### APPENDIX A GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 if multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, lear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman<sup>™</sup> filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform from pressure while wiping the area inside the template.

A-5 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

#### APPENDIX B

#### SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, coiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been teast disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

#### APPENDIX C

#### INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq fl or LESS.

If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BE(TWEEN 201) and 200,000 micrograms/sq ft

Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline

C-3 Over 200,000 m/crograms/se ff

Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

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#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD (NDOOR FIRING RANGES)

#### APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

#### APPENDIX D

#### INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less

If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

#### APPENDIX E

#### RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a fist of vendors, which supply the media and containers necessary to collect an and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) lifter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (B2) and general area (GA) air samples.

Order From Catalog Number

- a, Millipore Corp. MAWP-037-A0 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380
- b. Gelman Sciences 64678 (GN-4) 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520
- c. Supelco, Inc. 2-3368M
   Superco Park
   Bellofonte, PA 16823
   800-247-6628
   800-359-3041

E-3.37 mm MCE Filter with pad, no cassetto included, for lead surface wipe samples.

Order From Catalog Number

 a. Supelcoline 2-33811M SupelcolPark Bellefonte, PA 16823

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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 461 of 1660

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INOOOR FIRING RANGES

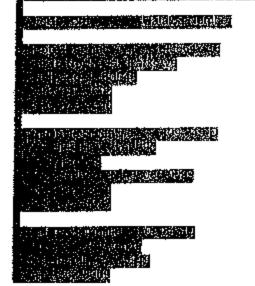
#### APPENDIX E (Continued)

800-247-6628 800-359-3041

b. Millipore Corp. AAWP-037-00 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380

c. SKC, inc. 225-5
 334 Valley View Rd.
 Eighty Four, PA 15330
 412-941-9701
 800-752-8472

## 



E-5, Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
 P.O. Box 117
 Rockford, It. 61105
 815–966-0747
 800–874-3723

 b. Altech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Waukegap Rd. Deerfield, IL 60015 312-948-8600

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### APPENDIX & (Continued)

800-255-8324

E-6, Ghost Wipes™.

Order From Catalog Number

Environmental Express SC4200 490 Wando Park Bivd. MI. Pleasant, SC 29464 1-800-343-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

Environmental Express SC499 490 Wando Park Blvd. ML Pleasant, SC 29464 1-800-343-5319

E-8. Plastic ziptock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately \$1.25. Deionized water can be obtained at local and state water labs or a hospital.

#### APPENDIX F EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

75 u <u>q</u>	92	29 cm²		
100 cm²		1 sq ft		
<u>75 x 929</u> 100	=	<u>69675</u> 100	=	696.75ug/sq ft

ug - Microgram

Cm2 - Centimeters squared

Sq ft - Square fool

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

## APPENDIX G SURFACE WIPE SAMPLING SHEET

Raturn Address     Point of Con       Sampled Facility     City       Description of Operation     Date Collecte       Analysis Desired	Location (bidg/area)
Sampled Facility City State Description of Operation Date Collocte Analysis Desired Sampling Data	Location (bidg/area)
Description of Operation Date Collocte Analysis Desired Sampling Data	
Analysis Desired	ed Date Shipped
Sampling Data	···· ·····
	··· ·
ab Uso Only Sample # Results	
	Remarks
····	··
· · · · · · · · · · · · · · · · ·	
· · · · · · ·_	· -
]	
omments to Lab:	

40

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### APPENDIX H AIR SAMPLING SHEET

[		Industrial H	ygiene Aj	r San	ple Shee	t	
Return Ad	dress		Point of i	Contact	(name/phone	i #)	
			Samples	Collect	ed By		·
Sampled F	acility	City	State	Cocat	on (bidg/area	<i></i>	
Description	of Operation	Persons Exposed	Hrs/Day		ithod of Colle	ction	
'Analysis D	esirod			<b>_</b>			
Sampling t	Data					·····	
Sample No.	]						
Риктр No.							В
Time On					1		L
Time Off							A
Total Time ( (min)							N
Flow Rate (LPM)				<b>n- •</b> .			ĸ
Volums (liters)							
GA/BZ							
Employee Name10				<i>,</i>			
Laboratory : No.							
Calibration				·	····		
Pump No.	Callo Pre-Use	ration (LPM) Post-Use	Rotamotor	Sotting		Date	
	· · · · · · · · · · · · · · · · · · ·						······································
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		····		·	·····		
				· · · · · ·			
Name of Callb	l raior	Calibration Date	Pump Manu	dacturer	]		
Commonts ia l	Lab.	!	ł			-	··· •

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX ( ABBREVIATIONS AND TERMS

#### Section I Abbreviations

ARNG Army National Guard

**BUN** Blood urea nitrogen

**BZ** Breathing zone

CBC Complete blood count

CFR Code of Federal Regulations

*em* Centimeter

DHEW Department of Health, Education and Wolfare

**EPA** Environmental Protection Agency

**GA** .General area

OMPF Official Military Personnel File

OPF Official Personnel File

OSHA Occupational Safety and Health Administration

TOLP Toxic Characteristic Leaching Procedures

ug/sq\_ft Micrograms per square foot

#### NGB-AVS-SG

SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### APPENDIX I (Continued)

#### Section II Terms

#### HEPA

Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

#### Leed-Contaminated Range

It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

#### Wipe Sample

The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

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1215 Manor Drive, Suite 205 Mechanicsburg, PA 17055 Phone: 717.590.7031 Fax: 717.590.7936 www.complianceplace.com

# **Industrial Hygiene Survey Report**

National Guard Facility Hackettstown Readiness Center

Prepared For:	National Guard Bureau Region North IH 301-IH Old Bay Lane Havre de Grace, MD 21078
Survey Location:	Hackettstown Readiness Center 901 Willow Grove Street Hackettstown, NJ, 07840-5099
Prepared By:	Compliance Management International, Inc. 1215 Manor Drive Suite 205 Mechanicsburg, PA 17055
Survey Date:	March 14, 2013

**Report Date:** 

April 4, 2013



Senior Industrial Hygienist

## **Table of Contents**

Section 1.0 Executive Summary
Section 2.0 Operation Description & Observations
Section 3.0 Lead Testing
Section 4.0 Lighting7
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Section 6.0 Suspect Asbestos Containing Building Materials
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Section 8.0 Limitations
Appendix A. Laboratory Analysis Report
Appendix B. Photographs
Appendix C. Floor Plan
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#### Section 1.0 Executive Summary

An industrial hygiene survey was conducted on March 14, 2013, at the Hackettstown Readiness Center located at 901 Willow Grove Street, Hackettstown NJ 07840. The survey was performed by Mr. Non-Responsive.

- 1. Lead surface and air samples were collected. Surface levels of lead were below the NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" benchmark of 200 micrograms per square foot (ug/ft<sup>2</sup>) in all locations. Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m<sup>3</sup>). See Section 3.0 for detailed findings.
- 2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in five locations. See Section 4.0 for detailed findings.
- 3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.
  - a. Temperature levels met the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) recommended guideline of 68-79 degrees F.
  - b. The relative humidity level was below the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in one location.
  - c. CO levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 ppm.
  - d. CO<sub>2</sub> levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

See Section 5.0 for detailed sampling results

- 4. Water-stained ceiling tiles were observed in the facility. See Section 5.0 for detailed findings.
- 5. No suspect asbestos containing materials (ACM) were identified in this survey. See Section 6.0 for detailed findings.

### **Section 2.0 Operation Description & Observations**

The Hackettstown Readiness Center is mainly an administrative facility with a drill hall, offices and classrooms, attached garage used for bulk storage, and a converted firing range area used for storage. There were approximately 3 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1980s. It is a one-story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, carpet, and 9" x 9" and 12" x 12" floor tile.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of a fuel-fired forced hot water furnace for heat. There is one air conditioning (A/C) unit.

There is no child-care facility in the building.

Overall housekeeping practices were good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

### Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Sample #	Location	Air ug/m <sup>3</sup>	Surface ug/ft <sup>2</sup>
1	Office 125	<5.7	*
2	Drill Hall	<5.6	*
3	Blank	<3	*
4	Drill Hall Floor	*	<110
5	Drill Hall Table	*	<110
6	Kitchen Mixer	*	<110
7	Converted Firing Range Floor	*	120
8	Converted Firing Range Floor Outside Entrance	*	<110
9	Converted Firing Range Contents	*	<110
10	Office 125 Supply Diffuser	*	<110
11	Exercise Room Window Sill	*	<110
12	Classroom 118	*	<110
13	Room 128 Cabinet	*	<110
14	Office 7	*	<110
15	Short Hall Heater	*	<110
-	Criteria	50	200

#### Lead Testing Results Summary

Table Notes:

- 1. Bolded results exceed listed criteria
- 2. **ppm** = parts per million
- 3.  $ug/ft^2$  = micrograms per square foot
- 4.  $ug/m^3$  = micrograms per cubic meter
- 5. **ug** = micrograms

Sources:

- 1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
- 2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot  $(ug/ft^2)$  as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft<sup>2</sup> on floors and 250 ug/ft<sup>2</sup> on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were below the recommended guideline of 200 ug/ft<sup>2</sup> in all locations sampled.
- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m<sup>3</sup>).

### **Section 4.0 Lighting**

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Drill hall	30.1	10	Yes
Converted Firing Range			
Storage Bulk	21.6	10	Yes
Food Services Prep	53.3	50	Yes
Food Services Storage	28.0	5	Yes
Lobby	32.0	10	Yes
Corridor Main	39.7	5	Yes
Storage Room Bulk	33.2	10	Yes
Corridor Short	17.4	5	Yes
Boiler Room	8.5	30	No
Exercise Room	26.0	30	No
Electrical Room	36.2	30	Yes
Men's Toilet	33.8	5	Yes
Classroom 118	107.7	30-50	Yes
Women's Toilet	38.9	5	Yes
Office 128	68.0	30-50	Yes
Office 132	39.1	30	Yes
Office 7	31.7	30-50	Yes
Conference 125 Meeting	29.0	30	Yes
Library	27.5	30-50	No
Supply Vault	13.6	30	No
Storage Garage Bulk	7.2	10	No

#### Light Survey Assessment Summary

Table Notes:

- 1. FC = Foot Candles
- 2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the Boiler Room, Exercise Room, Library, Supply Vault, and Garage areas. Lighting should be improved in these areas.

### Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	28.0	54.7	388	0.0
Conference 125	68.1	23.7	495	0.0
Criteria	68-79	30-60	<1,088	<9

#### IAQ Assessment Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3. (%) = percent relative humidity
- 4.  $^{\circ}\mathbf{F} = \text{degrees Fahrenheit}$

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in occupied areas.
- Relative humidity levels were below the recommended guidelines in one sampled area. Relative humidity should be maintained at 30-60%.
- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level. For this survey, carbon dioxide levels did not exceed the recommended ceiling of 1,088 ppm. This is an indication that outdoor air ventilation is adequate.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observation were noted:
  - A few water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

### **Section 6.0 Suspect Asbestos Containing Building Materials**

Based on the age of the building (built in the 1980's) it is unlikely that asbestos containing materials are present in the facility. However, at the time of this survey CMI personnel did note suspect ACM in the following areas:

- 1. Boiler breeching in the Boiler Room (approximately 200 square feet). The material was intact and in good condition, therefore not sampled.
- 2. 9"x9" floor tiles in Corridors, Exercise Room, and Offices (1,000 to 2,000 square feet). The material was intact and in good condition, therefore not sampled.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

### **Section 7.0 Equipment**

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	3/14/13	2.49 LPM
SKC Air Sampling Pump	647610	3/14/13	2.53 LPM

#### **Section 8.0 Limitations**

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

## Appendix A. Laboratory Analysis Report

# AMA Analytical Services, Inc.

#### A Specialized Environmental Laboratory

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### **CERTIFICATE OF ANALYSIS**

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD **& ENVIRONMENTAL MICROBIOLOGY** ISOMEC 17025-2005 www.aibaaccreditedlabs.org

LAB #100470

Client:	National Guard Bureau	Job Name:	3KNJ	Chain Of Custody:	515352		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Hackettstown	Date Submitted:	3/18/2013		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	3/20/2013 Re	eport Date:	3/25/2013

Attention:

### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		oorting .imit	Total ug	Final Res	ult	Comments
13045348	1	Flame	Air	523	N/A	5.7	ug/m³	<3	<5.7	ug/m³	
13045349	2	Flame	Air	531	N/A	5.6	ug/m³	<3	<5.6	ug/m³	
13045350	3	Flame	Air Blank	0	N/A	3	ug/m <sup>3</sup>		<3	ug	
13045351	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045352	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045353	6	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045354	7	Flame	Wipe	****	0.108	110	ug/ft <sup>2</sup>	13	120	ug/fl²	
13045355	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045356	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045357	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045358	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
13045359	12	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045360	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045361	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045362	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# AMA Analytical Services, Inc.

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#### CERTIFICATE OF ANALYSIS

LAB #100470 3KNJ National Guard Bureau Job Name: Chain Of Custody: 515352 Client: 301-IH Old Bay Lane, Attn: ARNG-CJG-P, Hackettstown Address: Job Location: Date Submitted: 3/18/2013 State Military Reservation Havre de Grace, Maryland 21078 Job Number: Not Provided **Person Submitting:** P.O. Number: W912K6-09-A-0003 3/20/2013 Date Analyzed: Report Date: 3/25/2013 Attention:

### Summary of Atomic Absorption Analysis for Lead

Page 2 of 2

AIHA LAP, LLC ACCREDITED LABORATORY

NDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17025:2005 www.aihaaccreditedlabs.org

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments
nalysis Method F I/A = Not Applical %Pb = percent lea lote: All samples lote: All results ha	d on a dry weight bas were received in good ave two significant dig	es, Paints, and So ts per million (ppn sis ug = microg d condition unless its. Any additiona	il/Solids : EPA 6 n) on a dry weight rams ug/L otherwise noted.	00/R-93/200(M)-7	010; Water: SM-3 parts per million (p	3113B associa	ted with these	nalytical results of quality	control samples
ir and Wipe resul inal results for ai	sidered when interpre Its are not corrected for and wipe samples ar on nor verified by this	or any blank result re based on client	S		Non-	Responsi	ve		
	e considered prelimin ned by the Technical				Analys		Teo	hnical Manager	Responsive

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# Appendix B. Photographs



Hackettstown Armory Front



Converted Firing Range Storage



Suspect ACM Floor Tiles



Suspect ACM Boiler Breech Material

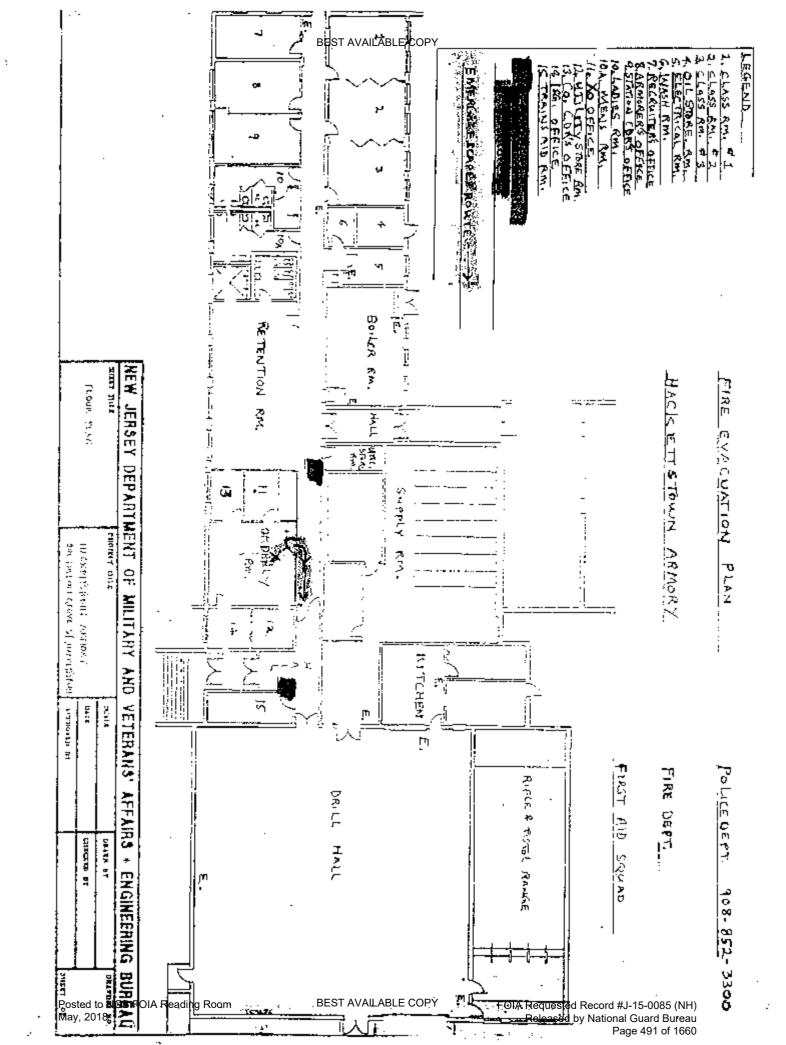


Water Stained Ceiling Tiles



Attached Parking/Storage Garage

# **Appendix C. Floor Plan**



### **Appendix D. References**

- 1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.
- 2. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices, 2011 Edition.
- 3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27<sup>th</sup> Edition.
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- 5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.
- 6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.
- 7. National Emission Standard Hazardous Air Pollutants (NESHAP) The standards for asbestos are contained in 40 CFR 61.140 through 61.157.
- 8. National Ambient Air Quality Standards (NAAQS) National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.
- 9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h) (3)].
- 10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).
- 11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.
- 12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.
- 13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

### **Prepared For:**

National Guard Bureau Army National Guard **Region North Industrial Hygiene Office** 301 - IH Old Bay Lane Havre De Grace, Maryland 21078

### **Prepared By:**

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FINAL INDUSTRIAL HYGIENE SURVEY REPORT JERSEY CITY ARMORY **678 MONTGOMERY STREET** JERSEY CITY, NEW JERSEY

March 2006 PN: 39741509







**Project Manager** 

Posted to NGB FOIA Reading Room May, 2018

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- APPENDIX B PERSONNEL LIST
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- APPENDIX D ANALYTICAL RESULTS
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- APPENDIX F PHOTOGRAPHS
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- APPENDIX H POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

## FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ughting On the day of the survey, the illuminance in the administrative area was inadequate in several offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04)	RAC 4
Lead was detected in wipe samples collected in the administrative areas, the drill hall, and the former firing range.	Personnel trained in accordance with the OSHA Lead Standard should clean the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Asbestos No site specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Mold Watermarks were observed on the ceiling tiles. Mold growth could become an issue if left unattended.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
<b>Ergonomic</b> Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3

#### 1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Armory located at 678 Montgomery Street in Jersey City, New Jersey 07306. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 7, 2004, Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Jersey City, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Mr. on-Responsive of the State of New Jersey was Ms. site contact for this survey.

An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

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#### 2.0 ADMINISTRATIVE AREA

#### 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs and armrests were in a fixed position and keyboards could not be adjusted in several locations including Room. 7 - D Co. Office (Photo # 13). Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling or damaged plaster was observed in several locations. including the Drill Hall, Weight Room (Photo # 9), Women's Room (Photo # 6), and Room 7 – D Co. Office (Photos # 12 & 14) indicate the potential for mold growth.

There is 9" x 9" brown floor tile in locations throughout the Armory (Photo # 11). According to the armorer, this tile is asbestos-containing and has been removed from various locations including the basement hallway. There were abatement records found in the armorer's office for this abatement, as well as for abatement of pipe insulation in the Drill Hall and abatement of floor tile in the Supply Room.

There was a Right to Know Center located in the Garage; however, there was only a sign and no Material Safety Data Sheets (Photo # 19). Also, in the Garage, there was broken ductwork (Photo # 18).

#### 2.2 Chemical and Physical Agents Sampled

## 2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). Relative humidity on the day of the survey ranged from 20% to 21% with an average of 21%. This average reading was below the maximum level of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

### 2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Armory. Carbon dioxide concentrations ranged from 584 to 741 parts per million (ppm), with an average of 648 ppm. Carbon dioxide levels were measured using a direct-reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 495 ppm on the day of the survey, the ASHRAE limit would be 1195 ppm.

### 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Armory. Carbon monoxide concentrations remained at 0 parts per million (ppm) throughout the survey period. The measured level was below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity,

irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

## 2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI/IESNA RP-1-04 American National Standard Practice for Office Lighting)

Location	Function	Measured Illuminance (lux/foot candles)	Recommended Illuminance (lux / foot candles)
Basement Dining Area	Dining Room	93/9	500 / 50
Kitchen	Kitchen	964 / 90	500 / 50
Room 9 – Kitchen Storage	Supply Area	69 / 6	300 / 30
Storage Rooms 26/28	Supply Area	39/4	300/30
Room 25 – Unit Supply	Supply Area	49/5	300/30
Room 23 – Storage	Supply Area	75/7	300 / 30
Room 21 – EVAC Platoon Storage	Supply Area	112/10	300 / 30
DMSO Section Area	Supply Area	101/9	300 / 30
Room 20 - Storage	Supply Area	34/3	300 / 30
Room 15 – Parts Room	Supply Area	48/4	300 / 30
Room 18 – Storage	Supply Area	103 / 10	300 / 30
Civ. Div. Storage Room	Supply Area	86 / 8	300 / 30
Armorer's Office	Administrative Duties	295 / 27	500 / 50
Recruiting Office	Administrative Duties	343 / 32	500 / 50
Co. E 50 <sup>™</sup> MSB Office	Administrative Duties	250 / 23	500 / 50
Main Office	Administrative Duties	124 / 12	500 / 50
Family Support Center Office	Administrative Duties	231/21	500 / 50
Family Support Center	Administrative Duties	189 / 18	500 / 50

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

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Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Pantry Storage	Supply Area	220/20	500 / 50
Entryway – North End	Accessway	85/8	30/3
Weight Room	Fitness Room	33/3	500 / 50
Training Room	Learning Center	129 / 12	500 / 50
Room 11 - D Co. Training	Learning Center	247 / 23	500 / 50
D Co. Office	Administrative Duties	151 / 14	500 / 50
D Co. Commander's Office	Administrative Duties	191 / 18	500 / 50
Room 7 – D Co. Office	Administrative Duties	114 / 11	500 / 50
Room 6	Administrative Duties	120 / 11	500 / 50
Conference Room 5	Administrative Duties	87/8	500 / 50
1 <sup>st</sup> Sergeant Office	Administrative Duties	425 / 39	500 / 50
Room 3	Administrative Duties	414 / 38	500 / 50
2 <sup>nd</sup> Floor South End Office	Administrative Duties	135 / 13	500 / 50

 Table 2-1 (Cont)

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey the illuminance in the administrative area was inadequate in several offices.

### 2.2.5 Lead

One paint chip sample was collected in an area where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. The sample was found to contain lead in a concentration below the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 2-2 below shows the results of the lead paint testing.

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# Table 2-2 Level of Lead in Paint Found in the Administrative Area

Sample Location	URS Sample Number	Reporting Limit	Final Result (% by Weight) ;
Hallway Outside Former Firing Range	PC-01	0.01	<0.011

The analytical report from AMA is contained in Appendix D.

Wipe testing for lead dust was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-3 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
CIV/DIF Store Room – Cabinet	<b>WS</b> -01	0. <b>11</b> 1	4300	200
Room 15 – Parts Room – Cabinet	WS-02	0. <b>1</b> 11	170	200
Room 25 – Unit Supply – Cabinet	WS-03	0.111	360	200
Store Rooms 26/28 - Shelf	WS-04	0.111	89	200
Dining Area – Pipe	WS-05	0.111	780	200
Radio Storage Room – Shelf	WS-06	0.111	<b>8</b> 8	200
Garage – Floor	WS-07	0.111	1100	200
Family Support Center Office – Windowsill	WS-10	0.111	170	200
Hall Outside   Armorer's Office –   Water Fountain	WS-11	0.111	51	200
Laundry Room – Water Heater	WS-12	0.111	130	200
Armory Club/Training Room – Windowsill	WS-13	0.111	240	200

 Table 2-3

 Levels of Lead Dust Found in the Administrative Area

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Sample Location	URS Sample Numbér	Area Wiped (ft <sup>2</sup> )	, Result (μg/π²)	Màximum Surface Contamination Level (µg/fl²)
2 <sup>nd</sup> Floor Women's Room – Radiator	WS-14	0.111	21	200
Room 11 D Co. Training Room	W\$-15	0.111	85	200
Conference Room 5 – Windowsill	WS-16	0.111	380	200
3 <sup>rd</sup> Floor Electrical Room – Stair	RWS-01	0.111	750	200
1 <sup>st</sup> Floor Women's Room – Radiator	RWS-02	0.111	24	200
2 <sup>nd</sup> Floor Balcony – Ledge	RWS-03	0.111	340	200
Room 6 – Balcony	RW\$-04	0.111	74	200
Hall Outside Former Firing Range – Floor	RWS-05	0.111	1500	200

### Table 2-3 (Cont) Levels of Lead Dust Found in the Administrative Area

### 2.2.6 Asbestos

Not applicable to this operation.

### Ventilation System Evaluation 2.3

Not applicable to this operation.

#### 2.4 **Noise Measurements**

Not applicable to this operation.

### 2.5 Personal Protective Equipment

Not applicable to this operation.

### 2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues with the desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey, the illuminance in the administrative area was inadequate in several offices. URS recommends increasing lighting in those administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: The one paint chip sample collected in the hallway outside the former firing range was found to not contain lead. Nine of the nineteen surface wipe samples collected in the administrative areas were found to contain lead dust levels above the maximum limit set by the National Guard Bureau Region North IH Office (See Appendix G). URS recommends cleaning the administrative area where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025).

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

# URS

#### 3.0 FORMER FIRING RANGE

#### 3.1 Operation Description

The firing range has been dismantled and this building area is now primarily used for storage.

### 3.2 Chemical and Physical Agents Sampled

### 3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Levels of Lead E	)ust Found ir	the Form	her Firing I	Range
	URS Sample	Wiped	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination

**FR-01** 

FR-02

FR-03

FR-04

FR-05

Table 3-1

0.111

0.111

0.111

0.111

0.111

18

1000

18.000

46,000

300

3300

Level (ug/ft\*

200

200

200

200

200

### 3.3 Ventilation System Evaluation

Not applicable to this operation.

Former Firing Range-Cabinet

Former Firing Range-Floor

Former Firing Range-Floor

Former Firing Range-Floor

Former Firing Range-Box

### 3.4 Noise Measurements

Not applicable to this operation.

### 3.5 Personal Protective Equipment

Not applicable to this operation.

### 3.6 Interpretation of Results

LEAD: The five surface wipe samples in the former firing range were found to contain lead dust levels above the maximum limit set by the National Guard Bureau Region North IH Office (See Appendix G). URS recommends cleaning the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025). Guidance for the cleaning and rehabilitation of indoor firing ranges is provided in Appendix H.

### 4.0 DRILL HALL

#### 4.1 **Operation Description**

The drill hall is a large space used for assembling personnel and also used as a gymnasium for community activities for children. The walls are constructed of cinderblock and brick with a hardwood floor.

### 4.2 Chemical and Physical Agents Sampled

### 4.2.1 Lead

Wipe testing for lead dust was conducted in the drill half using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1 Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall – Videogame	WS-08	0.111	110	200
Drill Hall - Cabinet	WS-09	Q.111	1500	200

### 4.3 Ventilation System Evaluation

Not applicable to this operation.

### 4.4 Noise Measurements

Not applicable to this operation.

### 4.5 Personal Protective Equipment

Not applicable to this operation.

#### 4.6 Interpretation of Results

LEAD: The wipe sample collected from the cabinet in the drill hall was found to contain lead above the level recommended by the NGB Region North IH Office. URS recommends cleaning the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025).

### URS 12

#### **BOILER ROOM** 5.0

#### **Operation Description** 5.1

The boiler room was not accessible at the time of the site visit.

### URS 13

### 6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

### 6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is required for this site with a confined space behind the old bullet trap of the former firing range.

### 6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

### 6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not raquired for this site.

### 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

### 7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U.S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U.S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

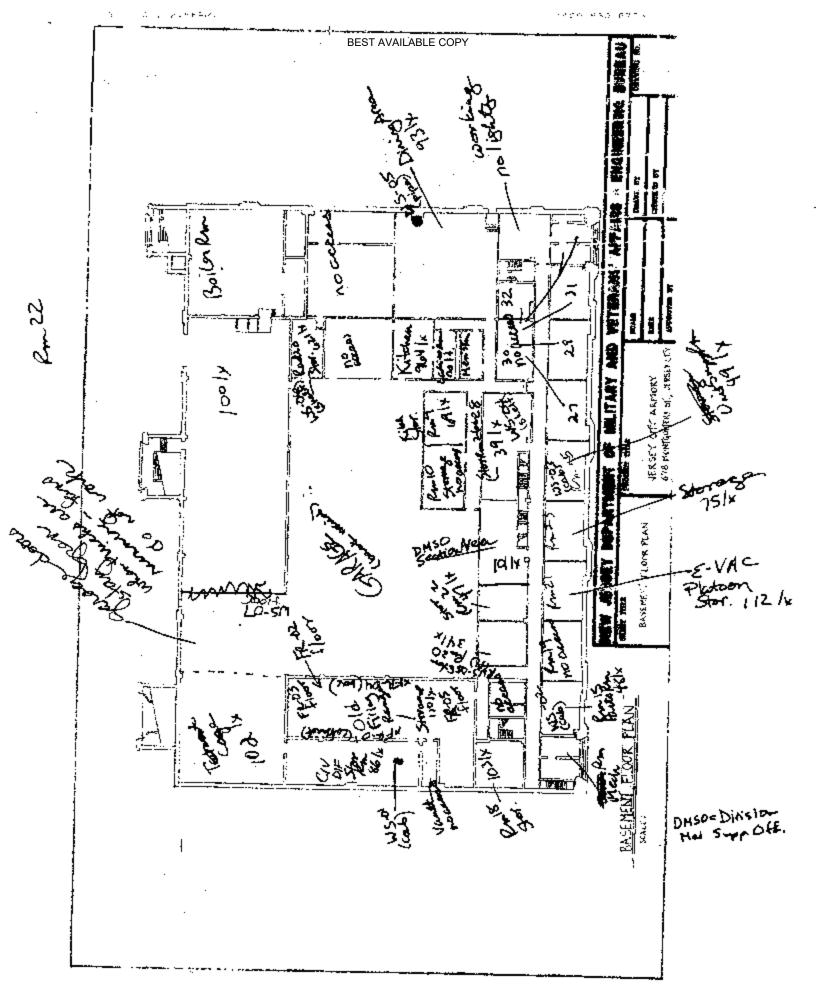
Standard for General Industry: 29 CFR 1910

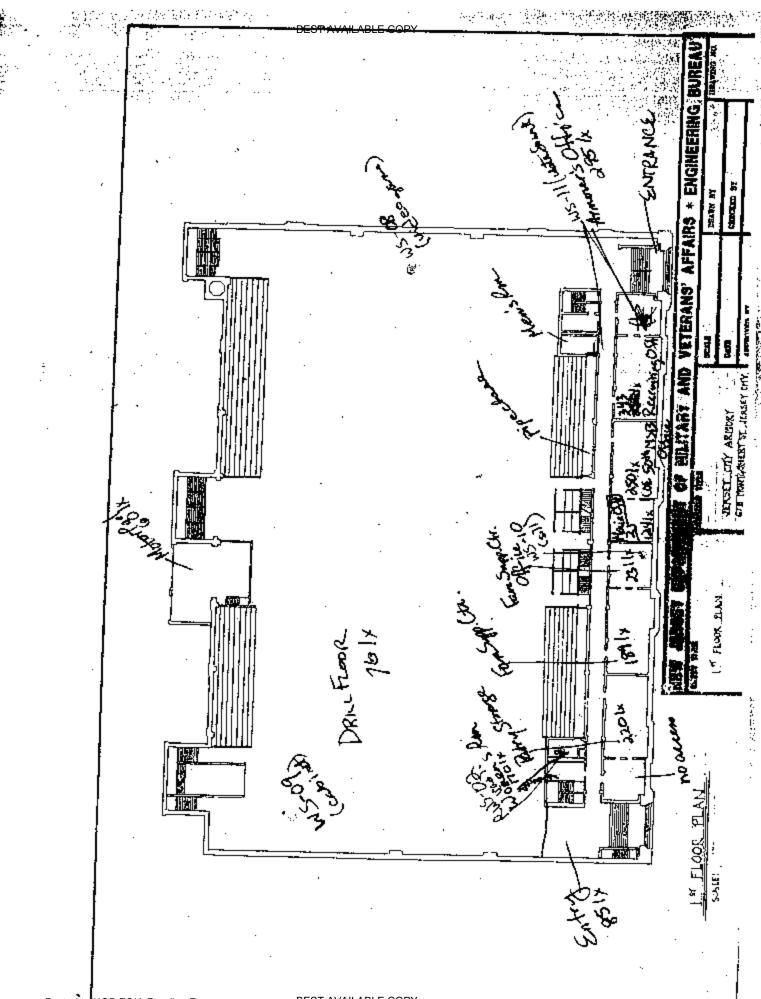
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APPENDIX A

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## ARMORY DRAWING

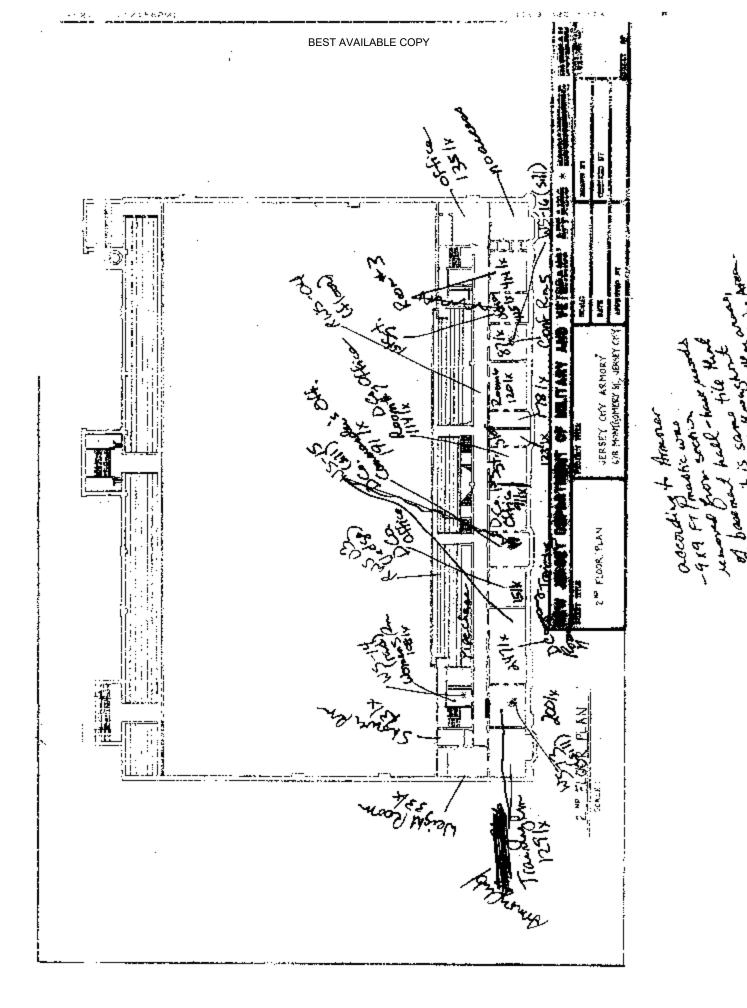




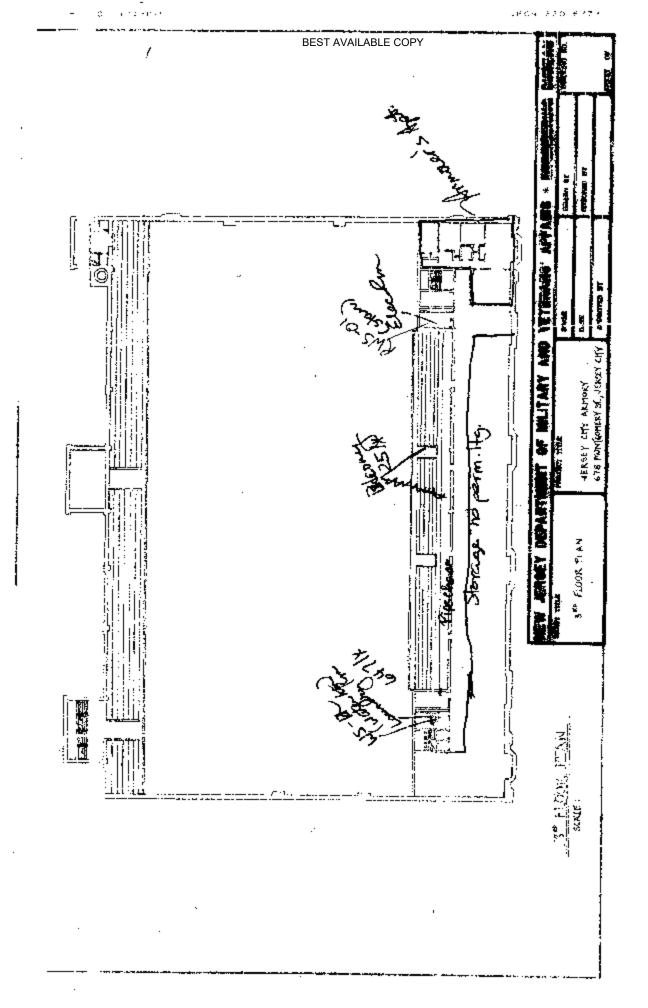
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FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 516 of 1660 APPENDIX B

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PERSONNEL LIST

FOIA Requested Record #J-15-0085 (NH) Released by National Guard Bureau Page 518 of 1660

NOT PROVIDED

APPENDIX C

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HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

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### ANALYTICAL RESULTS

	dy:	alyzed: 6/10/2004	Person Submitting:	Datc: 07-Jul-04	Page 1 of 2 Lead	Final Result Comments	4300 116/ft2				780 ug/fh²	88 ug/N <sup>2</sup>	1100 ug/ft <sup>2</sup>	110 ug/ft <sup>2</sup>	1500 ug/ft <sup>2</sup>	170 ug/fi <sup>2</sup>	51 ug/fi <sup>2</sup>	130 ug/fi <sup>2</sup>	240 ug/ft <sup>2</sup>	21 ug/ft <sup>2</sup>	85 ug/ft²	380 ug/fi <sup>2</sup>	750 ug/ft²	24 ug/ft <sup>2</sup>	340 ug/ft <sup>2</sup>	74 ug/ĥ²
National Guard Bureu Joh Name: Amory Site Millany Recordion: Joh Name: Amory Site Millany Recordion: Joh Number: Nas Provided Have de Grace, Maryland 21078 Joh Number: Nas Provided P.O. Number: BPA WP912K6-04-40002 P.O. Number: P.O. Number: BPA WP912K6-04-40002 P.O. Number: P.O. NUMPER: P.O. P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER: P.O. NUMPER:	Chain O	Date An	Person S	Report Date:	is for	orting init	10/9/2	ue/ft²	ug/ft²	ug/ft²	ug/ft²	r∬/gu	ug/ft²	±∬/ĝn	₂U/ân	rŋ∕gu	rg∕ff²	ាឌ/វិវ	ug/ft²	ug/ft²	ug/ft²	ug/ft³	rU/βn	-Ω/βn	rU/βn	ug/ft²
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National Guard Bureau     Jub Name:     Armory       301-HH Old Bay Lane, Arm: NGB-AVN-SI, state Milliary Reservation     Job Number:     Armory       301-HH Old Bay Lane, Arm: NGB-AVN-SI, state Milliary Reservation     Job Number:     Not Provided       Have de Grace, Maryland     21078     Job Number:     Not Provided       P.O. Number:     BPA #W91266     Armory     Not Provided       Warden     Analysis Type     Job Number:     Not Provided       Warden     Zibert Zample     Analysis Type     Armory       Warden     Wipe     Wipe     Mathematican (U.)       WS-01     Flame     Wipe     Mathematican (U.)       WS-03     Flame     Wipe     Mathematican (U.)       WS-04     Furnace     Wipe     Mathematican (U.)       WS-05     Furnace     Wipe     Ma				-04-A0002	bsorption .	Arca Wiped (ft <sup>2</sup> )	111.0	0.111	0.111	0.111	0.111	111.0	0.111	0.111	111.0	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111
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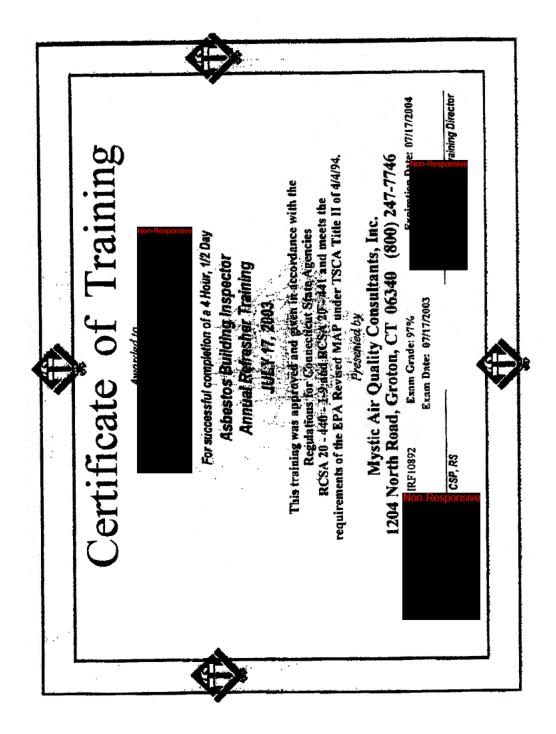
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APPENDIX E

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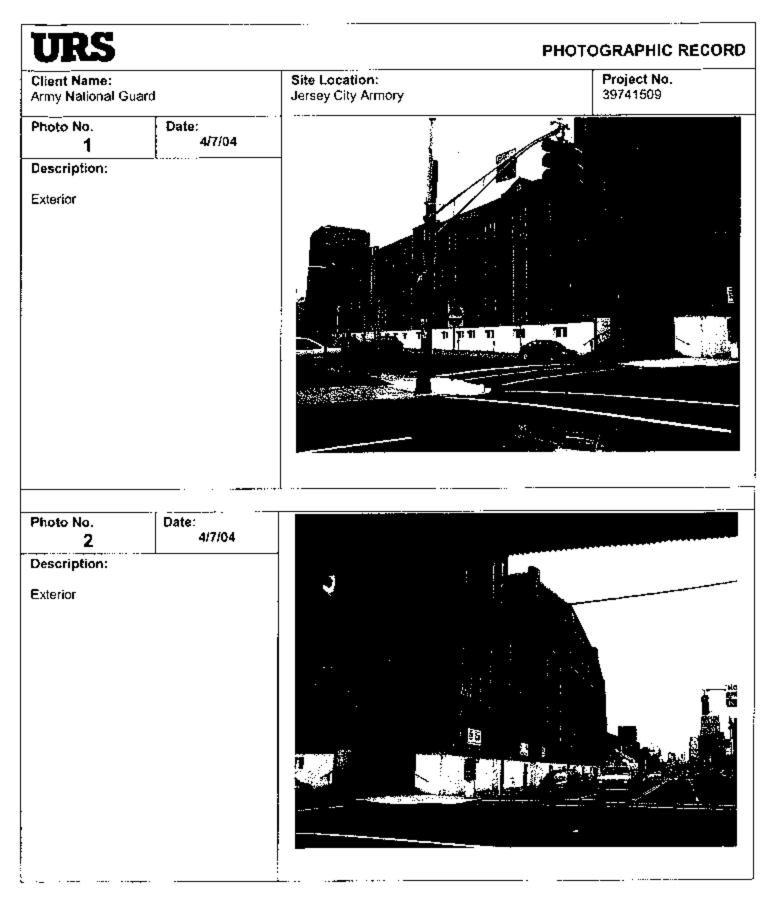
TRAINING CERTIFICATES

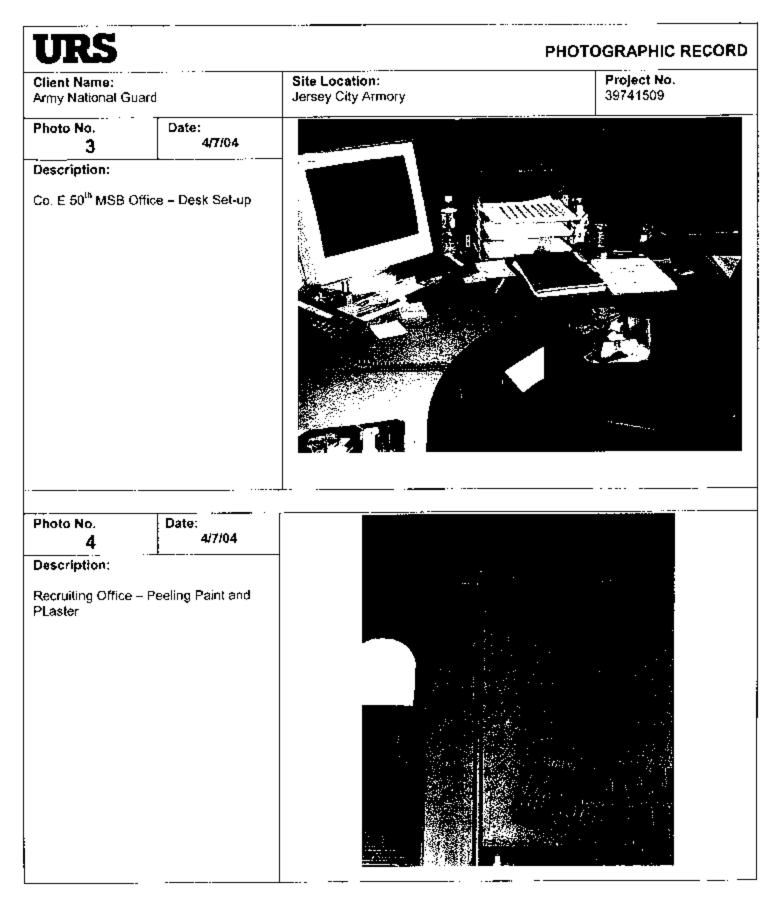


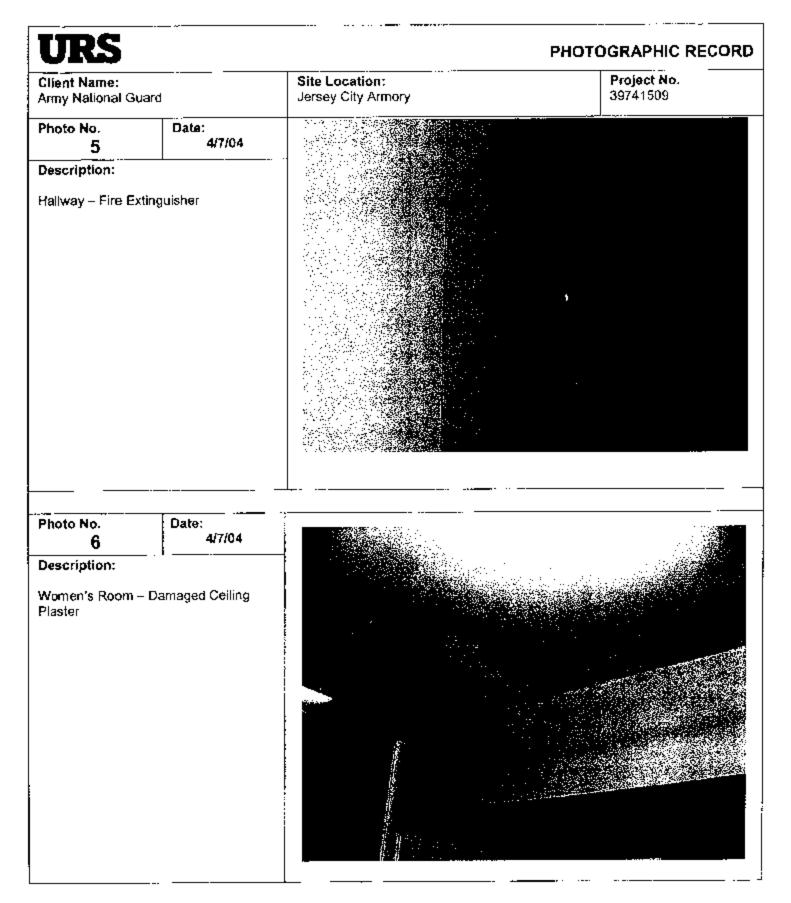
APPENDIX F

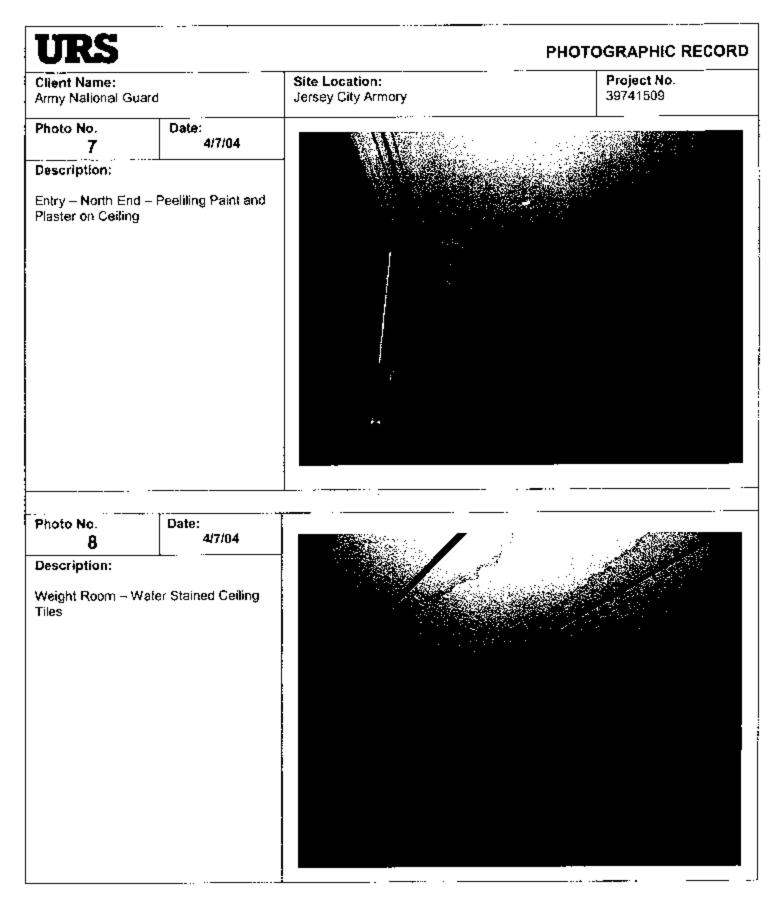
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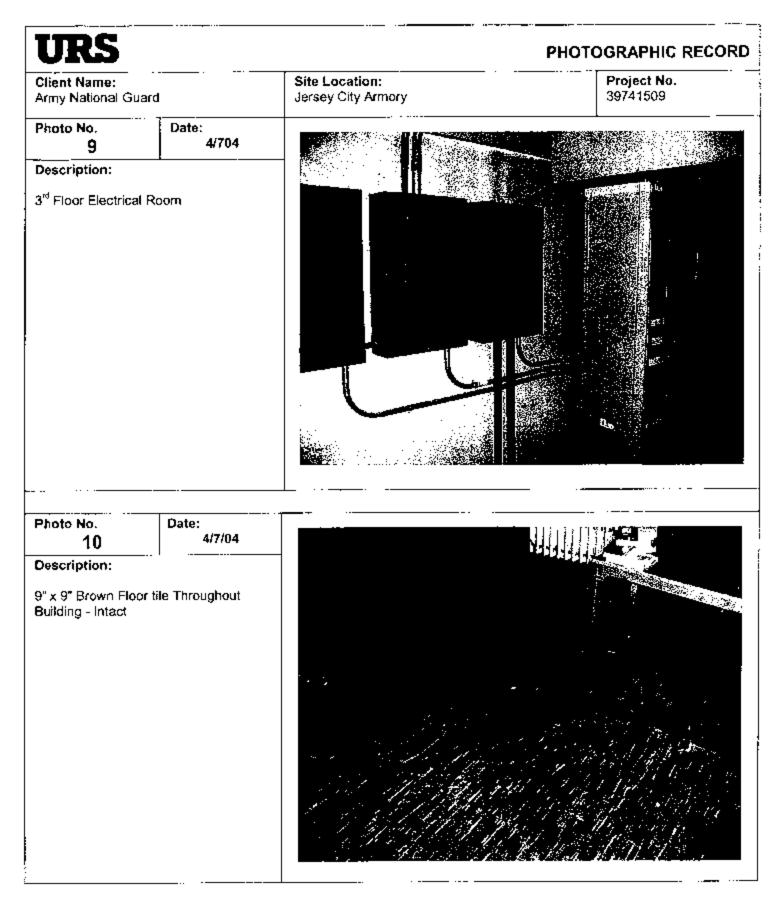
PHOTOGRAPHS

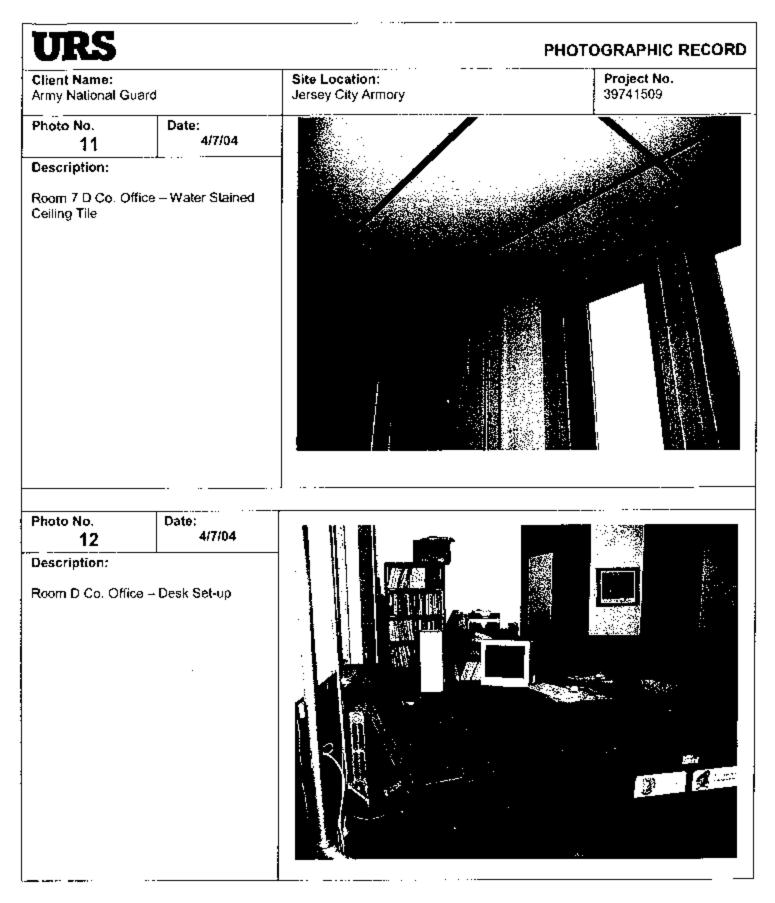


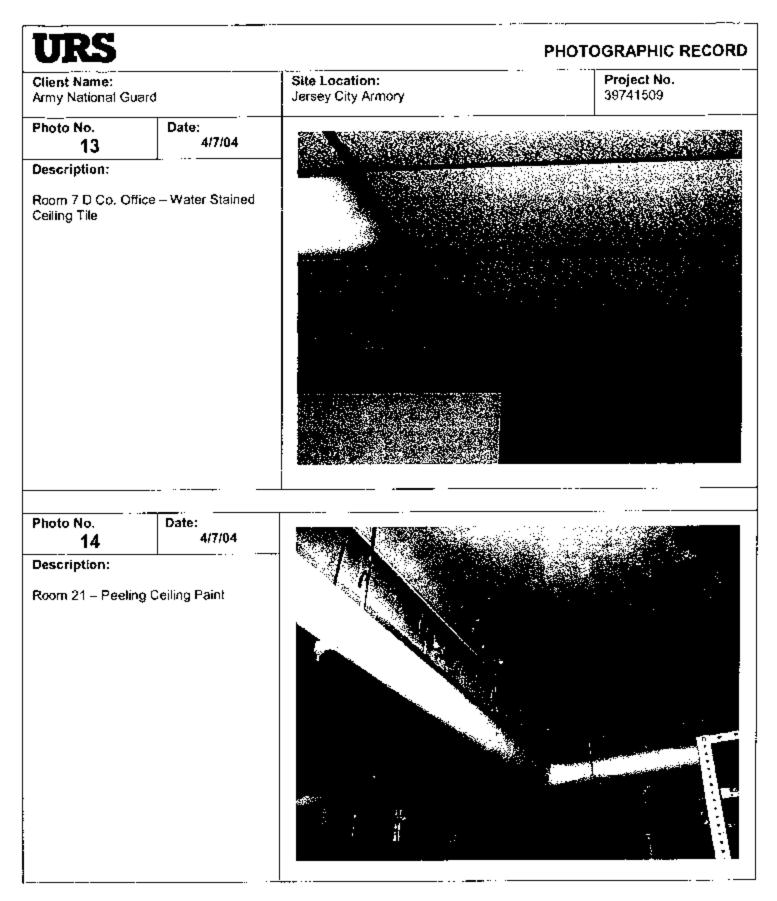


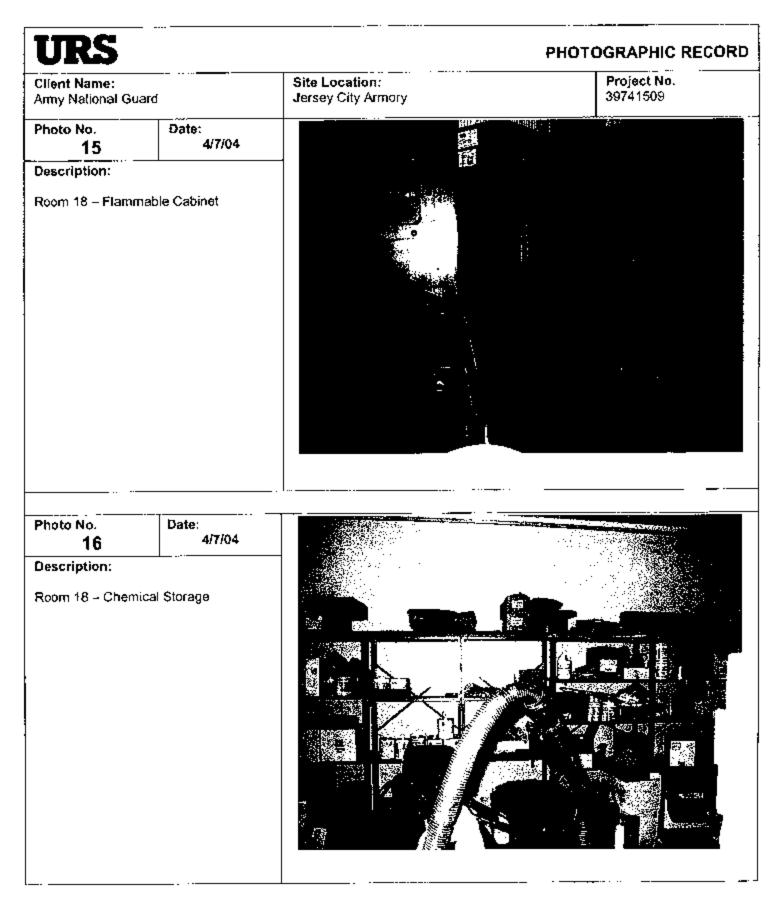


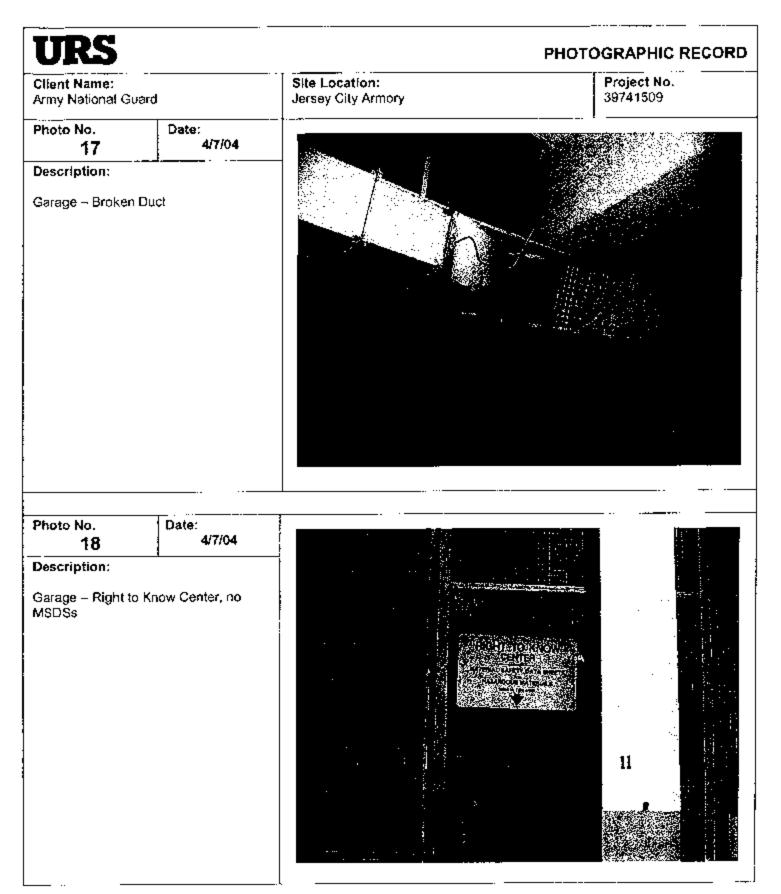


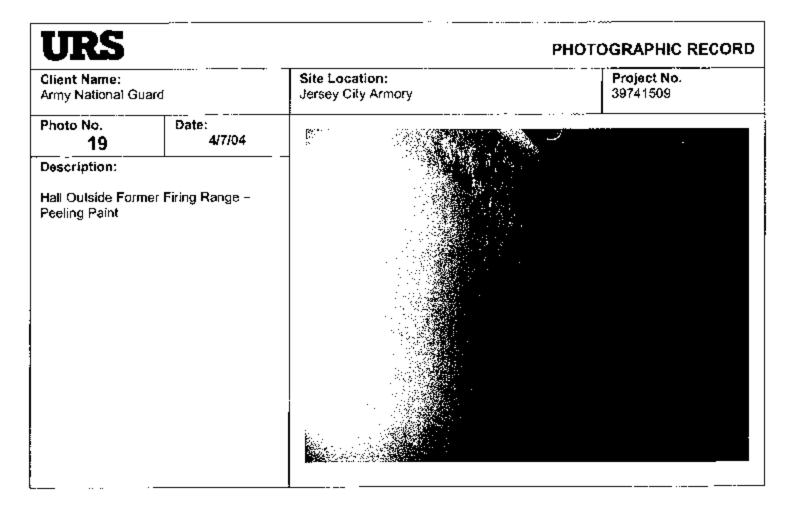












APPENDIX G

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## RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ( $\mu g/ft^2$ ). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) in residential dwellings and child occupied facilities. A child occupied facility is defined es a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200  $\mu$ g/ft<sup>2</sup> in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200  $\mu$ g/fl<sup>2</sup> is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

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a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40  $\mu$ g/ft<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

## APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

#### ADDENDUM

#### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

#### Paragraph

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Wipe Sample Media	7
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Range Cleaning Instructions	9
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Conversion of Indoor Firing Ranges	18
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#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Rosults (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

#### 2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).

- b. AR 11-34 (The Army Respiratory Protection Program).
- c. AR 40-5 (Preventive Medicine).

d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).

e. 29 Code of Federal Regulations (CFR). Part 1910, Occupational Safety and Health Standards.

f. OSHA Technical Manual, Edition VII.

g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Finng Ranges).

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Explanation of Abbreviations and Terms.

Abbreviations and special terms used in this publication are listed in the glossary.

#### 4. Policy and Procedures.

Conversion of Ranges, indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following -

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, <sup>Sit</sup> Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix 8. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/Items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipmenVitems stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

#### 5, Goal

To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

#### Background.

The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, initability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

#### 7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipa samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and lebeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of ~

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty-seven (37) millimeters (inm) mixed collulose oster (MCE) filters, with or without the cassettes.

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(2) Unacceptable Media consists of but is not limited to --

(a) Colton bails

(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol See Appendix A.

#### Ranges Cleaning Instructions.

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span<sup>TM</sup> has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

I. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, healing system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

I. A thorough visual inspection to detect dust should be made following creanup and prior to collecting post surface wipe samples.

 m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

#### 10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

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b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

#### 11. Contaminated Sand and Lead Waste

Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

#### 12. Medical Surveillance

 a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

- A detailed work and medical history
- (2) A thorough physical examination
- (3) A respirator use evaluation
- (4) A blood pressure measurement
- (5) Blood sample analysis to include:
  - (a) A baseline blood lead level
  - (b) A complete blood count (CBC)
  - (c) Blood urea nitrogen (BUN)
- (6) Serum creatinine
- (7) Zinc protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

#### 13. Worker Education

OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye Initiations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldior's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, rotain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

- a. The content of the standard and its appendices.
- b. The specific nature of operations that could result in exposure to lead above the action level.
- c. The purpose, proper selection, fitting, use and limitations of respirators.
- d The purpose and a description of medical surveillance program.
- e. Eating and drinking are prohibited in lead contaminated areas.
- f. Smoking and smoking materials will not be permuted in contaminated areas.

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g. Employees must wash their hands and other exposed skin whenever they leave the work area.

h. The engineering controls and work practices associated with the individual's job assignment.

i. The contents of any compliance plan in effect.

#### 14. Personal Protective Equipment

For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek TH full body suit.

(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).

(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to omployees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

#### 15. Housekeeping

This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating property and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the well method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

#### 16. Maintenance

The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

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b. Evaluate static pressure and compare to the beseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienisi.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps,

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

#### 18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Foderal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges stated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing matorial (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

 h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

#### 19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

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#### APPENDIX A GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the molstened wipe, Unfold the wipe.

(2) If using a dry media such as MCE or Whatman<sup>™</sup> filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-8 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

#### APPENDIX B

#### SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

#### APPENOIX C

#### INTERPRETATION OF SAMPLE RESULTS (PRIDE TO CLEANING)

C-1 200 micrograms/sq ft or LESS

If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft

Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft

Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

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#### APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or splited solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

#### APPENDIX D

#### INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less

If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

#### APPENDIX E

#### RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a fist of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygtene Office for additional assistance or clarification.

E-2 Pro-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From Catalog Number

- a. Millipore Corp. MAWP-037-A0 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380
- b. Gelman Sciences 64678 (GN-4) 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520
- c. Supelco, Inc. 2-3368M
   Supe/co Park
   Bellefonte, PA 16823
   800-247-6628
   800-359-3041

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From Catalog Number

a. Supelco Inc. 2-3381IM
 Supelco Park
 Boliofonte, PA (6823)

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#### APPENOIX E (Continued)

800-247-6628 800-359-3041

 b. Millipore Corp. AAWP-037-00 Ashdy Road Bedford, MA 01730 617-275-9200 600-225-1380

c. SKC, Inc. 225-5 334 Valley View Rd. Eighty Four, PA 15330 412-941-9701 800-752-8472

#### 

Shirth Children (Children 
E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

a. Pierce Chemical Co. 13219 (screw cap) P.O. Box 117 Rockford, IL 61105 815-968-0747 800-874-3723

 Altech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Waukegan Rd Deerfield, IL 60015 312-948-8600

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#### APPENDIX E (Continued)

800-255-8324

E-8. Ghost Wipes™.

#### Order From Catalog Number

Environmental Express SC4200 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

Environmental Express SC499 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately \$1.25. Deionized water can be obtained at local and state water labs or a hospital.

#### APPENDIX F EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

75 ug	- 92	λ9 cm²	
<u>75 ug</u> 100 cm <sup>2</sup>		1 sq ft	
<u>75 x 929</u> 100	=	<u>69675</u> 100	= 696,75ug/sq ft

ug – Microgram

Cm2 - Centimoters squared

Sq ft - Square foot

Posted to NGB FOIA Reading Room May, 2018

#### NG8-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

		Hygiene Surfa	-	t (name & phone #)
Return Address				
			Samples Collec	ted By
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escription of Op	veration	w]	Date Collected	Date Shipped
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#### APPENDIX G SURFACE WIPE SAMPLING SHEET

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SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

### APPENDIX H AIR SAMPLING SHEET

<b></b>		Industrial H	ygiene Air	Sample	Sheet	
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			Samples (	Collected By	· · · · · · · · · · · · · · · · · · ·	
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Description e	of Operation	Persons Exposed	Hre/Day	Method	of Collection	· ,
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NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Sefety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

> APPENDIX I ABBREVIATIONS AND TERMS

Section I Abbreviations

ARNG Army National Guard

BUN Blood urea nitrogen

BZ Breathing zone

CBC Complete blood count

CFR Code of Federal Regulations

*cm* Centimeter

DHEW Department of Health, Education and Welfare

EPA Environmental Protection Agency

**GA** General area

**OMPF** Official Military Personnel File

**OPF** Official Personnel File

OSHA Occupational Safety and Health Administration

**TCLP** Toxic Characteristic Leaching Procedures

ug/sq\_ft Micrograms per square foot

#### NGB-AVS-SG SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

## APPENDIX I (Continued)

#### Section II Terms

#### **HEPA**

Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

#### Leed-Contaminated Range

It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

#### Wipe Sample

The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.



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1215 Manor Drive, Suite 205 Mechanicsburg, PA 17055 Phone: 717.590.7031 Fax: 717.590.7936 www.complianceplace.com

# **Industrial Hygiene Survey Report**

National Guard Facility Jersey City Readiness Center

Prepared For:	National Guard Bureau Region North IH 301-IH Old Bay Lane
	Havre de Grace, MD 21078
Survey Location:	Jersey City Readiness Center
29	678 Montgomery Street
	Jersey City, NJ, 07306
Prepared By:	Compliance Management International, Inc.
	1215 Manor Drive
	Suite 205
	Mechanicsburg, PA 17055

Survey Date: March 11, 2013



Senior Industrial Hygienist

## **Table of Contents**

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Section 2.0 Operation Description & Observations
Section 3.0 Lead Testing
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## Section 1.0 Executive Summary

An industrial hygiene survey was conducted on March 11, 2013, at the Jersey City Readiness Center located at 678 Montgomery Street, Jersey City, NJ 07306. The survey was performed by Mr. Non-Responsive.

- 1. Lead bulk, surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot  $(ug/ft^2)$  in eleven (11) locations. See Section 3.0 for sampling results.
- 2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in six locations. See Section 4.0 for detailed findings.
- 3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.
  - a. Relative humidity levels were below the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in three locations.
  - b. Temperature levels were above the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE 55-2010) recommended guideline of 68-79 degrees F in one location.
  - c. CO levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 ppm.
  - d. CO<sub>2</sub> levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

See Section 5.0 for detailed sampling results.

- 4. Water-stained ceiling tiles were observed in the facility. No active water leaks were observed at the time of this survey.
- 5. Suspect asbestos containing materials were found to be deteriorated and in poor condition. See Section 6.0 for detailed findings.

## Section 2.0 Operation Description & Observations

The Jersey City Readiness Center is mainly an administrative facility with a drill hall/arena, offices and classrooms, basement parking area, and converted firing range/storage area. There were approximately 20 full-time employees stationed at this facility at the time of this survey.

The building was initially purchased in the 1880s. It is a three-story structure with a basement. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, 9" x 9" and 12" x 12" floor tile, and carpet. The third floor is currently vacant. It is scheduled to be renovated and used as office space.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of a natural-gas fired forced hot water furnace for heat. A roof mounted air conditioning (A/C) unit services the third floor apartment.

The area of the building that was once a firing range has been converted into a storage area. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were fair. This should be improved.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

## Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Sample #	Location	Bulk (%)	Air ug/m <sup>3</sup>	Surface ug/ft <sup>2</sup>
1	Armorer's Office	*	<4.5	*
2	Drill Hall/Arena	*	<4.4	*
3	Blank	*	<3	*
4	Converted Firing Range- Floor	*	*	2100
5	<b>Converted Firing Range- Cabinet</b>	*	*	1200
6	Converted Firing Range-Light Fixture	*	*	500
7	Converted Firing Range-Outside Entrance	*	*	2800
8	A6 Microwave	*	*	<110
9	Drill Hall/Arena, Floor Center	*	*	<110
10	Drill Hall/Arena- Emergency Light South	*	*	220
11	Drill Hall/Arena- Phone Box	*	*	460
12	Drill Hall/Arena- Outside Entrance Floor	*	*	550
13	Lobby- Coke Machine	*	*	210
14	1 <sup>st</sup> Floor Corridor Floor	*	*	<110
15	Recruiting Office- Shelf	*	*	<110
16	Family Assistance Center- Window Sill	*	*	200
17	COC Commander Office- cabinet	*	*	<110
18	C2 Bookshelf	*	*	<110
19	C9 Window Sill	*	*	<110
20	2 <sup>nd</sup> Floor Hall- Floor at Copier	*	*	<110
21	C18- Countertop	*	*	<110
22	3 <sup>rd</sup> Floor- Window- Sill	*	*	6200
23	Kitchen- Refrigerator	*	*	<110
24	Dining Room- Wall Heater	*	*	230
25	C15 Wall	0.14	*	*
26	FAC Wall	0.1	*	*
-	Criteria	0.5	50	200

## Lead Testing Results Summary

Table Notes:

- 1. **Bolded** results exceed listed criteria
- 2. **ppm** = parts per million
- 3.  $ug/ft^2 = micrograms per square foot$
- 4.  $ug/m^3 = micrograms per cubic meter$
- 5. **ug** = micrograms

Sources:

- 1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
- 2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot  $(ug/ft^2)$  as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft<sup>2</sup> on floors and 250 ug/ft<sup>2</sup> on windowsills should be observed. There is no child care provided at this facility.

Lead bulk, surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft<sup>2</sup> in the following locations:
  - Converted Firing Range Floor
  - Converted Firing Range- Cabinet
  - Converted Firing Range-Light Fixture
  - Converted Firing Range-Outside Entrance
  - Drill Hall/Arena- Emergency Light South
  - Drill Hall/Arena- Phone Box
  - o Drill Hall/Arena- Outside Entrance Floor
  - o Lobby- Coke Machine
  - Family Assistance Center- Window Sill
  - 3<sup>rd</sup> Floor- Window- Sill
  - Dining Room- Wall Heater

Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of  $200 \text{ ug/ft}^2$ .

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m<sup>3</sup>).
- Two bulk samples of peeling paint were collected from Office C15 and Family Assistance Center walls. These samples contained 0.14% and 0.10% Pb (lead) respectively. This is less than the Environmental Protection Agency (EPA) definition of lead-based paint of 0.5%. However, all areas of peeling paint should be properly repaired.

## **Section 4.0 Lighting**

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Armorer's Office	41.3	30-50	Yes
Corridor- 1 <sup>st</sup> Floor	5.3	5	Yes
Recruiting Office	35.1	30-50	Yes
Lobby	21.1	10	Yes
2 <sup>nd</sup> Floor Dining	34.1	10	Yes
Exercise Room	53.6	30	Yes
C19 Exercise Room	43.1	30	Yes
C15 Office	34.8	30-50	Yes
Corridor 2 <sup>nd</sup> Floor	10.6	5	Yes
Condol 2 Floor C12 Office	32.1	30-50	Yes
C12 Office	41.3	30-50	Yes
C9 Office	38.5	30-50	Yes
			Yes
C2 Office	30.8	30-50	
C3 Office	36.3	30-50	Yes
C8 Office	28.2	30-50	No
C6 Office	44.2	30-50	Yes
Elevator	34.2	5	Yes
Basement Storage-Bulk	25.3	10	Yes
Food Services Dining	42.1	10	Yes
Food Services Prep	59.1	50	Yes
Food Services Storage A	35.3	5	Yes
Food Services Storage B	63.2	5	Yes
FAC Office Main	27.2	30-50	No
FAC Office A	25.3	30-50	No
FAC Office B	31.3	30-50	Yes
Cmdr. C Company Medical			
Training	30.1	30-50	Yes
Recruiting East Office	32.7	30-50	Yes
Women's Toilet	45.7	5	Yes
Boiler Room	16.2	30	No
Electrical Room A	5.1	30	No
Electrical Room B	6.3	30	No
Women's Locker Room	82.5	7	Yes
Men's Locker Room	55.1	7	Yes
Drill Hall/Arena	30.5	10	Yes

## Light Survey Assessment Summary

Table Notes:

- 1. FC = Foot Candles
- 2. Bolded results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the Food Services Preparation area, Classroom 1, Boiler Room, and Storage Room 164. Lighting should be improved in these areas.

## Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected. IAO Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	43.5	84.9	518	0.0
Armorer's Office	77.7	28.0	680	0.0
Recruiting Office	81.1	22.8	588	0.0
C2 Office	79.3	24.6	505	0.0
Criteria	68-79	30-60	<1,218	<9

- Table Notes:
  - 1. **Bolded** results exceed listed criteria
  - 2. **ppm** = parts per million
  - 3. (%) = percent relative humidity
  - 4.  $\mathbf{F} = \text{degrees Fahrenheit}$

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements were above the recommended 79°F in two areas. Temperature should be maintained at 68-79 °F.
- Relative humidity levels were below the recommended guidelines in three sampled areas. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level for this survey. For this survey, carbon dioxide levels did not exceed the recommended ceiling of 1,218 ppm. This is an indication that outdoor air ventilation is adequate.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide.
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observation were noted:
  - Overall housekeeping was fair. Dirt and dust were evident in many areas.
  - Water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.
  - Chipped and peeling paint was observed on walls and ceilings in several areas of the facility. All areas of peeling paint should be properly repaired. Samples were collected for lead paint analysis.

## **Section 6.0 Suspect Asbestos Containing Building Materials**

The following suspect Asbestos Containing Material (ACM) was noted at the time of this survey:

- 1. A total of approximately 500 square feet of suspect ACM insulation boiler breeching was observed. Several small areas were damaged. A sample was collected for analysis. Sample results indicate no asbestos was detected.
- 2. Approximately 3,000 to 4,000 square feet of suspect ACM floor tile was observed in Halls and many of the rooms. The flooring was intact and in good condition.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

## **Section 7.0 Equipment**

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	3/11/13	2.59 LPM
SKC Air Sampling Pump	647610	3/11/13	2.62 LPM

## **Section 8.0 Limitations**

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

## Appendix A. Laboratory Analysis Report

## AMA Analytical Services, Inc.

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#### A Specialized Environmental Laboratory

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## **CERTIFICATE OF ANALYSIS**



National Guard Bureau **Client:** Job Name: **3KNJ IH Survey** Chain Of Custody: 515353 301-IH Old Bay Lane, Attn: ARNG-CJG-P, Address: Job Location: Jersey City Date Analyzed: 3/25/2013 State Military Reservation Job Number: Not Provided **Person Submitting:** Havre de Grace, Maryland 21078 W912K6-09-A-0003 P.O. Number: Page 1 of 1 Attention: Summary of Polarized Light Microscopy Client Chrysotile Amosite Crocidolite Other Mineral Fiberglass Organic Synthetic Other Particulate Sample AMA Sample Total Sample Homogeneity Analyst Comments Wool Percent Percent Percent Percent Number Sample # Asbestos Percent Percent Percent Asbestos Type Color ID Percent Percent 13045328 27 NAD 20 80 NP Off-White Homogeneous LBP The following footnotes only apply to those samples which the total asbestos result is flagged with a note number. TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative 1 or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy. 2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM, Analysis Method - EPA/600/R-93/116 dated July 1993 NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component" Uncertainty: For samples containing asbestos in range of 1-10% Non-Responsive the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23 All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy. **Technical Director** Analyst(s) This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of

# locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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## AMA Analytical Services, Inc.

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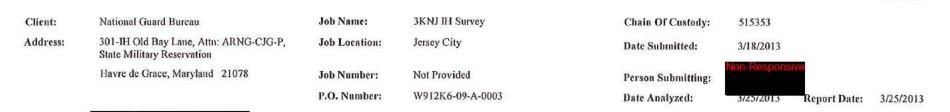
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## **CERTIFICATE OF ANALYSIS**

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LAB #100470



Attention: Non-Responsive

## Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		porting Limit	Total ug	Final Res	ult	Comments
13045302	1	Flame	Air	661	N/A	4.5	ug/m³	<3	<4.5	ug/m³	
13045303	2	Flame	Air	681	N/A	4.4	ug/m³	<3	<4.4	ug/m³	
13045304	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13045305	4	Flame	Wipe	****	0.108	110	ug/ft²	230	2100	ug/ft²	
13045306	5	Flame	Wipe	****	0.108	110	ug/ft²	130	1200	ug/ft²	
13045307	6	Flame	Wipe	****	0.108	110	ug/ft2	53	500	ug/ft²	
13045308	7	Flame	Wipe	****	0.108	110	ug/ft²	310	2800	ug/ft²	
13045309	8	Flame	Wipe	***	0.108	110	ug/ft²	<12	<110	ug/fl²	
13045310	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13045311	10	Flame	Wipe	***	0.108	110	ug/ft²	240	2200	ug/ft²	
13045312	11	Flame	Wipe	****	0.108	110	ug/ft²	50	460	ug/ft²	
13045313	12	Flame	Wipe	****	0.108	110	ug/ft²	59	550	ug/ft²	
13045314	13	Flame	Wipe	****	0.108	110	ug/ft²	23	210	ug/ft²	
13045315	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045316	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ſt²	
13045317	16	Flame	Wipe	****	0.108	110	ug/ft²	22	200	ug/ft²	
13045318	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045319	18	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045320	19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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LAS#100470

Client:	National Guard Bureau	Job Name:	3KNJ IH Survey	Chain Of Custody:	515353		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Jersey City	Date Submitted:	3/18/2013		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsiv	Ve	
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	3/25/2013	Report Date:	3/25/2013

## Summary of Atomic Absorption Analysis for Lead

Page 2 of 2

MA Sample Number	Client Sample Number			Air Volume (L)	영화가 잘못했을까??		orting imit	Total ug	Final Res	Comments	
13045321	20	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045322	21	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045323	22	Flame	Wipe	****	0.108	110	ug/ft²	660	6200	ug/ft²	
13045324	23	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13045325	24	Flame	Wipe	****	0.108	110	ug/ft²	24	230	ug/ft²	
13045326	25	Flame	Paint Chip	****	N/A	0.0086	%Pb		0.14	%Pb	
13045327	26	Flame	Paint Chip	****	N/A	0.009	%Pb		0.1	%Pb	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7010; Water: SM-3113B MA Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7010; Water: SM-3113B See QC Summary for associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.



Technical Manager:

Non-Responsive

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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