



July 22, 2020

Diane Czarnecki
Industrial Hygienist
Facilities Management Division
GSA Public Buildings Service – Heartland Region
2300 Main Street
Kansas City, MO 64108

Re: Goodfellow Federal Center – Bldg. 102E Air Sampling
Project No. 121244

Dear Ms. Czarnecki:

Thank you for the opportunity to provide the General Services Administration (GSA) with the Resource Conservation and Recovery Act (RCRA) metals air sampling investigation of the above referenced buildings located at the Goodfellow Federal Complex, in St. Louis, Missouri. Burns & McDonnell understands that the purpose of the investigation was to provide sampling data regarding pre-existing conditions noted in the investigation reports previously prepared for the facility. The following report summarizes the sample collection activities and the laboratory analytical results of the samples submitted.

METHODOLOGY

On June 8, 2020, Emily Ahlemeyer of Burns & McDonnell and Jeff Smith of OCCU-TEC conducted air sampling for the presence of seven (7) of the RCRA metals including arsenic, barium, cadmium, chromium, lead, selenium, and silver. Sampling was conducted in various locations throughout Building 102E.

The proposed sampling scheme, the number of samples, sample distribution, and general methodology was developed based on previous investigation methodology and in coordination with the GSA. Sample locations and samples collected from discretionary locations were determined by sampling personnel while on-site.

Air sampling for RCRA metals was collected on 37-millimeter (mm) cassettes with 0.8 micrometer (μm) mixed cellulose ester (MCE) filters using powered air sampling pumps in accordance with the National Institute for Occupational Safety and Health (NIOSH) sampling methodology. Samples were collected in a method sufficient to collect a minimum sample volume of 300 liters. Air samples were submitted under chain-of-custody to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for independence analysis of RCRA metals according to NIOSH method 7300. EHS is accredited under the American Industrial Hygiene Association (AIHA) Industrial Hygiene Laboratory Accreditation Program (IHLAP) program, identification number LAP-100420.

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RESULTS AND DISCUSSION

Results of the air sampling are summarized in the table below by identifying the range of results for Building 102E for each of the seven (7) metals that were sampled. Results indicate that all nine (9) air samples collected from Building 102E contained concentrations of RCRA metals below the OSHA Permissible Exposure Limit (PEL).

Table 1. Summary of Air Sampling Results

Analyte	Lowest Concentration ^(a) ($\mu\text{g}/\text{m}^3$) ^(b)	Highest Concentration ^(a) ($\mu\text{g}/\text{m}^3$) ^(b)	Permissible Exposure Limit (PEL) ($\mu\text{g}/\text{m}^3$) ^(b)
Arsenic	<2.0	<2.5	10
Barium	<0.38	<0.48	500
Cadmium	<0.38	<0.48	5
Chromium (Total)	<2.0	<2.5	500
Lead	<0.38	<0.48	50
Selenium	<2.0	<2.5	200
Silver	<0.38	<0.48	10

Notes:

- (a) Samples with a “<” sign indicate that the results were below the reportable limit.
- (b) $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter of air.

GSA may choose to compare results with guidance limits from additional organizations for risk evaluation, including but not limited to the American Conference of Governmental Industrial Hygienists (ACGIH) and/or the World Health Organization (WHO).

A summary table of all sampling results by location is included in Appendix A. The complete laboratory report for the air sampling from EHS is attached in Appendix B. The air sampling professional’s Missouri Lead license is included in Appendix C.

LIMITATIONS

The scope of this assessment was limited as follows. Burns & McDonnell collected samples from a select number of locations in an effort to minimize cost while providing a general overview of the air quality at the site. Sample locations do not encompass every indoor space at the Site. Additionally, samples were only analyzed for a select number of potential contaminants likely to affect the air quality at the site. Burns & McDonnell is not responsible for potential contaminants not identified in this report. This report was prepared for the sole use of GSA.



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Burns & McDonnell appreciates the opportunity to work with the General Services Administration on this project. Please contact us if you have any questions regarding this report or if we may be of any additional service.

Sincerely,

(b) (6)

A large black rectangular redaction box covers the signature area, with the text '(b) (6)' in the top left corner.

Matt Shanahan, CHMM
Project Manager

Attachments:

- Appendix A – Results Summary by Location
- Appendix B – Air Sample Laboratory Report
- Appendix C – Qualifications and Licenses

APPENDIX A – RESULTS SUMMARY BY LOCATION

Appendix A

Results Summary by Location

Goodfellow Federal Center - Building 102E - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits ¹
102E-A-01	1st Floor, North Lobby	Arsenic	< 2.3	µg/m ³	10
		Barium	< 0.44	µg/m ³	500
		Cadmium	< 0.44	µg/m ³	5
		Chromium	< 2.3	µg/m ³	500
		Lead	< 0.44	µg/m ³	50
		Selenium	< 2.3	µg/m ³	200
		Silver	< 0.44	µg/m ³	10
102E-A-02	1st Floor, N Conference Room @ Column N22	Arsenic	< 2.4	µg/m ³	10
		Barium	< 0.45	µg/m ³	500
		Cadmium	< 0.45	µg/m ³	5
		Chromium	< 2.4	µg/m ³	500
		Lead	< 0.45	µg/m ³	50
		Selenium	< 2.4	µg/m ³	200
		Silver	< 0.45	µg/m ³	10
102E-A-03	1st Floor, Break Room Table	Arsenic	< 2.3	µg/m ³	10
		Barium	< 0.45	µg/m ³	500
		Cadmium	< 0.45	µg/m ³	5
		Chromium	< 2.3	µg/m ³	500
		Lead	< 0.45	µg/m ³	50
		Selenium	< 2.3	µg/m ³	200
		Silver	< 0.45	µg/m ³	10
102E-A-04	1st Floor, South Storage Room	Arsenic	< 2.5	µg/m ³	10
		Barium	< 0.47	µg/m ³	500
		Cadmium	< 0.47	µg/m ³	5
		Chromium	< 2.5	µg/m ³	500
		Lead	< 0.47	µg/m ³	50
		Selenium	< 2.5	µg/m ³	200
		Silver	< 0.47	µg/m ³	10
102E-A-05	2nd Floor, North Lobby	Arsenic	< 2.5	µg/m ³	10
		Barium	< 0.47	µg/m ³	500
		Cadmium	< 0.47	µg/m ³	5
		Chromium	< 2.5	µg/m ³	500
		Lead	< 0.47	µg/m ³	50
		Selenium	< 2.5	µg/m ³	200
		Silver	< 0.47	µg/m ³	10

Appendix A

Results Summary by Location

Goodfellow Federal Center - Building 102E - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits ¹
102E-A-06	2nd Floor, Lobby Window Sill	Arsenic	< 2.5	µg/m ³	10
		Barium	< 0.48	µg/m ³	500
		Cadmium	< 0.48	µg/m ³	5
		Chromium	< 2.5	µg/m ³	500
		Lead	< 0.48	µg/m ³	50
		Selenium	< 2.5	µg/m ³	200
		Silver	< 0.48	µg/m ³	10
102E-A-07R	2nd Floor, Training Room	Arsenic	< 2.0	µg/m ³	10
		Barium	< 0.38	µg/m ³	500
		Cadmium	< 0.38	µg/m ³	5
		Chromium	< 2.0	µg/m ³	500
		Lead	< 0.38	µg/m ³	50
		Selenium	< 2.0	µg/m ³	200
		Silver	< 0.38	µg/m ³	10
102E-A-08	2nd Floor, S Office Area	Arsenic	< 2.5	µg/m ³	10
		Barium	< 0.48	µg/m ³	500
		Cadmium	< 0.48	µg/m ³	5
		Chromium	< 2.5	µg/m ³	500
		Lead	< 0.48	µg/m ³	50
		Selenium	< 2.5	µg/m ³	200
		Silver	< 0.48	µg/m ³	10
102E-A-09	Field Blank	Arsenic	< 1.3	µg	--
		Barium	< 0.25	µg	--
		Cadmium	< 0.25	µg	--
		Chromium	< 1.3	µg	--
		Lead	< 0.25	µg	--
		Selenium	< 1.3	µg	--
		Silver	< 0.25	µg	--

Notes:

¹Limits equal to the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs)

APPENDIX B – AIR SAMPLE LABORATORY REPORT



Environmental Hazards Services, L.L.C.
 7469 Whitepine Rd
 Richmond, VA 23237
 Telephone: 800.347.4010

Air Metals Analysis Report

Client: Burns & McDonnell Engineering
 9400 Ward Pkwy.
 Kansas City, MO 64114

Report Number: 20-06-01415
 Received Date: 06/11/2020
 Reported Date: 06/12/2020

Project/Test Address: 168765; Goodfellow IH Services; 4300 Goodfellow Blvd

Client Number:
26-3514

Fax Number:
816-822-3494

Laboratory Results

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
20-06-01415-001	102E-A-01	06/11/2020	Arsenic (As)	570.3	<1.3	<2.3	
			Barium (Ba)		<0.25	<0.44	
			Cadmium (Cd)		<0.25	<0.44	
			Chromium (Cr)		<1.3	<2.3	
			Lead (Pb)		<0.25	<0.44	
			Selenium (Se)		<1.3	<2.3	
			Silver (Ag)		<0.25	<0.44	
20-06-01415-002	102E-A-02	06/11/2020	Arsenic (As)	558.6	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.45	
			Cadmium (Cd)		<0.25	<0.45	
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.45	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.45	
20-06-01415-003	102E-A-03	06/11/2020	Arsenic (As)	566	<1.3	<2.3	
			Barium (Ba)		<0.25	<0.45	
			Cadmium (Cd)		<0.25	<0.45	

Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-01415

Project/Test Address: 168765; Goodfellow IH Services; 4300
Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
			Chromium (Cr)		<1.3	<2.3	
			Lead (Pb)		<0.25	<0.45	
			Selenium (Se)		<1.3	<2.3	
			Silver (Ag)		<0.25	<0.45	
20-06-01415-004	102E-A-04	06/11/2020	Arsenic (As)	539.1	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.47	
20-06-01415-005	102E-A-05	06/11/2020	Arsenic (As)	537	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.47	
20-06-01415-006	102E-A-06	06/11/2020	Arsenic (As)	529.6	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.48	
			Cadmium (Cd)		<0.25	<0.48	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.48	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.48	

Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-01415

Project/Test Address: 168765; Goodfellow IH Services; 4300
Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
20-06-01415-007I	102E-A-07R	06/12/2020	Arsenic (As)	670.7	<1.3	<2.0	
			Barium (Ba)		<0.25	<0.38	
			Cadmium (Cd)		<0.25	<0.38	
			Chromium (Cr)		<1.3	<2.0	
			Lead (Pb)		<0.25	<0.38	
			Selenium (Se)		<1.3	<2.0	
			Silver (Ag)		<0.25	<0.38	
20-06-01415-008I	102E-A-08	06/12/2020	Arsenic (As)	529.8	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.48	
			Cadmium (Cd)		<0.25	<0.48	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.48	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.48	
20-06-01415-009I	102E-A-09	06/12/2020	Arsenic (As)	0	<1.3	---	
			Barium (Ba)		<0.25	---	
			Cadmium (Cd)		<0.25	---	
			Chromium (Cr)		<1.3	---	
			Lead (Pb)		<0.25	---	
			Selenium (Se)		<1.3	---	
			Silver (Ag)		<0.25	---	

Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-01415

Project/Test Address: 168765; Goodfellow IH Services; 4300
Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
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Sample Narratives:

Method: NIOSH 7300M
Analyst: Anthony Dee

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Reviewed By Authorized Signatory:

Tasha Eaddy
QA/QC Clerk

Sample Results denoted with a "less than" (<) sign contains less than the reporting limit for each particular metal, based on a 25mL volume. The reporting limit is 0.05ug for Beryllium, 25ug for Aluminum, Calcium, Iron and Zinc, 1.3ug for Arsenic, Chromium, Magnesium, Antimony and Selenium, and 0.25ug for all other metals.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Unless otherwise noted, samples are reported without a dry weight correction. Sample location, description, area, volume, etc., was provided by the client. If the report does not contain the result for a field blank, it is due to the fact that the client did not include a field blank with their samples. EHS sample results do not reflect blank correction. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714.

LEGEND ug = microgram ug/m³ = micrograms per cubic meter
 mL = milliliter L= Liters

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form

Pg 1 of 1

Company Name		Burns & McDonnell				Account #		26-3514											
Company Address		9400 Ward Parkway				City/State/Zip		Kansas City, MO 64114											
Phone		816-349-6646				Email		mshanahan@burnsmcd.com											
Project Name / Testing Address		Goodfellow IH Services / 4300 Goodfellow Blvd.																	
PO Number		168765				Collected By		Emily Ahlemeyer & Jeff Smith											
Turn-Around Time		<input checked="" type="radio"/> 3 DAY <input type="radio"/> 2 DAY <input type="radio"/> 1 DAY <input type="radio"/> SAME DAY OR WEEKEND - Must Call Ahead																	
LAB NUMBER	Client Sample ID	Collection Date & Time	METALS						Other Metals	PARTICULATES				AIR			WIPES AREA Circle The Unit of Measurement Used cm or in		
			Pb TCLP	TCLP RCRA 8	RCRA 8 Total	Toxic Metal Profile	Welding Furnace Profile	TX 11 TCLP		CA 17 Total	Total Nuisance Dust	Respirable Dust	TSP Gravimetric	TSP Pb	PM-10	Total Time		Flow Rate	Vol.
																Mins.		L/min.	Total Liters
1	102E-A-01	6/8/20 1240							As, Se, Pb, Cd, Cr, Ag, Ba						214	2.67	570.3	x	
2	102E-A-02	1244												212	2.64	558.6	x		
3	102E-A-03	1244												212	2.67	566	x		
4	102E-A-04	1245												211	2.56	539.1	x		
5	102E-A-05	1248												211	2.55	537	x		
6	102E-A-06	1248												211	2.51	529.6	x		
7	102E-A-07R	6/9/20 0855												256	2.62	670.7	x		
8	102E-A-08	6/8/20 1251												209	2.54	529.8	x		
9	102E-A-09	6/9/20 0937												NA	NA	NA	x		
10																	x		
11																	x		
12																	x		
13																	x		
14																	x		
15																	x		
Released By:		Emily Ahlemeyer				Date:		6/9/2020		Time:		5:00 PM							
Signature:		(b) (6)																	

LAB USE ONLY - BELOW THIS LINE

Received By: T Ashgar
 Signature: (b) (6)
 Date: 6/11/20 Time: 12:20p AM PM

Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

20-06-01415

Due Date:
06/16/2020
(Tuesday)
EL

APPENDIX C – QUALIFICATIONS AND LICENSES

**STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES**

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Jeffrey T. Smith

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Risk Assessor
Category of License

Issuance Date: **3/16/2019**
Expiration Date: **3/16/2021**
License Number: **010316-200089640**

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Randall W. Williams, MD, FACOG
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102