OCCU-TEC
100 NW Business Park Lane
Riverside, MO 64150
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March 20, 2019

Diane Czarnecki
Industrial Hygienist
Facilities Management Division
GSA Public Buildings Service - Heartland Region
U.S. General Services Administration
2300 Main Street, Kansas City, MO 64108

RE: Goodfellow Federal Center
Metals in Settled Dust Sampling – Building 101
4300 Goodfellow Boulevard
St. Louis, Missouri 63120
OCCU-TEC Project No. 918004.002

Dear Ms. Czarnecki:

Thank you for the opportunity to assist the General Services Administration (GSA) with the metals in settled dust sampling investigation of Building 101 located at the Goodfellow Federal Center (GFC), in St. Louis, Missouri. OCCU-TEC, Inc. (OCCU-TEC) understands that the purpose of the investigation was to provide additional sampling data of existing environmental conditions that are present at GFC that could adversely impact the health and safety of building occupants as well as workers at the facility. The following report summarizes the sample collection activities and the laboratory analytical results of samples submitted.

On February 28, 2019, a team of OCCU-TEC personnel, including a Missouri licensed lead risk assessor, conducted settled dust sampling for the presence of seven of the Resource Conservation and Recovery Act (RCRA) target metals (lead, arsenic, barium, cadmium, total chromium, selenium, and silver) from various surfaces throughout the building. The purpose of this testing was to further characterize the presence and concentration of target metals in areas of the buildings that have had little or no previous testing.

The proposed sampling scheme, the number of samples, the sample distribution and general methodology was developed by GSA and OCCU-TEC. Specific sample locations were determined by OCCU-TEC personnel while on-site.

Metals in Settled Dust Sampling

Metals in settled dust sampling was conducted in various floor surfaces throughout the building.

Dust wipe sampling was conducted in accordance with ASTM Standard E1728-16: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination. ASTM Standard E1728-16 is consistent with the methodology described in the Housing and Urban Development Guidelines and 40 CRF 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

Dust wipe sampling for the target metals was conducted on a variety of representative floor surfaces that have the potential of being disturbed during routine janitorial work, and planned maintenance or renovation projects within the building. A representative surface area of approximately one square foot (1 SF) was measured and delineated with pre-fabricated, disposable templates. The dust wipe samples were collected using dedicated dust wipe cloths meeting ASTM standards. Each dust wipe cloth was pre-moistened and individually wrapped. Each sample was collected by wiping in a back and forth "S" pattern over a measured sampling area. Then, the wipe was folded over itself and the area was wiped again in a direction perpendicular to the first wipe orientation. The wipe samples were then placed into lab[redacted], clean laboratory-sup[redacted]e tubes with screw on caps. Dust wipe samp[redacted]were submitted to Sc[redacted]itute, Inc. (SAI) in Greensboro, North Caro[redacted] for Inductively Cou[redacted]alysis of metals analysis using Environm[redacted]Protection Agency ([redacted]B/7420.

Results of the dust wipe samples collected from the building indicate that all the thirteen (13) samples contained concentrations of target metals above laboratory detection limits. The following table identifies the range of results for each of the seven metals that were analyzed. **Samples with a "<" sign indicate that the results were below the reportable limit.**

Analysis	Lowest Concentration (µg/sq. ft.)	Highest Concentration (µg/sq. ft.)
Silver	<0.50	3.30
Arsenic	0.63	29.00
Barium	10.00	260.00
Cadmium	0.24	8.80
Total Chromium	<0.50	290.00
Lead	8.70	230.00
Selenium	<0.50	0.60

Many of the samples collected contained target metals above the Brookhaven recommended levels. Based on the results of the sampling, all the subject building areas should be presumed to contain measurable levels of RCRA metals and proper precautions should be taken upon entry and exit of the subject areas to protect workers and limit the spread of dust to the outside environment.

OCCU-TEC appreciates the opportunity to work with GSA on this project. If you have any questions concerning this report, or if we may be of any additional service, please feel free to contact us.

Sincerely,

(b) (6)

Jeff T. Smith
Senior Project Manager

(b) (6)

Kevin Heriford
Operations Manager (QA/QC)

Appendices:

A - Sample Summ Table
B - Laboratory Analysis Reports
C - Licenses

Appendix A

Sample Summary Table

Goodfellow Federal Center - Building # 101 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Recommended Limits**
101-W-01	Lower Level - Mechanical Room	Floor	Silver	3.30	µg/ft^2	* 139/9.3
			Arsenic	1.70	µg/ft^2	** 62
			Barium	32.00	µg/ft^2	
			Cadmium	4.10	µg/ft^2	** 31
			Chromium	6.50	µg/ft^2	
			Lead	91.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-02	2nd Floor - Room 208	Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	0.68	µg/ft^2	** 62
			Barium	10.00	µg/ft^2	
			Cadmium	0.31	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	8.70	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-03	2nd Floor - East Stariwell to Penthouse- Landing	Floor	Silver	0.66	µg/ft^2	* 139/9.3
			Arsenic	29.00	µg/ft^2	** 62
			Barium	56.00	µg/ft^2	
			Cadmium	4.60	µg/ft^2	** 31
			Chromium	24.00	µg/ft^2	
			Lead	74.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-04	1st Floor - Room 118	Floor	Silver	0.67	µg/ft^2	* 139/9.3
			Arsenic	0.63	µg/ft^2	** 62
			Barium	71.00	µg/ft^2	
			Cadmium	0.24	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	10.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-05	1st Floor - Wire Closet at Column B-12	Floor	Silver	0.69	µg/ft^2	* 139/9.3
			Arsenic	2.70	µg/ft^2	** 62
			Barium	130.00	µg/ft^2	
			Cadmium	1.30	µg/ft^2	** 31
			Chromium	4.00	µg/ft^2	
			Lead	38.00	µg/ft^2	** 200/40
			Selenium	0.60	µg/ft^2	
101-W-06	Lower Level - New Boiler Room in South Hallway	Floor	Silver	0.70	µg/ft^2	* 139/9.3
			Arsenic	0.84	µg/ft^2	** 62
			Barium	40.00	µg/ft^2	
			Cadmium	1.10	µg/ft^2	** 31
			Chromium	43.00	µg/ft^2	
			Lead	96.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
101-W-07	Lower Level - South Fire Pump Room	Floor	Silver	1.50	µg/ft^2	* 139/9.3
			Arsenic	2.40	µg/ft^2	** 62
			Barium	120.00	µg/ft^2	
			Cadmium	6.50	µg/ft^2	** 31
			Chromium	36.00	µg/ft^2	
			Lead	230.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-08	Lower Level - Electrical Room	Floor	Silver	0.67	µg/ft^2	* 139/9.3
			Arsenic	1.40	µg/ft^2	** 62
			Barium	48.00	µg/ft^2	
			Cadmium	3.10	µg/ft^2	** 31
			Chromium	1.50	µg/ft^2	
			Lead	29.00	µg/ft^2	** 200/40
			Selenium	0.53	µg/ft^2	
101-W-09	Lower Level - Janitor Closet at bottom of center stairs	Floor	Silver	2.40	µg/ft^2	* 139/9.3
			Arsenic	11.00	µg/ft^2	** 62
			Barium	260.00	µg/ft^2	
			Cadmium	8.80	µg/ft^2	** 31
			Chromium	290.00	µg/ft^2	
			Lead	220.00	µg/ft^2	** 200/40
			Selenium	< 5.00	µg/ft^2	
101-W-10	Lower Level - North Cafeteria Entrance	Floor	Silver	1.10	µg/ft^2	* 139/9.3
			Arsenic	1.10	µg/ft^2	** 62
			Barium	34.00	µg/ft^2	
			Cadmium	1.60	µg/ft^2	** 31
			Chromium	3.80	µg/ft^2	
			Lead	30.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-11	Lower Level - East Kitchen Storage Room	Floor	Silver	0.55	µg/ft^2	* 139/9.3
			Arsenic	0.97	µg/ft^2	** 62
			Barium	30.00	µg/ft^2	
			Cadmium	0.97	µg/ft^2	** 31
			Chromium	2.90	µg/ft^2	
			Lead	22.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-12	Basement - SE Air Handler Room	Floor	Silver	1.70	µg/ft^2	* 139/9.3
			Arsenic	1.00	µg/ft^2	** 62
			Barium	14.00	µg/ft^2	
			Cadmium	2.00	µg/ft^2	** 31
			Chromium	4.60	µg/ft^2	
			Lead	200.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
101-W-13	Basement - NE Lounge next to Locker Rooms	Floor	Silver	0.54	µg/ft^2	* 139/9.3
			Arsenic	3.70	µg/ft^2	** 62
			Barium	36.00	µg/ft^2	
			Cadmium	4.20	µg/ft^2	** 31
			Chromium	5.10	µg/ft^2	
			Lead	170.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
101-W-14	Field Blank		Silver	0.54	µg/ft^2	* 139/9.3
			Arsenic	< 0.25	µg/ft^2	** 62
			Barium	0.26	µg/ft^2	
			Cadmium	< 0.05	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	< 0.25	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

* Recommended Limits based on Table 3 (BNL Surface Wipe Criteria for Metals) of the Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 19: 3/4/14

** Recommended Limits based on Attachment 9.3 (Required & Recommended Surface Wipe Criteria) - Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 23: 6/23/17

Indicates results at or above REL

Appendix B

Laboratory Analytical Reports

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905857**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 101**			**Page:**	**1 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
101-W-01	Floor – LL Mech Room	1	Ag	0.50	3.3	3.3
			As*	0.25	1.7	1.7
			Ba*	0.50	32	32
			Cd	0.050	4.1	4.1
			Cr	0.50	6.5	6.5
71905857IPW_1			Pb	2.5	91	91
			Se	0.50	< 0.50	< 0.50
101-W-02	Floor – Room 208	1	Ag	0.50	< 0.50	< 0.50
			As*	0.25	0.68	0.68
			Ba*	0.050	10.	10.
			Cd	0.050	0.31	0.31
			Cr	0.50	< 0.50	< 0.50
71905857IPW_2			Pb	0.25	8.7	8.7
			Se	0.50	< 0.50	< 0.50
101-W-03	Floor – East Stair Landing	1	Ag	0.50	0.66	0.66
			As*	0.25	29	29
			Ba*	0.50	56	56
			Cd	0.050	4.6	4.6
			Cr	0.50	24	24
71905857IPW_3			Pb	2.5	74	74
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

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Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905857**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 101**			**Page:**	**2 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
101-W-04	Floor – Room 118	1	Ag	0.50	0.67	0.67
			As*	0.25	0.63	0.63
			Ba*	0.50	71	71
			Cd	0.050	0.24	0.24
			Cr	0.50	< 0.50	< 0.50
71905857IPW_4			Pb	0.25	10.	10.
			Se	0.50	< 0.50	< 0.50
101-W-05	Floor – Wire Closet at B12	1	Ag	0.50	0.69	0.69
			As*	0.25	2.7	2.7
			Ba*	5.0	130	130
			Cd	0.050	1.3	1.3
			Cr	0.50	4.0	4.0
71905857IPW_5			Pb	25	38	38
			Se	0.50	0.60	0.60
101-W-06	Floor – S Hall Boiler Room	1	Ag	0.50	0.70	0.70
			As*	0.25	0.84	0.84
			Ba*	0.50	40.	40.
			Cd	0.050	1.1	1.1
			Cr	5.0	43	43
71905857IPW_6			Pb	2.5	96	96
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905857**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 101**			**Page:**	**3 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
101-W-07	Floor – LL Fire Pump Room	1	Ag	0.50	1.5	1.5
			As*	0.25	2.4	2.4
			Ba*	5.0	120	120
			Cd	0.050	6.5	6.5
			Cr	0.50	36	36
71905857IPW_7			Pb	25	230	230
			Se	0.50	< 0.50	< 0.50
101-W-08	Floor – LL Elec Room	1	Ag	0.50	0.67	0.67
			As*	0.25	1.4	1.4
			Ba*	0.50	48	48
			Cd	0.050	3.1	3.1
			Cr	0.50	1.5	1.5
71905857IPW_8			Pb	0.25	29	29
			Se	0.50	0.53	0.53
101-W-09	Floor – LL Utility Closet	1	Ag	0.50	2.4	2.4
			As*	0.25	11	11
			Ba*	5.0	260	260
			Cd	0.050	8.8	8.8
			Cr	5.0	290	290
71905857IPW_9			Pb	25	220	220
			Se*	5.0	< 5.0	< 5.0

*As – media matched matrix blank showed a media contribution of 1.5 µg
*Ba – media matched matrix blank showed a media contribution of 0.63 µg
*Se – elevated RL possibly due to high levels of Al interference

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905857**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 101**			**Page:**	**4 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
101-W-10	Floor – LL Café Entrance	1	Ag	0.50	1.1	1.1
			As*	0.25	1.1	1.1
			Ba*	0.50	34	34
			Cd	0.050	1.6	1.6
			Cr	0.50	3.8	3.8
71905857IPW_10			Pb	0.25	30.	30.
			Se	0.50	< 0.50	< 0.50
101-W-11	Floor – LL Kitchen Storage	1	Ag	0.50	0.55	0.55
			As*	0.25	0.97	0.97
			Ba*	0.50	30.	30.
			Cd	0.050	0.97	0.97
			Cr	0.50	2.9	2.9
71905857IPW_11			Pb	0.25	22	22
			Se	0.50	< 0.50	< 0.50
101-W-12	Floor – Bsmt SE AHU Room	1	Ag	0.50	1.7	1.7
			As*	0.25	1.0	1.0
			Ba*	0.50	14	14
			Cd	0.050	2.0	2.0
			Cr	0.50	4.6	4.6
71905857IPW_12			Pb	2.5	200	200
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905857**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 101**			**Page:**	**5 of 5**

Sample ID *Lab Sample ID*	Description *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
101-W-13	Floor – NE Lounge	1	Ag	0.50	0.54	0.54
			As*	0.25	3.7	3.7
			Ba*	0.50	36	36
			Cd	0.050	4.2	4.2
			Cr	0.50	5.1	5.1
71905857IPW_13			Pb	2.5	170	170
			Se	0.50	< 0.50	< 0.50
101-W-14	Blank	-	Ag	0.50	0.54	-
			As*	0.25	< 0.25	-
			Ba*	0.050	0.26	-
			Cd	0.050	< 0.050	-
			Cr	0.50	< 0.50	-
71905857IPW_14			Pb	0.25	< 0.25	-
			Se	0.50	< 0.50	-

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Scientific Analytical Institute, Inc.
4604 Dundas Drive Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

Lab Use Only
Lab Order ID: 71905857
Client Code: _____

Company Contact Information	
Company: OccuTec	Contact: Jeff Smith
Address: 100 NW Business Park Lane	Phone ☐: 816-994-3421
Riverside, MO 64150	Fax ☐:
	Email ☐: jsmith@occutec.com

Billing/Invoice Information	Turn Around Times^	
SAME ☒	90 Min. ☐	48 Hours ☐
Company:	3 Hours ☐	72 Hours ☐
Contact:	6 Hours ☐	96 Hours ☐
Address:	12 Hours ☐	120 Hours ☐
	24 Hours ☐	144+Hours ☒
	^TATs not available for certain test types	
PO Number:		
Project Name/Number: 918004.002 Bldg 101		

Industrial Hygiene Test Types	
Silica as Alpha Quartz*	☐
Silica as Cristobalite*	☐
Silica as Tridymite*	☐
Silica as Alpha Quartz, Cristobalite, Tridymite*	☐
Include Respirable Dust	☐
Silica Bulk*	☐
Bulk Phase ID/Whole Rock SAI Method H-SOP-003	☐
Total Dust NIOSH Method 0500	☐
Respirable Dust NIOSH Method 0600	☐
PCM NIOSH 7400 (Fibers)	☐
TEM NIOSH 7402 (Asbestos)	☐
Hexavalent Chromium (OSHA ID-215) (Note if from spray paint operations)	☐
Metals (NIOSH 7300) (Specify Metals Under Comments)	☐
Other 6010C	☒

**Modified NIOSH 7500/OSHA ID 142*

Sample ID #	Description/Location	Volume/Area	Comments (List Metals Here)
101-W-01	Floor - LL Mech Room	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
101-W-02	Floor - Room 208		
101-W-03	Floor - East Stair Landing		
101-W-04	Floor - Room 118		
101-W-05	Floor - Wire Closet at B12		
101-W-06	Floor - S Hall Boiler Room		
101-W-07	Floor - LL Fire Pump Room		
101-W-08	Floor - LL Elec Room		
101-W-09	Floor - LL Utility Closet		
101-W-10	Floor - LL Cafe Entrance		
101-W-11	Floor - LL Kitchen Storage		
101-W-12	Floor - Bsmt SE AHU Room		
101-W-13	Floor NE Lounge		
101-W-14	Blank		

Accepted ☒
Rejected ☐

Total # of Samples _____

Relinquished by	Date/Time	Received by	Date/Time
(b) (6)	3-1-19 1500	(b) (6)	3/4/19 0830

A-F-018 -01 EXP 12-1-13

Appendix C

Qualifications and Licenses

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Austin G. O'Byrne

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:	**12/10/2018**
Expiration Date:	**12/10/2020**
License Number:	**181210-300005671**

(b) (6) [redacted]

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

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

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:	**3/16/2017**
Expiration Date:	**3/16/2019**
License Number:	**010316-200089640**

(b) (6) [redacted]

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

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

OCCU-TEC
100 NW Business Park Lane
Riverside, MO 64150
Telephone: 816.231.5580
Fax: 816.231.5641
www.occutec.com

March 29, 2019

Diane Czarnecki
Industrial Hygienist
Facilities Management Division
GSA Public Buildings Service - Heartland Region
U.S. General Services Administration
2300 Main Street, Kansas City, MO 64108

RE: Goodfellow Federal Center
Metals in Settled Dust Sampling – Building 103
4300 Goodfellow Boulevard
St. Louis, Missouri 63120
OCCU-TEC Project No. 918004.002

Dear Ms. Czarnecki:

Thank you for the opportunity to assist the General Services Administration (GSA) with the metals in settled dust sampling investigation of Building 103 located at the Goodfellow Federal Center (GFC), in St. Louis, Missouri. OCCU-TEC, Inc. (OCCU-TEC) understands that the purpose of the investigation was to provide additional sampling data of existing environmental conditions that are present at GFC that could adversely impact the health and safety of building occupants as well as workers at the facility. The following report summarizes the sample collection activities and the laboratory analytical results of samples submitted.

On March 13, 2019, a team of OCCU-TEC personnel, including a Missouri licensed lead risk assessor, conducted settled dust sampling for the presence of seven of the Resource Conservation and Recovery Act (RCRA) target metals (lead, arsenic, barium, cadmium, total chromium, selenium, and silver) from various floor surfaces throughout the building. The purpose of this testing was to further characterize the presence and concentration of target metals following the lead-based paint stabilization and rubber membrane installation project in the Basement of Building #103.

The proposed sampling scheme, the number of samples, the sample distribution and general methodology was developed by GSA and OCCU-TEC. Specific sample locations were determined by OCCU-TEC personnel while on-site.

Metals in Settled Dust Sampling

Metals in settled dust sampling was conducted on various surfaces throughout the Basement as well as the leading stairwells to the Basement.

Dust wipe sampling was conducted in accordance with ASTM Standard E1728-16: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination. ASTM Standard E1728-16 is consistent with the methodology described in the Housing and Urban Development Guidelines and 40 CRF 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

Dust wipe sampling for the target metals was conducted on a variety of representative floor surfaces that have the potential of being disturbed during planned maintenance or renovation projects within the building. A representative surface area of approximately one square foot (1 SF) was measured and delineated with pre-fabricated, disposable templates. The dust wipe samples were collected using dedicated dust wipe cloths meeting ASTM standards. Each [redacted] wipe cloth was pr[redacted]vidually wrapped. Each sample was collec[redacted]by wiping in a back[redacted] over a measured sampling area. Then, the wipe was folded over i[redacted]ined again in a direction perpendicular t[redacted] first wipe orientatio[redacted]e then placed into labeled, clean labor[redacted] supplied plastic cent[redacted]n caps. Dust wipe samples were submitted to Scientific Analytical Institute, Inc. (SAI) in Greensboro, North Carolina for analysis of metals analysis by flame atomic absorption (Flame AA) spectroscopy using Environmental Protection Agency (EPA) method SW846 350B/7420. It should be noted that due to the use of Flame AA only the results for lead could be verified. Results for other metals should be considered estimates.

Results of the dust wipe samples collected from the building indicate that all the eleven (11) samples contained concentrations of target metals above laboratory detection limits. The following table identifies the range of results for each of the seven metals that were analyzed. **Samples with a "<" sign indicate that the results were below the reportable limit.**

Analysis	Lowest Concentration (µg/sq. ft.)	Highest Concentration (µg/sq. ft.)
Silver	<0.50	1.30
Arsenic	<2.00	5.40
Barium	<7.50	200.00
Cadmium	0.47	33.00
Total Chromium	<0.50	32.00
Lead	6.20	560.00
Selenium	<.1.30	<.1.30

Many of the samples collected contained target metals above the Brookhaven recommended levels. Based on the results of the sampling, all the subject building areas should be presumed to contain measurable levels of RCRA metals and proper precautions should be taken upon entry and exit of the subject areas to protect workers and limit the spread of dust to the outside environment.

OCCU-TEC appreciates the opportunity to work with GSA on this project. If you have any questions concerning this report, or if we may be of any additional service, please feel free to contact us.

Sincerely,

(b) (6)

Jeff T. Smith
Senior Project Manager

(b) (6)

/QC)

Appendices:

A - Sample Summary Table
B - Laboratory Analysis Reports
C - Licenses

Appendix A

Sample Summary Table

Goodfellow Federal Center - Building # 103 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Recommended Limits**
103-WP-001	West Stairwell - stair tread to 2nd Floor	Vinyl Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	2.20	µg/ft^2	** 62
			Barium	15.00	µg/ft^2	
			Cadmium	0.94	µg/ft^2	** 31
			Chromium	2.40	µg/ft^2	
			Lead	6.20	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-002	West Stairwell - stair tread to basement	Concrete Floor	Silver	1.30	µg/ft^2	* 139/9.3
			Arsenic	3.30	µg/ft^2	** 62
			Barium	47.00	µg/ft^2	
			Cadmium	9.00	µg/ft^2	** 31
			Chromium	6.80	µg/ft^2	
			Lead	87.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-003	West Stairwell - Lower Landing by sump pump	Concrete Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	5.40	µg/ft^2	** 62
			Barium	200.00	µg/ft^2	
			Cadmium	33.00	µg/ft^2	** 31
			Chromium	29.00	µg/ft^2	
			Lead	280.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-004	Concrete Crawlspace - step up to north side	Concrete Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	3.40	µg/ft^2	** 62
			Barium	< 75.00	µg/ft^2	
			Cadmium	18.00	µg/ft^2	** 31
			Chromium	14.00	µg/ft^2	
			Lead	140.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-005	Crawlspace Wall Ledge - South side	Concrete Floor	Silver	0.76	µg/ft^2	* 139/9.3
			Arsenic	5.00	µg/ft^2	** 62
			Barium	120.00	µg/ft^2	
			Cadmium	25.00	µg/ft^2	** 31
			Chromium	32.00	µg/ft^2	
			Lead	560.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-006	Column Support Ledge at Col G-19	Concrete/Metal Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	8.40	µg/ft^2	
			Cadmium	3.00	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	69.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
103-WP-007	Top of Water Pipe Insulation at Col. F-18	Figerglass pipe covering	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	10.00	µg/ft^2	
			Cadmium	1.40	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	21.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-008	East Stairwell - Tread to basement	Concrete Floor	Silver	1.00	µg/ft^2	* 139/9.3
			Arsenic	3.20	µg/ft^2	** 62
			Barium	76.00	µg/ft^2	
			Cadmium	9.70	µg/ft^2	** 31
			Chromium	6.00	µg/ft^2	
			Lead	210.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-009	East Stairwell - landing to basement	Concrete Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	29.00	µg/ft^2	
			Cadmium	3.90	µg/ft^2	** 31
			Chromium	1.80	µg/ft^2	
			Lead	55.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-010	East Stairwell - column support at landing	Concrete/Metal Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	21.00	µg/ft^2	
			Cadmium	2.40	µg/ft^2	** 31
			Chromium	1.60	µg/ft^2	
			Lead	41.00	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-011	East Stairwell - Tread to second floor	Vinyl Floor	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	< 7.50	µg/ft^2	
			Cadmium	0.47	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	7.60	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	
103-WP-012	Field Blank		Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	< 0.75	µg/ft^2	
			Cadmium	< 0.05	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	< 0.25	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
103-WP-013	Field Blank		Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	< 2.00	µg/ft^2	** 62
			Barium	< 0.75	µg/ft^2	
			Cadmium	< 0.05	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	< 0.25	µg/ft^2	** 200/40
			Selenium	< 1.30	µg/ft^2	

* Recommended Limits based on Table 3 (BNL Surface Wipe Criteria for Metals) of the Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 19: 3/4/14

** Recommended Limits based on Attachment 9.3 (Required & Recommended Surface Wipe Criteria) - Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 23: 6/23/17

Indicates results at or above REL

Appendix B

Laboratory Analytical Reports

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Justin Arnold**	**Lab Order ID:**	**71907056**
	100 NW Business Park Ln.			**Date Received:**	**03/14/2019**
	Riverside, MO 64150			**Date Reported:**	**03/28/2019**
Project:	**GFC-103 CS Wipes**			**Page:**	**1 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
103-WP-001	W. stair well - staitread to 2nd	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	2.2	2.2
			Ba	7.5	15	15
			Cd	0.050	0.94	0.94
			Cr	0.50	2.4	2.4
71907056IPW_1			Pb	0.25	6.2	6.2
			Se	1.3	< 1.3	< 1.3
103-WP-002	W. stair well - staitread to basement	1	Ag	0.50	1.3	1.3
			As	2.0	3.3	3.3
			Ba	7.5	47	47
			Cd	0.050	9.0	9.0
			Cr	0.50	6.8	6.8
71907056IPW_2			Pb	2.5	87	87
			Se	1.3	< 1.3	< 1.3
103-WP-003	W. stair lower landing by s…	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	5.4	5.4
			Ba	75	200	200
			Cd	0.050	33	33
			Cr	0.50	29	29
71907056IPW_3			Pb	0.25	280	280
			Se	1.3	< 1.3	< 1.3

***NOTE: All samples where digested using a lead only digestion for Flame AA analysis, therefore only lead could be verified.**

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Justin Arnold**	**Lab Order ID:**	**71907056**
	100 NW Business Park Ln.			**Date Received:**	**03/14/2019**
	Riverside, MO 64150			**Date Reported:**	**03/28/2019**
Project:	**GFC-103 CS Wipes**			**Page:**	**2 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
103-WP-004	Concrete crawlspace step up N side	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	3.4	3.4
			Ba	75	< 75	< 75
			Cd	0.050	18	18
			Cr	0.50	14	14
71907056IPW_4			Pb	0.25	140	140
			Se	1.3	< 1.3	< 1.3
103-WP-005	Crawlspace wall ledge S. side	1	Ag	0.50	0.76	0.76
			As	2.0	5.0	5.0
			Ba	75	120	120
			Cd	0.050	25	25
			Cr	0.50	32	32
71907056IPW_5			Pb	25	560	560
			Se	1.3	< 1.3	< 1.3
103-WP-006	Column suport ledge G-19	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	< 2.0	< 2.0
			Ba	0.75	8.4	8.4
			Cd	0.050	3.0	3.0
			Cr	0.50	< 0.50	< 0.50
71907056IPW_6			Pb	2.5	69	69
			Se	1.3	< 1.3	< 1.3

***NOTE: All samples where digested using a lead only digestion for Flame AA analysis, therefore only lead could be verified.**

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Unless otherwise noted blank sample correction was not performed on analytical results. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. MDLs are available upon request. Time-weighted average (TWA) calculations are based on customer supplied data and valid only for samples included in the specified TWA group. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190.

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Justin Arnold**	**Lab Order ID:**	**71907056**
	100 NW Business Park Ln.			**Date Received:**	**03/14/2019**
	Riverside, MO 64150			**Date Reported:**	**03/28/2019**
Project:	**GFC-103 CS Wipes**			**Page:**	**3 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
103-WP-007	Top of water pipe insulation F-18	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	< 2.0	< 2.0
			Ba	7.5	10.	10.
			Cd	0.050	1.4	1.4
			Cr	0.50	< 0.50	< 0.50
71907056IPW_7			Pb	0.25	21	21
			Se	1.3	< 1.3	< 1.3
103-WP-008	E. stair - tread - to basement	1	Ag	0.50	1.0	1.0
			As	2.0	3.2	3.2
			Ba	75	76	76
			Cd	0.050	9.7	9.7
			Cr	0.50	6.0	6.0
71907056IPW_8			Pb	0.25	210	210
			Se	1.3	< 1.3	< 1.3
103-WP-009	E. stair - landing - to basement	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	< 2.0	< 2.0
			Ba	7.5	29	29
			Cd	0.050	3.9	3.9
			Cr	0.50	1.8	1.8
71907056IPW_9			Pb	0.25	55	55
			Se	1.3	< 1.3	< 1.3

***NOTE: All samples where digested using a lead only digestion for Flame AA analysis, therefore only lead could be verified.**

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Unless otherwise noted blank sample correction was not performed on analytical results. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. MDLs are available upon request. Time-weighted average (TWA) calculations are based on customer supplied data and valid only for samples included in the specified TWA group. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190.

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Justin Arnold**	**Lab Order ID:**	**71907056**
	100 NW Business Park Ln.			**Date Received:**	**03/14/2019**
	Riverside, MO 64150			**Date Reported:**	**03/28/2019**
Project:	**GFC-103 CS Wipes**			**Page:**	**4 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
103-WP-010	E. stair - column support @ landing	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	< 2.0	< 2.0
			Ba	7.5	21	21
			Cd	0.050	2.4	2.4
			Cr	0.50	1.6	1.6
71907056IPW_10			Pb	0.25	41	41
			Se	1.3	< 1.3	< 1.3
103-WP-011	E. stair - tread to second floor	1	Ag	0.50	< 0.50	< 0.50
			As	2.0	< 2.0	< 2.0
			Ba	7.5	< 7.5	< 7.5
			Cd	0.050	0.47	0.47
			Cr	0.50	< 0.50	< 0.50
71907056IPW_11			Pb	0.25	7.6	7.6
			Se	1.3	< 1.3	< 1.3
103-WP-012	Blank	-	Ag	0.50	< 0.50	-
			As	2.0	< 2.0	-
			Ba	0.75	< 0.75	-
			Cd	0.050	< 0.050	-
			Cr	0.50	< 0.50	-
71907056IPW_12			Pb	0.25	< 0.25	-
			Se	1.3	< 1.3	-

***NOTE: All samples where digested using a lead only digestion for Flame AA analysis, therefore only lead could be verified.**

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Justin Arnold**	**Lab Order ID:**	**71907056**
	100 NW Business Park Ln.			**Date Received:**	**03/14/2019**
	Riverside, MO 64150			**Date Reported:**	**03/28/2019**
Project:	**GFC-103 CS Wipes**			**Page:**	**5 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration ($µg/ft^2$)
103-WP-013	Blank	-	Ag	0.50	< 0.50	-
			As	2.0	< 2.0	-
			Ba	0.75	< 0.75	-
			Cd	0.050	< 0.050	-
			Cr	0.50	< 0.50	-
71907056IPW_13			Pb	0.25	< 0.25	-
			Se	1.3	< 1.3	-

***NOTE: All samples where digested using a lead only digestion for Flame AA analysis, therefore only lead could be verified.**

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Unless otherwise noted blank sample correction was not performed on analytical results. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. MDLs are available upon request. Time-weighted average (TWA) calculations are based on customer supplied data and valid only for samples included in the specified TWA group. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190.

Scientific Analytical Institute
4604 Dundas Dr. Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

Lab Use Only
Lab Order ID: 19070056
Client Code: _____

Contact Information

Company Name:	OCCU TEC, Inc
Address:	100 NW Business Park Ln Riverside, MO 64150
Contact:	Justin Arnold
Phone ☐:	816-810-3276
Fax ☐:	
Email ☐:	JArnold@occutec.com
PO Number:	918004
Project Name/Number:	GFC-103 CS Wipes

Billing/Invoice Information

Company:	Same
Address:	←
Contact:	Ap@occutec.com
Phone ☐:	
Fax ☐:	
Email ☐:	

Lead Test Types

Paint Chips by Flame AA (PBP) ☐	Soil by Flame AA (PBS) ☐	Other ☐
Wipe by Flame AA (PBW) ☒ PTO	Air by Flame AA (PBA) ☐	

Turn Around Times

3 Hours	☐	72 Hours	☐
6 Hours	☐	96 Hours	☐
12 Hours	☐	120 Hours	☐
24 Hours	☐	144+ Hours	☐
48 Hours	☐	Standard	

Sample ID #	Description/Location	Volume/Area	Comments
103-WP-001	W Stair Well - Stair tread to 2nd	1 SF	Vinyl
103-WP-002	W Stair Well - Stair tread to Basement	1 SF	Concrete
103-WP-003	W Stair Lower Landing by Sump	1 SF	Concrete
103-WP-004	Concrete Crawlspace Step up N side	1 SF	Concrete
103-WP-005	Crawlspace Wall Ledge S. side	1 SF	Concrete
103-WP-006	Column Support Ledge G-19	1 SF	Concrete + Metal
103-WP-007	Top of water Pipe Insulation F-18	1 SF	Fiberglass Ins
103-WP-008	E Stair - Tread - To Basement	1 SF	Concrete
103-WP-009	E Stair - Landing - To Basem	1 SF	Concrete
103-WP-010	E Stair - Colum Support @ Landing	1 SF	Concrete + Metal
103-WP-011	E Stair - Tread to Second Floor	to 1SF	Vinyle
103-WP-012	Blank	NA	
103-WP-013	Blank	NA	

Accepted ☒
Rejected ☐

Total Number of Samples _____

Relinquished by	Date/Time	Received by	Date/Time
(b) (6)	3-13-19 1600	(b) (6)	3/14 930 pm

Appendix C

Qualifications and Licenses

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Justin E. Arnold

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:	**6/11/2018**
Expiration Date:	**6/11/2020**
License Number:	**120611-300003622**

(b) (6) [redacted]

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

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

OCCU-TEC
100 NW Business Park Lane
Riverside, MO 64150
Telephone: 816.231.5580
Fax: 816.231.5641
www.occutec.com

March 18, 2019

Diane Czarnecki
Industrial Hygienist
Facilities Management Division
GSA Public Buildings Service - Heartland Region
U.S. General Services Administration
2300 Main Street, Kansas City, MO 64108

RE: Goodfellow Federal Center
Metals in Settled Dust Sampling – Building 110 Basement and Stairwells
4300 Goodfellow Boulevard
St. Louis, Missouri 63120
OCCU-TEC Project No. 918004.002

Dear Ms. Czarnecki:

Thank you for the opportunity to assist the General Services Administration (GSA) with the metals in settled dust sampling investigation of Building 110 located at the Goodfellow Federal Center (GFC), in St. Louis, Missouri. OCCU-TEC, Inc. (OCCU-TEC) understands that the purpose of the investigation was to provide additional sampling data of existing environmental conditions that are present at GFC – Building #110 that could adversely impact the health and safety of building occupants as well as workers at the facility. The following report summarizes the sample collection activities and the laboratory analytical results of samples submitted.

On February 28, 2019, a team of OCCU-TEC personnel including a Missouri licensed lead risk assessor, conducted settled dust sampling for the presence of seven of the Resource Conservation and Recovery Act (RCRA) target metals (lead, arsenic, barium, cadmium, total chromium, selenium, and silver) from various surfaces throughout the building The purpose of this testing was to further characterize the presence and concentration of target metals in the stairwells leading to the basement as well as currently stored equipment in the Basement. Results of this testing can be used to determine the extend of cleaning needed before the upcoming negative pressure project within the basement.

The proposed sampling scheme, the number of samples, the sample distribution and general methodology was developed by GSA and OCCU-TEC. Specific sample locations were determined by OCCU-TEC personnel while on-site.

Metals in Settled Dust Sampling

Metals in settled dust sampling was conducted in various horizontal surfaces throughout the basement and leading stairwells.

Dust wipe sampling was conducted in accordance with ASTM Standard E1728-16: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination. ASTM Standard E1728-16 is consistent with the methodology described in the Housing and Urban Development Guidelines and 40 CRF 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

Dust wipe sampling for the target metals was conducted on a variety of representative surfaces that have the potential of being disturbed during routine janitorial work, and planned maintenance or renovation projects within the building. A representative surface area of approximately one square foot (1 SF) was measured and delineated with pre-fabricated, disposable templates. The dust wipe samples were collected using dedicated dust wipe cloths meeting [redacted]TM standards. Each [redacted]re-moistened and individually wrapped. E[redacted]ample was collected [redacted]d forth "S" pattern over a measured sampling area. Then, the wipe [redacted] the area was wiped again in a directi[redacted]pendicular to the fi[redacted]wipe samples were then placed into lab[redacted]lean laboratory-sup[redacted]es with screw on caps. Dust wipe samples were submitted to Scientific Analytical Institute, Inc. (SAI) in Greensboro, North Carolina for Inductively Coupled Plasma (ICP) analysis of metals analysis using Environmental Protection Agency (EPA) method SW846 350B/7420.

Results of the dust wipe samples collected from the building indicate that all the thirteen (13) samples contained concentrations of target metals above laboratory detection limits. The following table identifies the range of results for each of the seven metals that were analyzed. **Samples with a "<" sign indicate that the results were below the reportable limit.**

Analysis	Lowest Concentration (µg/sq. ft.)	Highest Concentration (µg/sq. ft.)
Silver	<0.50	2.50
Arsenic	0.51	9.00
Barium	12.00	330.00
Cadmium	0.31	11.00
Total Chromium	1.10	48.00
Lead	22.00	590.00
Selenium	<0.50	<0.50

Many of the samples collected contained target metals above the Brookhaven recommended levels. Based on the results of the sampling, all the presently stored materials within the Basement of Bldg. 110 should be presumed to contain measurable levels of RCRA metals and proper precautions should be taken upon handling or disturbing the stored materials to protect workers and limit the spread of dust to the outside environment.

OCCU-TEC appreciates the opportunity to work with GSA on this project. If you have any questions concerning this report, or if we may be of any additional service, please feel free to contact us.

Sincerely,

(b) (6)

Jeff T. Smith
Senior Project Manager

(b) (6)

Kevin Heriford
Operations Manager (QA/QC)

Appendices:

A - Sample Summary Table
B - Laboratory Analysis Reports
C - Licenses

Appendix A

Sample Summary Table

Goodfellow Federal Center - Building # 110 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Recommended Limits**
110-01	Basement Level - North Stairwell at Baement Entrance	Floor	Silver	0.84	µg/ft^2	* 139/9.3
			Arsenic	0.72	µg/ft^2	** 62
			Barium	22.00	µg/ft^2	
			Cadmium	0.52	µg/ft^2	** 31
			Chromium	2.30	µg/ft^2	
			Lead	56.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-02	North Stairwell - mid level	Stair Landing	Silver	0.67	µg/ft^2	* 139/9.3
			Arsenic	0.62	µg/ft^2	** 62
			Barium	17.00	µg/ft^2	
			Cadmium	0.31	µg/ft^2	** 31
			Chromium	3.10	µg/ft^2	
			Lead	22.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-03	Basement at Column B-4	Pallet of stored air diffusers	Silver	2.50	µg/ft^2	* 139/9.3
			Arsenic	9.00	µg/ft^2	** 62
			Barium	330.00	µg/ft^2	
			Cadmium	11.00	µg/ft^2	** 31
			Chromium	48.00	µg/ft^2	
			Lead	590.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-04	Basement at Column D-4	Top of gym treadmill	Silver	0.58	µg/ft^2	* 139/9.3
			Arsenic	1.60	µg/ft^2	** 62
			Barium	47.00	µg/ft^2	
			Cadmium	1.70	µg/ft^2	** 31
			Chromium	7.80	µg/ft^2	
			Lead	180.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-05	Basement at Column E-6	Pallet of stored light fixtures	Silver	1.30	µg/ft^2	* 139/9.3
			Arsenic	3.20	µg/ft^2	** 62
			Barium	110.00	µg/ft^2	
			Cadmium	3.80	µg/ft^2	** 31
			Chromium	20.00	µg/ft^2	
			Lead	450.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-06	Basement at Column E-7	Wood doors in storage	Silver	0.92	µg/ft^2	* 139/9.3
			Arsenic	4.80	µg/ft^2	** 62
			Barium	120.00	µg/ft^2	
			Cadmium	5.70	µg/ft^2	** 31
			Chromium	24.00	µg/ft^2	
			Lead	290.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
110-07	Basement at Column B-9	Raised floor panels in storage	Silver	0.96	µg/ft^2	* 139/9.3
			Arsenic	2.50	µg/ft^2	** 62
			Barium	130.00	µg/ft^2	
			Cadmium	11.00	µg/ft^2	** 31
			Chromium	19.00	µg/ft^2	
			Lead	200.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-08	Basement at Column D-14	Pallet of stored air diffusers	Silver	< 0.50	µg/ft^2	* 139/9.3
			Arsenic	2.00	µg/ft^2	** 62
			Barium	55.00	µg/ft^2	
			Cadmium	2.10	µg/ft^2	** 31
			Chromium	21.00	µg/ft^2	
			Lead	120.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-09	Basement Wire Closet at Column F-12	East Shelf	Silver	2.30	µg/ft^2	* 139/9.3
			Arsenic	1.90	µg/ft^2	** 62
			Barium	47.00	µg/ft^2	
			Cadmium	2.30	µg/ft^2	** 31
			Chromium	7.20	µg/ft^2	
			Lead	200.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-10	Basement at Column F-13	Wire Spool on Floor	Silver	0.85	µg/ft^2	* 139/9.3
			Arsenic	1.30	µg/ft^2	** 62
			Barium	32.00	µg/ft^2	
			Cadmium	1.60	µg/ft^2	** 31
			Chromium	4.40	µg/ft^2	
			Lead	170.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-11	Basement Level - South Stairwell at Basement Entrance	Floor	Silver	0.51	µg/ft^2	* 139/9.3
			Arsenic	0.51	µg/ft^2	** 62
			Barium	15.00	µg/ft^2	
			Cadmium	0.55	µg/ft^2	** 31
			Chromium	1.10	µg/ft^2	
			Lead	33.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	
110-12	South Stairwell - mid level	Stair Landing	Silver	0.55	µg/ft^2	* 139/9.3
			Arsenic	0.52	µg/ft^2	** 62
			Barium	12.00	µg/ft^2	
			Cadmium	0.49	µg/ft^2	** 31
			Chromium	1.10	µg/ft^2	
			Lead	69.00	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
110-13	Field Blank		Silver	0.53	µg/ft^2	* 139/9.3
			Arsenic	< 0.25	µg/ft^2	** 62
			Barium	0.32	µg/ft^2	
			Cadmium	< 0.05	µg/ft^2	** 31
			Chromium	< 0.50	µg/ft^2	
			Lead	< 0.25	µg/ft^2	** 200/40
			Selenium	< 0.50	µg/ft^2	

* Recommended Limits based on Table 3 (BNL Surface Wipe Criteria for Metals) of the Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 19: 3/4/14

** Recommended Limits based on Attachment 9.3 (Required & Recommended Surface Wipe Criteria) - Brookhaven Surface Wipe Sampling Procedure (IH75190), Rev 23: 6/23/17

Indicates results at or above REL

Appendix B

Laboratory Analytical Reports

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905855**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 110**			**Page:**	**1 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
110-01	N Stairwell – at entrance to bsmt	1	Ag	0.50	0.84	0.84
			As*	0.25	0.72	0.72
			Ba*	0.50	22	22
			Cd	0.050	0.52	0.52
			Cr	0.50	2.3	2.3
71905855IPW_1			Pb	2.5	56	56
			Se	0.50	< 0.50	< 0.50
110-02	N Stairwell – at middle landing	1	Ag	0.50	0.67	0.67
			As*	0.25	0.62	0.62
			Ba*	0.50	17	17
			Cd	0.050	0.31	0.31
			Cr	0.50	3.1	3.1
71905855IPW_2			Pb	0.25	22	22
			Se	0.50	< 0.50	< 0.50
110-03	Col B-4 – stored equipment	1	Ag	0.50	2.5	2.5
			As*	0.25	9.0	9.0
			Ba*	5.0	330	330
			Cd	0.050	11	11
			Cr	5.0	48	48
71905855IPW_3			Pb	25	590	590
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

** SAI is AIHA ELLAP accredited for Pb only for dust wipe metals.*

Unless otherwise noted blank sample correction was not performed on analytical results. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. MDLs are available upon request. Time-weighted average (TWA) calculations are based on customer supplied data and valid only for samples included in the specified TWA group. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190.

Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905855**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 110**			**Page:**	**2 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
110-04	Col D-4 – stored equip	1	Ag	0.50	0.58	0.58
			As*	0.25	1.6	1.6
			Ba*	0.50	47	47
			Cd	0.050	1.7	1.7
			Cr	0.50	7.8	7.8
71905855IPW_4			Pb	2.5	180	180
			Se	0.50	< 0.50	< 0.50
110-05	Col E-6 – stored equip	1	Ag	0.50	1.3	1.3
			As*	0.25	3.2	3.2
			Ba*	5.0	110	110
			Cd	0.050	3.8	3.8
			Cr	0.50	20.	20.
71905855IPW_5			Pb	25	450	450
			Se	0.50	< 0.50	< 0.50
110-06	Col E-7 – stored equip	1	Ag	0.50	0.92	0.92
			As*	0.25	4.8	4.8
			Ba*	5.0	120	120
			Cd	0.050	5.7	5.7
			Cr	0.50	24	24
71905855IPW_6			Pb	25	290	290
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905855**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 110**			**Page:**	**3 of 5**

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
110-07	Col B-9 – stored equip	1	Ag	0.50	0.96	0.96
			As*	0.25	2.5	2.5
			Ba*	5.0	130	130
			Cd	0.050	11	11
			Cr	0.50	19	19
71905855IPW_7			Pb	25	200	200
			Se	0.50	< 0.50	< 0.50
110-08	Col D-14 – stored equip	1	Ag	0.50	< 0.50	< 0.50
			As*	0.25	2.0	2.0
			Ba*	0.50	55	55
			Cd	0.050	2.1	2.1
			Cr	0.50	21	21
71905855IPW_8			Pb	2.5	120	120
			Se	0.50	< 0.50	< 0.50
110-09	Wire Closet shelf at F-12	1	Ag	0.50	2.3	2.3
			As*	0.25	1.9	1.9
			Ba*	0.50	47	47
			Cd	0.050	2.3	2.3
			Cr	0.50	7.2	7.2
71905855IPW_9			Pb	2.5	200	200
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905855**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 110**			**Page:**	**4 of 5**

Sample ID *Lab Sample ID*	Description *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft^2)
110-10	Col F-13 – stored equip	1	Ag	0.50	0.85	0.85
			As*	0.25	1.3	1.3
			Ba*	0.50	32	32
			Cd	0.050	1.6	1.6
			Cr	0.50	4.4	4.4
71905855IPW_10			Pb	2.5	170	170
			Se	0.50	< 0.50	< 0.50
110-11	S Stairwell – bottom landing	1	Ag	0.50	0.51	0.51
			As*	0.25	0.51	0.51
			Ba*	0.50	15	15
			Cd	0.050	0.55	0.55
			Cr	0.50	1.1	1.1
71905855IPW_11			Pb	2.5	33	33
			Se	0.50	< 0.50	< 0.50
110-12	S Stairwell - middle landing	1	Ag	0.50	0.55	0.55
			As*	0.25	0.52	0.52
			Ba*	0.50	12	12
			Cd	0.050	0.49	0.49
			Cr	0.50	1.1	1.1
71905855IPW_12			Pb	2.5	69	69
			Se	0.50	< 0.50	< 0.50

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Dust Wipe Metals Concentration by Inductively-Coupled Plasma Analysis (ICP)

NIOSH 7300/EPA SW-846 3050B

Client:	**Occu-Tec, Inc.**	**Attn:**	**Jeff Smith**	**Lab Order ID:**	**71905855**
	100 NW Business Park Ln.			**Date Received:**	**03/04/2019**
	Riverside, MO 64150			**Date Reported:**	**03/15/2019**
Project:	**918004.002 Bldg 110**			**Page:**	**5 of 5**

Sample ID *Lab Sample ID*	Description *Lab Notes*	Area (ft^2)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration ($µg/ft^2$)
110-13	Blank	-	Ag	0.50	0.53	-
			As*	0.25	< 0.25	-
			Ba*	0.050	0.32	-
			Cd	0.050	< 0.050	-
			Cr	0.50	< 0.50	-
71905855IPW_13			Pb	0.25	< 0.25	-
			Se	0.50	< 0.50	-

*As – media matched matrix blank showed a media contribution of 1.5 µg

*Ba – media matched matrix blank showed a media contribution of 0.63 µg

Melissa Ferrell

Analyst

(b) (6) [redacted]

Lab Director

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Scientific Analytical Institute, Inc.
4604 Dundas Drive Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

Lab Use Only
Lab Order ID: 71905855
Client Code: _____

Company Contact Information	
Company: OccuTec	Contact: Jeff Smith
Address: 100 NW Business Park Lane	Phone ☐: 816-994-3421
Riverside, MO 64150	Fax ☐:
	Email ☐: jsmith@occutec.com

Billing/Invoice Information	Turn Around Times^	
SAME ☒	90 Min. ☐	48 Hours ☐
Company:	3 Hours ☐	72 Hours ☐
Contact:	6 Hours ☐	96 Hours ☐
Address:	12 Hours ☐	120 Hours ☐
—	24 Hours ☐	144+Hours ☒
	^TATs not available for certain test types	
PO Number:		
Project Name/Number: 918004.002 Bldg 110		

Industrial Hygiene Test Types	
Silica as Alpha Quartz*	☐
Silica as Cristobalite*	☐
Silica as Tridymite*	☐
Silica as Alpha Quartz, Cristobalite, Tridymite*	☐
Include Respirable Dust	☐
Silica Bulk*	☐
Bulk Phase ID/Whole Rock SAI Method H-SOP-003	☐
Total Dust NIOSH Method 0500	☐
Respirable Dust NIOSH Method 0600	☐
PCM NIOSH 7400 (Fibers)	☐
TEM NIOSH 7402 (Asbestos)	☐
Hexavalent Chromium (OSHA ID-215) (Note if from spray paint operations)	☐
Metals (NIOSH 7300) (Specify Metals Under Comments)	☐
Other 6010C	☒

*Modified NIOSH 7500/OSHA ID 142

Sample ID #	Description/Location	Volume/Area	Comments (List Metals Here)
110-01	N Stairwell - at entrance to basmt	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
110-02	N Stairwell - at middle landing		
110-03	Col B-4 - stored equipment		
110-04	Col D-4 - stored equip		
110-05	Col E-6 - stored equip		
110-06	Col E-7 - stored equip		
110-07	Col B-9 - stored equip		
110-08	Col D-14 - stored equip		
110-09	Wire Closet shelf at F-12		
110-10	Col F-13 - stored equip		
110-11	S Stairwell - bottom landing		
110-12	S Stairwell - middle landing		
110-13	Blank		

Accepted ☒
Rejected ☐

Total # of Samples _____

Relinquished by	Date/Time	Received by	Date/Time
(b) (6)	3-1-19 1500	(b) (6)	3/4/19 @ 1030

A-F-018 -01 EXP 12-1-13

Appendix C

Qualifications and Licenses

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Austin G. O'Byrne

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:	**12/10/2018**
Expiration Date:	**12/10/2020**
License Number:	**181210-300005671**

(b) (6) [redacted]

Randall W. Williams, MD, FACOG
Director
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