

October 30, 2018

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 103D
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 103D 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 September 19, 2018, 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 within mechanical rooms, basements, penthouses, stairwells leading to and from basements or penthouses, and the sub-floor below the raised flooring. 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 within mechanical rooms, basements, penthouses, stairwells leading to and from basements or penthouses, and the sub-floor below raised flooring.

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 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 labeled, clean laboratory-supplied plastic centrifuge tubes 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 eight (8) 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	<25.00
Arsenic	<1.30	<13.00
Barium	20.00	1600.00
Cadmium	0.34	14.0
Total Chromium	2.00	460.00
Lead	9.70	4000.00
Selenium	<0.50	<25.00

* Please note, these results may indicate higher than expected reporting limits due to interferences from other metals. Please refer to the laboratory reports for specific information.

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
Project Manager (QA/QC)

Appendices:

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

Appendix

A

Sample Summary Table

Goodfellow Federal Center - Building # 103D - Wipe Sample Data

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
103D-01	1st Floor at Column M-33	Floor (under raised floor)	Silver	< 2.50	µg/ft ²	* 139/9.3
			Arsenic	< 2.50	µg/ft ²	** 62
			Barium	63.00	µg/ft ²	
			Cadmium	14.00	µg/ft ²	** 31
			Chromium	38.00	µg/ft ²	
			Lead	160.00	µg/ft ²	** 200/40
			Selenium	< 2.50	µg/ft ²	
103D-02	1st Floor at Column L-32	Floor (under raised floor)	Silver	< 2.50	µg/ft ²	* 139/9.3
			Arsenic	< 13.00	µg/ft ²	** 62
			Barium	100.00	µg/ft ²	
			Cadmium	9.70	µg/ft ²	** 31
			Chromium	59.00	µg/ft ²	
			Lead	310.00	µg/ft ²	** 200/40
			Selenium	< 2.50	µg/ft ²	
103D-03	Stairs to Penthouse	Middle Landing	Silver	< 25.00	µg/ft ²	* 139/9.3
			Arsenic	< 2.50	µg/ft ²	** 62
			Barium	190.00	µg/ft ²	
			Cadmium	10.00	µg/ft ²	** 31
			Chromium	74.00	µg/ft ²	
			Lead	530.00	µg/ft ²	** 200/40
			Selenium	< 25.00	µg/ft ²	
103D-04	Penthouse	Floor	Silver	< 5.00	µg/ft ²	* 139/9.3
			Arsenic	7.10	µg/ft ²	** 62
			Barium	200.00	µg/ft ²	
			Cadmium	6.20	µg/ft ²	** 31
			Chromium	60.00	µg/ft ²	
			Lead	1000.00	µg/ft ²	** 200/40
			Selenium	< 5.00	µg/ft ²	
103D-05	2nd Floor - Mechanical Room	Floor	Silver	< 0.50	µg/ft ²	* 139/9.3
			Arsenic	< 1.30	µg/ft ²	** 62
			Barium	27.00	µg/ft ²	
			Cadmium	0.39	µg/ft ²	** 31
			Chromium	2.00	µg/ft ²	
			Lead	9.70	µg/ft ²	** 200/40
			Selenium	< 0.50	µg/ft ²	
103D-06	2nd Floor - Mechanical Room	Top of AHU Unit	Silver	< 0.50	µg/ft ²	* 139/9.3
			Arsenic	< 1.30	µg/ft ²	** 62
			Barium	20.00	µg/ft ²	
			Cadmium	0.34	µg/ft ²	** 31
			Chromium	11.00	µg/ft ²	
			Lead	13.00	µg/ft ²	** 200/40
			Selenium	< 0.50	µg/ft ²	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
103D-07	2nd Floor at Column L-30	Floor (under raised floor)	Silver	< 2.50	µg/ft ²	* 139/9.3
			Arsenic	< 1.30	µg/ft ²	** 62
			Barium	79.00	µg/ft ²	
			Cadmium	8.90	µg/ft ²	** 31
			Chromium	26.00	µg/ft ²	
			Lead	180.00	µg/ft ²	** 200/40
			Selenium	< 2.50	µg/ft ²	
103D-08	Basement	Ledge	Silver	< 10.00	µg/ft ²	* 139/9.3
			Arsenic	< 5.00	µg/ft ²	** 62
			Barium	1600.00	µg/ft ²	
			Cadmium	7.60	µg/ft ²	** 31
			Chromium	460.00	µg/ft ²	
			Lead	4000.00	µg/ft ²	** 200/40
			Selenium	< 25.00	µg/ft ²	
103D-09	Field Blank		Silver	< 0.50	µg/ft ²	* 139/9.3
			Arsenic	< 0.25	µg/ft ²	** 62
			Barium	1.00	µg/ft ²	
			Cadmium	< 0.05	µg/ft ²	** 31
			Chromium	< 0.50	µg/ft ²	
			Lead	1.40	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. 100 NW Business Park Ln. Riverside, MO 64150	Attn: Justin Arnold	Lab Order ID: 51824364
Project: 918004.002 Building 103D		Date Received: 09/20/2018
		Date Reported: 10/16/2018
		Page: 1 of 3

Sample ID	Description	Area (ft ²)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft ²)
Lab Sample ID	Lab Notes					
103D-01	1 st Floor Under Raised Floor M 33	1	Ag*	2.5	< 2.5	< 2.5
			As*	2.5	< 2.5	< 2.5
			Ba	2.5	63	63
			Cd	0.25	14	14
			Cr	5.0	38	38
			51824364IPW_1			Pb
			Se*	2.5	< 2.5	< 2.5
103D-02	1 st Floor Under Raised Floor L 32	1	Ag*	2.5	< 2.5	< 2.5
			As*	13	< 13	< 13
			Ba	2.5	100	100
			Cd	0.25	9.7	9.7
			Cr	5.0	59	59
			51824364IPW_2			Pb
			Se*	2.5	< 2.5	< 2.5
103D-03	Stairs to Penthouse Middle Landing	1	Ag*	25	< 25	< 25
			As*	2.5	< 2.5	< 2.5
			Ba	5.0	190	190
			Cd	0.50	10.	10.
			Cr	25	74	74
			51824364IPW_3			Pb
			Se*	25	< 25	< 25

*Ag – elevated RL possibly due to high levels of Er and/or Fe interference *As – elevated RL possibly due to high levels of Pd interference
*Se – elevated RL possibly due to high levels of Al interferences

Melissa Ferrell

Analyst

(b) (6)

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. 100 NW Business Park Ln. Riverside, MO 64150	Attn: Justin Arnold	Lab Order ID: 51824364
Project: 918004.002 Building 103D		Date Received: 09/20/2018
		Date Reported: 10/16/2018
		Page: 2 of 3

Sample ID	Description	Area (ft ²)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft ²)
Lab Sample ID	Lab Notes					
103D-04	Penthouse Floor	1	Ag*	5.0	< 5.0	< 5.0
			As*	5.0	7.1	7.1
			Ba	5.0	200	200
			Cd	0.050	6.2	6.2
			Cr	5.0	60.	60.
51824364IPW_4			Pb	25	1000	1000
			Se*	5.0	< 5.0	< 5.0
103D-05	2 nd Floor Mech Room Floor	1	Ag	0.50	< 0.50	< 0.50
			As*	1.3	< 1.3	< 1.3
			Ba	0.50	27	27
			Cd	0.050	0.39	0.39
			Cr	0.50	2.0	2.0
51824364IPW_5			Pb	0.25	9.7	9.7
			Se	0.50	< 0.50	< 0.50
103D-06	2 nd Floor Mech Room Top of AHU	1	Ag	0.50	< 0.50	< 0.50
			As*	1.3	< 1.3	< 1.3
			Ba	0.25	20.	20.
			Cd	0.050	0.34	0.34
			Cr	0.50	11	11
51824364IPW_6			Pb	0.25	13	13
			Se	0.50	< 0.50	< 0.50

*Ag – elevated RL possibly due to high levels of Er and/or Fe interference *As – elevated RL possibly due to high levels of Pd interference
 *Se – elevated RL possibly due to high levels of Al interferences

Melissa Ferrell

(b) (6)

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

NIOSH 7300/EPA SW-846 3050B



Client: Occu-Tec, Inc. 100 NW Business Park Ln. Riverside, MO 64150	Attn: Justin Arnold	Lab Order ID: 51824364
Project: 918004.002 Building 103D		Date Received: 09/20/2018
		Date Reported: 10/16/2018
		Page: 3 of 3

Sample ID	Description	Area (ft ²)	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft ²)
Lab Sample ID	Lab Notes					
103D-07	2 nd Floor Under Raised Floor L 30	1	Ag*	2.5	< 2.5	< 2.5
			As*	1.3	< 1.3	< 1.3
			Ba	2.5	79	79
			Cd	0.25	8.9	8.9
			Cr	2.5	26	26
			51824364IPW_7			Pb
			Se*	2.5	< 2.5	< 2.5
103D-08	Basement Ledge	1	Ag*	10.	< 10.	< 10.
			As*	5.0	< 5.0	< 5.0
			Ba	50.	1600	1600
			Cd	0.050	7.6	7.6
			Cr	50.	460	460
			51824364IPW_8			Pb
			Se*	25	< 25	< 25
103D-09	Blank	-	Ag	0.50	< 0.50	-
			As	0.25	< 0.25	-
			Ba	0.050	1.0	-
			Cd	0.050	< 0.050	-
			Cr	0.50	< 0.50	-
51824364IPW_9	Not on COC		Pb	0.25	1.4	-
			Se	0.50	< 0.50	-

*Ag – elevated RL possibly due to high levels of Er and/or Fe interference *As – elevated RL possibly due to high levels of Pd interference
*Se – elevated RL possibly due to high levels of Al interferences

Melissa Ferrell

Analyst

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Lab Director

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Scientific Analytical Institute, Inc.
 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: 51824314
 Client Code: _____

Company Contact Information	
Company: OCCU-TEC Inc.	Contact: Justin Arnold
Address: 100 NW Business Park Lane	Phone ☐: 816-810-3276
Riverside, Mo 64150	Fax ☐: 816-994-3478
	Email : jarnold@occutec.com

Industrial Hygiene Test Types	
Silica as Alpha Quartz (XSZ)* ☐ With Respirable Dust (XDZ) ☐	
Silica as Cristobalite (XSC)* ☐ With Respirable Dust (XDC) ☐	
Silica as Tridymite (XST)* ☐ With Respirable Dust (XDT) ☐	
Silica as Alpha Quartz, Cristobalite, Tridymite (XSA)* ☐ With Respirable Dust (XDA) ☐	
Silica Bulk (XSI)* ☐	
Bulk Phase ID/Whole Rock (XUK) ☐	
Total Dust NIOSH Method 0500 (GTD) ☐	
Respirable Dust NIOSH Method 0600 (GRD) ☐	
PCM NIOSH 7400-A Ruies (PCM) ☐	
B Rules (PCB) ☐ TWA (PTA) ☐	
TEM NIOSH 7402 (Asbestos) (TNI) ☐	
Hexavalent Chromium (OSHA ID-215) (Note if from spray paint operations) ☐	
Metals (NIOSH 7300) (Specify Metals Under Comments) ☐	
Other 6010 C ☒	

* Modified NIOSH 7500/OSHA ID-142

Billing/Invoice Information	Turn Around Times [^]	
SAME <input checked="" type="checkbox"/>	90 Min. ☐	48 Hours ☐
Company:	3 Hours ☐	72 Hours ☐
Contact:	6 Hours ☐	96 Hours ☐
Address:	12 Hours ☐	120 Hours ☐
	24 Hours ☐	144 ⁺ Hours <input checked="" type="checkbox"/>
	[^] TATs not available for certain test types	
PO Number:		
Project Name/Number: 918004.002	Building 103D	

Sample ID #	Description/Location	Volume/Area	Comments
1030-01	1 st floor Under Raised floor M33	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-02	1 st floor Under Raised floor L32	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-03	Stairs to Penthouse Middle Landing	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-04	Penthouse floor	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-05	2 nd floor Mech Room floor	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-06	2 nd floor Mech Room Top of AHU	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-07	2 nd floor Under Raised floor L30	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
1030-08	Basement ledge	1 SF	Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se
		Accepted <input checked="" type="checkbox"/>	Ag, As, Ba, Cd, Cr, Pb, Se
		Rejected <input type="checkbox"/>	Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se

Total # of Samples _____

Delivered by	Date/Time	Received by	Date/Time
(b) (6)		(b) (6)	9-20-10 10:30

Page 1 of 1

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)



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