

October 31, 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 105E
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 105E 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 seven (7) 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	<0.15	3.60
Arsenic	<1.30	3.20
Barium	42.00	250.00
Cadmium	0.41	14.00
Total Chromium	14.00	70.00
Lead	150.00	1900.00
Selenium	<2.50	<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)
[Redacted Signature]

Jeff T. Smith
Senior Project Manager

(b) (6)
[Redacted Signature]

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 # 105E - Wipe Sample Data

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
105E-01	Basement Stairwell	Lower Landing	Silver	< 0.15	µg/ft ²	* 139/9.3
			Arsenic	< 1.30	µg/ft ²	** 62
			Barium	42.00	µg/ft ²	
			Cadmium	0.41	µg/ft ²	** 31
			Chromium	14.00	µg/ft ²	
			Lead	170.00	µg/ft ²	** 200/40
			Selenium	< 13.00	µg/ft ²	
105E-02	Basement	Floor	Silver	3.60	µg/ft ²	* 139/9.3
			Arsenic	< 13.00	µg/ft ²	** 62
			Barium	70.00	µg/ft ²	
			Cadmium	2.60	µg/ft ²	** 31
			Chromium	70.00	µg/ft ²	
			Lead	1900.00	µg/ft ²	** 200/40
			Selenium	< 25.00	µg/ft ²	
105E-03	2nd Floor - Mechanical Room	Top of AHU	Silver	1.30	µg/ft ²	* 139/9.3
			Arsenic	< 2.50	µg/ft ²	** 62
			Barium	59.00	µg/ft ²	
			Cadmium	14.00	µg/ft ²	** 31
			Chromium	15.00	µg/ft ²	
			Lead	150.00	µg/ft ²	** 200/40
			Selenium	< 13.00	µg/ft ²	
105E-04	2nd Floor - Northwest End	Floor (under raised floor)	Silver	2.50	µg/ft ²	* 139/9.3
			Arsenic	2.50	µg/ft ²	** 62
			Barium	140.00	µg/ft ²	
			Cadmium	14.00	µg/ft ²	** 31
			Chromium	43.00	µg/ft ²	
			Lead	750.00	µg/ft ²	** 200/40
			Selenium	< 13.00	µg/ft ²	
105E-05	2nd Floor - Sound End	Floor (under raised floor)	Silver	2.60	µg/ft ²	* 139/9.3
			Arsenic	2.60	µg/ft ²	** 62
			Barium	110.00	µg/ft ²	
			Cadmium	3.80	µg/ft ²	** 31
			Chromium	33.00	µg/ft ²	
			Lead	860.00	µg/ft ²	** 200/40
			Selenium	< 13.00	µg/ft ²	
105E-06	Stairs to Penthouse	Middle Landing	Silver	0.22	µg/ft ²	* 139/9.3
			Arsenic	3.00	µg/ft ²	** 62
			Barium	250.00	µg/ft ²	
			Cadmium	1.40	µg/ft ²	** 31
			Chromium	27.00	µg/ft ²	
			Lead	460.00	µg/ft ²	** 200/40
			Selenium	< 13.00	µg/ft ²	

Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
105E-07	Penthouse	Floor	Silver	< 0.15	µg/ft ²	* 139/9.3
			Arsenic	3.20	µg/ft ²	** 62
			Barium	100.00	µg/ft ²	
			Cadmium	1.70	µg/ft ²	** 31
			Chromium	16.00	µg/ft ²	
			Lead	380.00	µg/ft ²	** 200/40
			Selenium	< 2.50	µg/ft ²	
105E-08	Field Blank		Silver	< 0.15	µg/ft ²	* 139/9.3
			Arsenic	< 0.25	µg/ft ²	** 62
			Barium	0.58	µg/ft ²	
			Cadmium	< 0.05	µg/ft ²	** 31
			Chromium	< 0.10	µg/ft ²	
			Lead	< 0.25	µg/ft ²	** 200/40
			Selenium	< 2.50	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

Project: 918004.002 Building 105 E

Attn: Justin Arnold

Lab Order ID: 51824505
Date Received: 09/24/2018
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					
105E-01	Stairs to Basement Lower Landing	1	Ag	0.15	< 0.15	< 0.15
			As*	1.3	< 1.3	< 1.3
			Ba	0.50	42	42
			Cd	0.050	0.41	0.41
			Cr	0.10	14	14
51824505IPW_1			Pb	2.5	170	170
			Se*	13	< 13	< 13
105E-02	Basement Floor	1	Ag	0.15	3.6	3.6
			As*	13	< 13	< 13
			Ba	2.5	70.	70.
			Cd	0.050	2.6	2.6
			Cr	1.0	70.	70.
51824505IPW_2			Pb	25	1900	1900
			Se*	25	< 25	< 25
105E-03	2 nd Floor Mechanical Room Top of AHU	1	Ag	0.15	1.3	1.3
			As*	2.5	< 2.5	< 2.5
			Ba	1.0	59	59
			Cd	0.25	14	14
			Cr	0.10	15	15
51824505IPW_3			Pb	2.5	150	150
			Se*	13	< 13	< 13

*As – elevated RL possibly due to high levels of Pd interference

*Se – elevated RL possibly due to high levels of Al interference

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: 51824505
Project: 918004.002 Building 105 E		Date Received: 09/24/2018
		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					
105E-04	2 nd Floor Under Raised Floor NW End	1	Ag	0.15	2.5	2.5
			As*	2.5	2.5	2.5
			Ba	2.5	140	140
			Cd	0.25	14	14
			Cr	0.50	43	43
			51824505IPW_4			Pb
			Se*	13	< 13	< 13
105E-05	2 nd Floor Under Raised Floor S End	1	Ag	0.15	2.6	2.6
			As*	2.5	2.6	2.6
			Ba	2.5	110	110
			Cd	0.050	3.8	3.8
			Cr	0.50	33	33
			51824505IPW_5			Pb
			Se*	13	< 13	< 13
105E-06	Stairs to Penthouse Middle Landing	1	Ag	0.15	0.22	0.22
			As*	2.5	3.0	3.0
			Ba	5.0	250	250
			Cd	0.050	1.4	1.4
			Cr	1.0	27	27
			51824505IPW_6			Pb
			Se*	13	< 13	< 13

*As – elevated RL possibly due to high levels of Pd interference

*Se – elevated RL possibly due to high levels of Al interference

Melissa Ferrell

Analyst

(b) (6)

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.
100 NW Business Park Ln.
Riverside, MO 64150

Project: 918004.002 Building 105 E

Attn: Justin Arnold

Lab Order ID: 51824505
Date Received: 09/24/2018
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					
105E-07	Penthouse Floor	1	Ag	0.15	< 0.15	< 0.15
			As*	2.5	3.2	3.2
			Ba	2.5	100	100
			Cd	0.050	1.7	1.7
			Cr	0.50	16	16
51824505IPW_7			Pb	13	380	380
			Se	2.5	< 2.5	< 2.5
105E-08	BLANK	-	Ag	0.15	< 0.15	-
			As	0.25	< 0.25	-
			Ba	0.050	0.58	-
			Cd	0.050	< 0.050	-
			Cr	0.10	< 0.10	-
51824505IPW_8			Pb	0.25	< 0.25	-
			Se	2.5	< 2.5	-

*As – elevated RL possibly due to high levels of Pd interference

Melissa Ferrell

Analyst

(b) (6)

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: 51824505
 Client Code: _____

Company Contact Information	
Company: OCCU-TEC Inc.	Contact: Justin Arnold
Address: 100 NW Business Park Lane Riverside, Mo 64150	Phone <input type="checkbox"/> : 816-810-3276 Fax <input type="checkbox"/> : 816-994-3478
	Email :jarnold@occutec.com

Billing/Invoice Information	Turn Around Times [^]	
SAME <input checked="" type="checkbox"/>	90 Min. <input type="checkbox"/>	48 Hours <input type="checkbox"/>
Company:	3 Hours <input type="checkbox"/>	72 Hours <input type="checkbox"/>
Contact:	6 Hours <input type="checkbox"/>	96 Hours <input type="checkbox"/>
Address:	12 Hours <input type="checkbox"/>	120 Hours <input type="checkbox"/>
	24 Hours <input type="checkbox"/>	144 ⁺ Hours <input checked="" type="checkbox"/>
[^] TATs not available for certain test types		
PO Number:		
Project Name/Number: 918004.002 building 105E		

Industrial Hygiene Test Types	
Silica as Alpha Quartz (XSZ)* <input type="checkbox"/>	With Respirable Dust (XDZ) <input type="checkbox"/>
Silica as Cristobalite (XSC)* <input type="checkbox"/>	With Respirable Dust (XDC) <input type="checkbox"/>
Silica as Tridymite (XST)* <input type="checkbox"/>	With Respirable Dust (XDT) <input type="checkbox"/>
Silica as Alpha Quartz, Cristobalite, Tridymite (XSA)* <input type="checkbox"/>	With Respirable Dust (XDA) <input type="checkbox"/>
Silica Bulk (XSI)* <input type="checkbox"/>	
Bulk Phase ID/W/ole Rock (XUK) <input type="checkbox"/>	
Total Dust NIOSH Method 0500 (GTD) <input type="checkbox"/>	
Respirable Dust NIOSH Method 0600 (GRD) <input type="checkbox"/>	
PCM NIOSH 7406-A Rules (PCM) <input type="checkbox"/>	
B Rules (PCB) <input type="checkbox"/>	TWA (PTA) <input type="checkbox"/>
TEM NIOSH 7402 (Asbestos) (TNI) <input type="checkbox"/>	
Hexavalent Chromium (OSHA ID-215) (Note if from spray paint operations) <input type="checkbox"/>	
Metals (NIOSH 7300) (Specify Metals Under Comments) <input type="checkbox"/>	
Other 6010 C <input checked="" type="checkbox"/>	

* Modified NIOSH 7500/OSHA ID 142

Sample ID #	Description/Location	Volume/Area	Comments
105E-01	Stairs to basement lower landing	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-02	Basement Floor	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-03	2 nd floor Mechanical Room Top of AHU	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-04	2 nd floor Under Raised floor NW End	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-05	2 nd floor Under Raised floor S End	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-06	Stairs to Penthouse Middle landing	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-07	Penthouse floor	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
105E-08	BLANK		Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se

Total # of Samples _____

Relinquished by (b) (6)	Date/Time	Received by (b) (6)	Date/Time 9-24 10:30
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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