

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 103E  
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 103E 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 five (5) 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	<3.00
Arsenic	<1.30	5.50
Barium	13.00	510.00
Cadmium	0.19	9.60
Total Chromium	2.80	67.00
Lead	37.00	1100.00
Selenium	<2.50	<130.00

\* 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 # 103E - Wipe Sample Data						
Sample Number	Location	Area Description	Analyte	Result	Units	Recommended Limits
103E-01	Basement	Ledge	Silver	< 3.00	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	5.50	µg/ft <sup>2</sup>	** 62
			Barium	510.00	µg/ft <sup>2</sup>	
			Cadmium	6.00	µg/ft <sup>2</sup>	** 31
			Chromium	67.00	µg/ft <sup>2</sup>	
			Lead	1100.00	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 130.00	µg/ft <sup>2</sup>	
103E-02	Stairs to Basement	Middle Landing	Silver	< 0.15	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	< 1.30	µg/ft <sup>2</sup>	** 62
			Barium	13.00	µg/ft <sup>2</sup>	
			Cadmium	0.19	µg/ft <sup>2</sup>	** 31
			Chromium	2.80	µg/ft <sup>2</sup>	
			Lead	64.00	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 2.50	µg/ft <sup>2</sup>	
103E-03	1st Floor - Mechanical Room Closet	Floor	Silver	< 0.15	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	< 1.30	µg/ft <sup>2</sup>	** 62
			Barium	88.00	µg/ft <sup>2</sup>	
			Cadmium	4.70	µg/ft <sup>2</sup>	** 31
			Chromium	14.00	µg/ft <sup>2</sup>	
			Lead	340.00	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 13.00	µg/ft <sup>2</sup>	
103E-04	1st Floor - Mechanical Room	Top of AHU	Silver	< 0.15	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	< 1.30	µg/ft <sup>2</sup>	** 62
			Barium	23.00	µg/ft <sup>2</sup>	
			Cadmium	9.60	µg/ft <sup>2</sup>	** 31
			Chromium	6.90	µg/ft <sup>2</sup>	
			Lead	37.00	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 2.50	µg/ft <sup>2</sup>	
103E-05	Blank		Silver	< 0.15	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	< 0.25	µg/ft <sup>2</sup>	** 62
			Barium	1.00	µg/ft <sup>2</sup>	
			Cadmium	< 0.05	µg/ft <sup>2</sup>	** 31
			Chromium	< 0.10	µg/ft <sup>2</sup>	
			Lead	0.55	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 2.50	µg/ft <sup>2</sup>	
103E-06	Stairwell to Roof - 2nd Floor	Floor Landing	Silver	< 0.15	µg/ft <sup>2</sup>	* 139/9.3
			Arsenic	1.90	µg/ft <sup>2</sup>	** 62
			Barium	150.00	µg/ft <sup>2</sup>	
			Cadmium	0.45	µg/ft <sup>2</sup>	** 31
			Chromium	16.00	µg/ft <sup>2</sup>	
			Lead	100.00	µg/ft <sup>2</sup>	** 200/40
			Selenium	< 2.50	µg/ft <sup>2</sup>	

\* 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



<b>Client:</b> Occu-Tec, Inc. 100 NW Business Park Ln. Riverside, MO 64150	<b>Attn:</b> Justin Arnold	<b>Lab Order ID:</b> 51824369
<b>Project:</b> 918004.002 Building 103E		<b>Date Received:</b> 09/20/2018
		<b>Date Reported:</b> 10/16/2018
		<b>Page:</b> 1 of 2

Sample ID	Description	Area (ft <sup>2</sup> )	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft <sup>2</sup> )
Lab Sample ID	Lab Notes					
103E-01	Basement Ledge	1	Ag*	3.0	< 3.0	< 3.0
			As*	5.0	5.5	5.5
			Ba	25	510	510
			Cd	0.050	6.0	6.0
			Cr	2.0	67	67
			51824369IPW_1			Pb
			Se*	130	< 130	< 130
103E-02	Stairs to Basement Middle Landing	1	Ag	0.15	< 0.15	< 0.15
			As*	1.3	< 1.3	< 1.3
			Ba	0.25	13	13
			Cd	0.050	0.19	0.19
			Cr	0.10	2.8	2.8
			51824369IPW_2			Pb
			Se	2.5	< 2.5	< 2.5
103E-03	1 <sup>st</sup> Floor Mech Rm Closet Floor	1	Ag	0.15	< 0.15	< 0.15
			As*	1.3	< 1.3	< 1.3
			Ba	2.5	88	88
			Cd	0.050	4.7	4.7
			Cr	0.10	14	14
			51824369IPW_3			Pb
			Se*	13	< 13	< 13

\*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



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<b>Project:</b> 918004.002 Building 103E		<b>Date Received:</b> 09/20/2018
		<b>Date Reported:</b> 10/16/2018
		<b>Page:</b> 2 of 2

Sample ID	Description	Area (ft <sup>2</sup> )	*Element	Reporting Limit (µg)	Concentration (µg)	Concentration (µg/ft <sup>2</sup> )
Lab Sample ID	Lab Notes					
103E-04	1 <sup>st</sup> Floor Mech Rm Top of AHU	1	Ag	0.15	< 0.15	< 0.15
			As*	1.3	< 1.3	< 1.3
			Ba	0.50	23	23
			Cd	0.25	9.6	9.6
			Cr	0.10	6.9	6.9
			Pb	0.25	37	37
51824369IPW_4			Se	2.5	< 2.5	< 2.5
103E-05	BLANK	-	Ag	0.15	< 0.15	-
			As	0.25	< 0.25	-
			Ba	0.050	1.0	-
			Cd	0.050	< 0.050	-
			Cr	0.10	< 0.10	-
			Pb	0.25	0.55	-
51824369IPW_5			Se	2.5	< 2.5	-
103E-06	Stairs to Roof 2 <sup>nd</sup> Landing	1	Ag	0.15	< 0.15	< 0.15
			As*	1.3	1.9	1.9
			Ba	5.0	150	150
			Cd	0.050	0.45	0.45
			Cr	0.10	16	16
			Pb	2.5	100	100
51824369IPW_6			Se	2.5	< 2.5	< 2.5

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

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: 51824369  
 Client Code: \_\_\_\_\_

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

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/Whole 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 7400-A Rules (PCM) <input type="checkbox"/>	
B Rules (FCB) <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"/>	

Billing/Invoice Information	Turn Around Times <sup>^</sup>	
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 <sup>†</sup> Hours <input checked="" type="checkbox"/>
	<sup>^</sup> TATs not available for certain test types	

PO Number: \_\_\_\_\_  
 Project Name/Number: 918004.002 Building 103E

Sample ID #	Description/Location	Volume/Area	Comments
103E-01	Basement ledge	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
103E-02	Stairs to Basement middle landing	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
103E-03	1st floor Mech Rm Closet floor	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
103E-04	1st floor Mech Rm Top of AHU	1SF	Ag, As, Ba, Cd, Cr, Pb, Se
103E-05	BLANK	<del>1SF</del> NA	Ag, As, Ba, Cd, Cr, Pb, Se
103E-06	Stairs to roof 2nd landing	1SF	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
			Ag, As, Ba, Cd, Cr, Pb, Se
			Ag, As, Ba, Cd, Cr, Pb, Se

Accepted   
 Rejected

Total # of Samples \_\_\_\_\_

(b) (6)	Date/Time	Received by	Date/Time
		(b) (6)	9/28/10 30

# **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