

April 24, 2019 Project No. 123-93309-05

Shannon Cook, Site Coordinator
Ohio Environmental Protection Agency, SE District Office
2195 E. Front Street
Logan, OH 43138

SUPPLEMENTAL MATERIALS SAMPLING FORMER SATRALLOY SITE

DEAR MR. COOK,

As requested by Maria Galanti of Ohio EPA, Golder Associates Inc. (Golder) is submitting this letter report on recent sampling performed at the Former Satralloy Site located at 4243 County Road 74, Mingo Junction, Ohio (the Site). This work was performed in support of demolition interim action work planned to start this year.

Introduction

On behalf of Cyprus Amax Minerals Company (CAMC), between November 2018 and March 2019, Golder Associates, Inc. (Golder) performed sampling of materials of interest in structures at the Former Satralloy Site (the Site), located in Mingo Junction, Ohio.

The survey and associated representative building sample collection events were conducted by Golder personnel including an Ohio certified asbestos building inspector (Jamie Bailey, OH license number ES34596) where asbestos containing materials (ACM) sampling was executed. In addition, pre-existing samples of dust-like material collected from flat roof sections of the North and South Mill Buildings during the 2016 to 2017 phase of Interim Action (IA) activities were retrieved from the on-site Connex container and included with the other samples sent for laboratory analysis.

A survey of ACMs in the Administration Building, Pump House Building, Electrical Building, and the North and South Mill Buildings was completed by Golder led by an Ohio-certified asbestos building inspector (Jamie Bailey). Bulk ACM samples were collected in accordance with the Asbestos Hazard Emergency Response Act (AHERA) regulations and analyzed by polarized light microscopy (PLM) in accordance with the United States Environmental Protection Agency (USEPA) Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R93/116, July 1993).

Laboratory analysis for the samples collected was performed by TestAmerica, Inc. (TestAmerica) of North Canton, Ohio and asbestos samples were analyzed by EMLab P&K (EMLab) (NVLAP Lab #500031-0), a TestAmerica Company located in Fort Lauderdale, Florida.

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Sampling Events

Event 1

Event 1 was performed on November 9, 2018 by Jamie Bailey and John Wise of Golder and included collecting a total of 42 bulk samples for asbestos content in accordance with AHERA regulations. A summary of samples collected is presented in Table 1. Laboratory analytical results have been previously shared with OEPA. Sample locations are presented on Drawing Sheets 1 through 4.

Event 2

Event 2 was performed by Andy Lewis and John Wise on November 14, 2018. Seven paint chip samples and two window caulk, and one brick and mortar samples were collected and analyzed for total polychlorinated biphenyls (PCBs) by USEPA Method 8082A, total lead by USEPA Method 6010B, and the Toxicity Characteristic Leaching Procedure (TCLP) USEPA Method 1311 for chromium. Analytical results from this sampling event are summarized in Table 2. Sample locations are shown on Drawing Sheets 1 through 4.

Event 3

Subsequent concrete sampling for potential asbestos content was performed by Jamie Bailey and John Wise on December 18, 2018. Prior to collecting concrete samples, loose debris were removed from the concrete surface with a soft bristle brush followed by a wire brush to prevent cross-contamination. A total of 18 bulk samples were collected; each building floor deck slab was considered a separate homogenous material and sampled in accordance with AHERA regulations. Analytical results from this sampling event are summarized in Table 1 with other ACM sample analytical outputs. Sample locations are shown on Drawing Sheets 1 through 4.

Event 4

In 2013 to 2014 during IA activities, dust cleaned from the South and North Mill Buildings and their respective baghouses was collected and placed into one or ten cubic yard (CY) bags (super sacks) and stacked for storage in the North Mill Building High Bay area. Representative bagged dust samples were collected as described in the dust sampling plan approved by OEPA (Addendum 2 of the RI/FS Workplan) and Section 3.3.2 of the RI Report. Composite samples were prepared per the work plan and were analyzed for total metals, hexavalent chromium, pH, and by the Synthetic Precipitation Leaching Procedure (SPLP) for total chromium. Because access to the dust bags would be difficult once stacked, all original grab and composite samples were maintained and stored in labeled containers.

Remedial Investigation SPLP results (Table 4.2-1) for chromium-containing dust from the North Mill Building exceeded the 5 μ g/L limit for chromium, but dust SPLP results for the South Mill Building were two orders of magnitude less. To obtain direct measurement of TCLP, Eric Hoying (Golder) returned to the Site on January 7, 2019 and collected samples from one composite for each building, selected based on RI SPLP results. Samples were analyzed using the TCLP for RCRA metals by USEPA Method WS1311. In addition, one sample was re-analyzed using the SPLP procedure as a check against prior data.

The composite samples were prepared by collecting an equal mass from each grab container to provide the 120 grams of material required by the lab methods. Analytical results from this sampling event are summarized in Table 3.



Event 5

Event 5 was performed on January 17, 2019 by Dylan Thomas and John Wise and included collecting a total of seven concrete samples from former concrete process motor pedestals located within the two Mill Buildings. The samples were analyzed for total PCBs by USEPA Method 8082A. Analytical results from this sampling event are summarized in Table 4. Sample locations are shown on Drawing Sheets 1 through 4.

Event 6

Event 6 was performed on March 7, 2019 by Dan Freese of CAMC and John Wise, and included collection of two (2) samples of Transfelt sealing strips. One sample was obtained from the ground surface adjacent to the foundation of each Mill building. The sample material was laying loose on the ground surface. The material was placed into zip lock baggies marked using a sharpie with sampler name, date, time and location. The Samples were then shipped overnight to the Golder Columbus, Ohio office. Jamie Bailey, an Ohio-certified asbestos building inspector, packaged the samples to be analyzed by polarized light microscopy (PLM) in accordance with the United States Environmental Protection Agency (USEPA) Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R93/116, July 1993). Ms. Bailey also separated the remainder of the sample volume then placed the materials in laboratory supplied jars for total PCB analysis by USEPA Method 8020A. The analytical results are summarized in Table 1. Sample locations are shown on Drawing Sheets 1 through 4.

2016 Flat Roof Sampling

Samples from the flat roof sections of the North and South Mill Buildings were obtained on November 8, 2016 by Michael Lumpkin during 2016-2017 interim action activities to evaluate the thickness and consistency of accreted dust-like material present on the flat roofs of the buildings. The collected samples were analyzed for RCRA metals by USEPA Method WS1311 TCLP. Analytical results from this sampling event are summarized in Table 5. Sample locations are shown on Drawing Sheets 1 through 4.

Closing

If you have any questions regarding this letter or the attachments hereto, please feel free to contact me or Barbara Nielsen.

Sincerely,

Golder Associates Inc.

Tu But Holder

Lee Holder

Associate Engineer, Project Manager

LKH/JW/sb

CC: Barbara Nielsen, Cyprus Amax Minerals Company

Attachments: Tables 1 through 6

Drawings (sheets 1 through 4)

https://golderassociates.sharepoint.com/sites/105450/project files/3 technical work and deliverables/1 project manual 2019/attachment j1 supplemental materials sampling report/final/12393309-05 oepa-rev0-l-sampling letter-042419.docx



Tables

Table 1: Analytical Results - Asbestos

Building	Sample Event Date	Sample ID	Material Sampled	Sample Location	Asbestos Content (%) ⁽³⁾	Condition	Quantity	EPA Category ⁽⁴⁾
		A001-A A001-B	Gray Caulk	Exterior Windows	ND	Good	NA	NA
Administration Building		A001-B A002-A						
톋		A002-B						
ē		A002-C	Yellow Linoleum	Administration Building	ND	Fair	NA	NA
ţi	Event 1	A002-D A002-E						
stra	11/9/18	A002-E A003-A						
ij		A003-B	Covebase Mastic	Administration Building	ND	Good	NA	NA
щ _р		A004-A						
⋖		A004-B	Gray Linoleum	Administration Building	ND	Fair	NA	NA
Φ		A004-C			ND (All Levers)			
Pump House	Event 1	WT001-A ⁽¹⁾ WT001-B ⁽¹⁾	Wiring	Pump House Electrical Cabinets	ND (All Layers) Insulation Layer 15% Chrysotile	Good	6 EA	Cat. II
dwn 11/	11/9/18	WT002-A WT002-B	Window Glazing	Pump House Exterior Windows	<1% Chrysotile	Good	NA	NA
		EB001-A	Electrical		-			
		EB001-A	Cabinets	Electrical Building	ND	Good	NA	NA
Electrical Building	Event 1 11/9/18	EB002-A	Black					
		EB002-B	Expansion Joint	Electrical Building Wall	3% Chrysotile	Good	10 LF	Cat. II
cal		EB003-A	Black Gaskets					
ctric		EB003-B	around Wall	Electrical Building Wall	ND	Good	NA	NA
豐		EB003-B	Penetrations Black Electrical					
		EB004-A EB004-B	Wire Wrap ⁽²⁾	Electrical Building	5% Chrysotile	Good	10 EA	Cat. II
		N006-A	1'x1' Acoustic	North Mill Building	ND	Cand	NA	NA
		N006-B	Ceiling Tiles	Ground Floor Maintenance		Good	NA	INA
		N007-A	Green Vinyl	North Mill Building	Green Floor Tile			
			Floor Tiles and	Ground Floor Maintenance	2% Chrysotile	Poor	10 SF	Cat. I
		N007-B	Black Matic	Shop Office	Black Mastic – ND			
		N008-A	Window Glazing	North Mill Building	<1% Chrysotile	Good	NA	NA
ng		N008-B N009-A	Black Covebase	Ground Floor Maintenance North Mill Building	- ,			
iÞ		N009-A N009-B	Mastic	Upstairs Bathroom	10% Chrysotile	Good	40 LF	Cat. II
Bu	Event 1		Cream-colored	openii o banii ooni	Vinyl Floor Tile –			
Ξ	11/9/18	N010-A	12"x12" Vinyl	North Mill Building Upstairs	2% Chrysotile	Good	80 SF	Cat. I
North Mill Building		N010-B	Floor Tiles and Mastic	Bathroom	Black Mastic – 3% Chrysotile			
Ž		N011-A	Window Glazing	North Mill Building	2% Chrysotile	Poor	80 LF	Cat. II
		N011-B N012-A	Brown Gasket	Maintenance Shop Exterior North Mill Building				
		N012-A N012-B	on Fan	Associated with a Fan	30% Chrysotile	Good	4 EA	Cat. I
		N012-B	Fire Brick	North Mill Building	ND	Fair	NA	NA
		N013-B	FILE BLICK	Below Furnaces Ground Floor	IND	ган	INA	INA
		N014-A	Electrical Panel	North Mill Building	ND	Good	NA	NA
		N014-B		Ľ				



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Table 1: Analytical Results - Asbestos

ß.		N015-A N015-B	Concrete	North Mill Building Top Deck	ND	Good	NA	NA
uildin)		N016-A N016-B	Concrete	North Mill Building 2nd Deck	ND	Good	NA	NA
Mill Bu (cont.)	Event 2 12/18/18	N017-A N017-B	Concrete	North Mill Building 1st Deck	ND	Good	NA	NA
North Mill Building (cont.)		N018-A N018-B	Concrete	North Mill Building Silos on Ground Floor	ND	Good	NA	NA
Z		N019-A N019-B	Concrete	A – Second Furnace Support B – Third Furnace Support	ND	Good	NA	NA
		S002-A	Concrete	South Mill Building Top Deck A – South End	ND	Good	NA	NA
		S002-B	Concrete	B – North End	ND			IVA
South Mill Building		S003-A	Concrete	South Mill Building 2nd Deck A – South End B – North End	ND	Good	NA	NA
II Bui	Event 2	S003-B	Control		5	2004		10.
th Mil	12/18/18	S004-A	Concrete	South Mill Building 1 st Deck A – South End	ND	Good	NA	NA
Sou		S004-B	000.0.0	B – North End		0000		1471
		S005-A	Concrete	South Mill Building Furnace Supports	ND	Good	NA	NA
		S005-B	2 =	A – South End B – North End		2304		

Abbreviations

EA = Each

NA = Not Applicable

LF = Lineal Feet

ND = Not Detected

SF = Square Feet

Notes

Materials testing >1% ACM are highlighted in bold.

- 2 Black electrical wire wrap was also noted in electrical cabinets on buss bars in North Mill Building, Ground Floor Electrical Room.
- The USEPA and the State of Ohio, define an asbestos containing material (ACM) as any material that contains more than one percent asbestos (>1%).
- 4 The Categories of ACM are:

Category I - nonfriable ACM: asbestos containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more Category II - nonfriable ACM: any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined Regulated asbestos-containing material (RACM) - (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.



Table 2: Analytical Resuts - Paint and Window Glazing

Sample ID	Sample Date	Material Description/Location	Building	Total PCBs (mg/kg)
SAT-PS-01	11/14/2018	Yellow Paint, 2nd Deck, stairwell	SMB	0.57
SAT-PS-02	11/14/2018	Lime green paint, interior	PH	5.1
SAT-PS-03	11/14/2018	Green paint on door frame	EB	13.9
SAT-PS-04	11/14/2018	Lime green paint, upper above Top Deck	NMB	ND
SAT-PS-05	11/14/2018	Lime green paint, Ground Floor	SMB	ND
SAT-PS-06	11/14/2018	Gray paint on beams, Top Deck	SMB	ND
SAT-PS-07	11/14/2018	South office, cream paint	NMB	39.9
SAT-PS-08	11/14/2018	Blue paint on compressor, Ground Floor	NMB	1.5
SAT-PS-09	12/18/2018	Top Deck	SMB	6.1
SAT-WC-01	11/14/2018	Exterior window glazing, chalk	PH	1.4
SAT-WC-02	11/14/2018	Window glazing, south end	NMB	2.7

Abbreviations

EB = Electric Building

PH = Pump House

NMB = North Mill Building

SMB = South Mill Building

Result Qualifer Description

ND = Not Detected

"---" = Not Analyzed



Table 3: Analytical Results - Bagged Dust

Sample ID	Sample	Duilding	Analytical	Total Metals (mg/L)								
Sample ID	Date	Building	Method	As	Ва	Cd	Cr	Pb	Se	Ag	Hg	
NMB2-T1	1/7/2019	NMB	TCLP	0.5	0.1 J	0.0024 J	35	0.5	0.5	0.5	0.002	
NMB2-T1	1/7/2019	NMB	SPLP	0.1	0.097 J	0.1	26 B	0.012 J	0.1	0.1	0.002	
SMB3-T1	1/7/2019	SMB	TCLP	0.025 J	0.1 JB	0.0017 J	2.1 B	0.05	0.014 J	0.05	0.002	

Notes:

1. Concentrations that exceed RCRA are highlighted in Bold.

Abbreviations

NMB = North Mill Building

SMB = South Mill Building

US EPA Analytical Method

TCLP = Toxicity Characteristic Leaching Procedure, USEPA Method SW1311

SPLP = Synthetic Precipitation Leaching Procedure, USEPA Method SW1312

Metals Symbols

As = Arsenic

Ba = Barium

Cd = Cadmium

Cr = Chromium

Pb = Lead

Se = Selenium

Ag = Silver

Hg = Mercury

Result Qualifer Description

B = Analyte was found in the blank.

J = Result is less than the reporting limit but greater than or equal to the method detection limit. Result in an approximate value.



Table 4: Analytical Results - Machine Pedestal Samples

Commis ID	Samuela Data	Sample Description	Building	EPA Method	Total PCBs	Total Metals (mg/L)							
Sample ID Samp	Sample Date	Sample Description			(mg/kg)	As	Ва	Cd	Cr	Pb	Se	Ag	Hg
SAT-BRICK-01	11/14/2018	Brick/mortar, under furnace	NMB	6010B	-				16				
SAT-CONC-01	12/18/2018	East furnace rail support		SW 1311	-	< 0.50	0.071 JB	0.0030 J	200 B	< 0.50	< 0.50	< 0.50	< 0.0020
SAT-CP-01	1/17/2019	Maint Shop w Oil Staining		8082A	14								
SAT-CP-02	1/17/2019	Maint Shop			80								
SAT-CP-03	1/17/2019	Cooling Water Pumps	NMB		0.25								
SAT-CP-04	1/17/2019	Casting Bay Air Compressor Room			0.27								
SAT-CP-05	1/17/2019	1st Deck, 3rd Feed Pump			0.055								
SAT-CP-06	1/17/2019	2nd Deck, Cable Feed Motor, East	SMB	8082A	0.15 J								
SAT-CP-07	1/17/2019	2nd Deck, Cable Feed Motor, West w Oil Staining			0.047 J								

Notes:

1. Concentrations that exceed RCRA are highlighted in Bold.

Abbreviations

NMB = North Mill Building

SMB = South Mill Building

US EPA Analytical Method

6010B = ICP Metals, analysis for elemental metals

8082A = Polychlorinated Biphenyls (PCBs)

SW 1311 TCLP = Toxicity Characteristic Leaching Procedure, USEPA Method SW1311

Metals Symbols

As = Arsenic

Ba = Barium

Cd = Cadmium

Cr = Chromium

Pb = Lead

Se = Selenium

Ag = Silver

Hg = Mercury

Result Qualifer Description

B = Analyte was found in the blank.

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

" --- " = Not Analyzed



Table 5: Analytical Results Flat Roof Material

												Metals	(mg/L)			
Sample ID	ple II) I · I	Sample Location	Building	Analytical Method	As	Ва	Cd	Cr	Pb	Se	Ag	Hg				
SAT-RM-S01	11/8/2016	1	NMB High Bay		0.013 J	0.37 JB	0.00075 J	0.13 B	< 0.050	< 0.050	< 0.050	< 0.0020H				
SAT-RM-S02	11/8/2016	2	NMB High Bay		0.014 J	0.39 JB	0.00064 J	0.13 B	< 0.050	< 0.050	< 0.050	< 0.0020H				
SAT-RM-S03	11/8/2016	3	NMB Low Bay	SW1311	0.021 JB	0.20 JB	0.00075 J	0.53 B	< 0.050	< 0.050	< 0.050	< 0.0020H				
SAT-RM-S04	11/8/2016	4	NMB Low Bay	(TCLP)	0.019 JB	0.19 JB	0.00076 J	0.68 B	< 0.050	< 0.050	< 0.050	< 0.0020H				
SAT-RM-S05	11/8/2016	5	NMB Low Bay		0.019 JB	0.27 JB	0.0011 J	0.14 B	< 0.050	0.0097 JB	< 0.050	< 0.0020H				
SAT-RM-S07	11/8/2016	7	SMB		0.099 JB	0.32 JB	< 0.050	< 0.50	0.0061 J	< 0.50	0.0025 J	< 0.0020H				

Notes

Roof Material samples consisted of accreted dust collected from the top of the flat roofs.

Abbreviations

NMB = North Mill Building

SMB = South Mill Building

US EPA Analytical Method

SW 1311 TCLP = Toxicity Characteristic Leaching Procedure, USEPA Method SW1311

Result Qualifer Description

B = Analyte was found in the blank.

H = Sample was prepared and/or analyzed beyond the specified holding time

J = Result is less than the reporting limit but greater than or equal to the method detection limit. Result in an approximate value.

Metals Symbols

As = Arsenic

Ba = Barium

Cd = Cadmium

Cr = Chromium

Pb = Lead

Se = Selenium

Ag = Silver

Hg = Mercury



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Table 6: Analytical Results - Transfalt Sealing Strips¹

	Total PCBs (mg/kg)												
Sample ID	Sample Date	Sample Description	Building	EPA Method	Total PCBs (mg/kg)								
SAT-MISC-01	3/7/2019	Black Non-Fibrous Material	NMB	8082A	2.8								
SAT-MISC-02	3/7/2019	Black Non-Fibrous Material	SMB	0002A	0.57								

	Asbestos Content (%)											
Sample ID	Sample Date	Sample Description	Building	EPA Method	Asbestos (%)							
N020A	3/7/2019	Black Non-Fibrous Material	NMB		ND							
N020B	3/7/2019	Black Non-Fibrous Material	INIVID	Asbestos	ND							
S006A	3/7/2019	Black Non-Fibrous Material	SMB	PLM	ND							
S006B	3/7/2019	Black Non-Fibrous Material	SIVID		ND							

Abbreviations

NMB = North Mill Building

SMB = South Mill Building

US EPA Analytical Method

8082A = Polychlorinated Biphenyls (PCBs)
Asbestos PLM = US EPA Method 600/R-93-116

Result Qualifer Description

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentratio "ND" = Non-detect

Notes:

Transfalt sealing strips from behind transite panels, composed of black, non-fibrous material.

SAT-MISC-01 collected from the same location as N020

SAT-MISC-02 collected from the same location as S006

The USEPA and the State of Ohio, define an asbestos containing material (ACM) as any material that contains more than one percent asbestos (>1%).

The Categories of ACM are:

Category I - nonfriable ACM: asbestos containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos as determined using the PLM method.

Category II - nonfriable ACM: any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the PLM method that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated asbestos-containing material (RACM) - (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.











