# Blacktrail Environmental, Inc.

ENVIRONMENTAL LIABILITY MANAGEMENT

August 5, 2022

Mr. Rolf Eggers Cape Boats 2170 Wallingford Loop Mount Dora, Florida 32757

#### RE: Mold Assessment and Air Sampling for Toxic Mold Concentrations The Capital Gallery, 109 North 4<sup>th</sup> Street, Bismarck, North Dakota Blacktrail Project No. MLD2243

Dear Mr. Eggers,

Concern about indoor exposure to mold has been increasing as the public becomes aware that exposure to mold can cause a variety of health effects and symptoms, including allergic reactions. Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter such as fallen leaves and dead trees, but indoors, mold growth should be avoided. Molds reproduce by means of tiny spores; the spores are invisible to the naked eye and float through outdoor and indoor air. Mold may begin growing indoors when spores land on surfaces that are wet. There are many types of mold, and none of them will grow without water or moisture. Molds are usually not a problem indoors, unless mold spores land on wet or damp spots and begin growing. Molds have the potential to cause health problems. Molds produce allergens (substances that can cause allergic reactions), irritants, and in some cases, potentially toxic substances (mycotoxins).

A wide variety of symptoms have been attributed to the toxic effects of fungi. Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). According to documents published by the U.S. Environmental Protection Agency (USEPA), allergic reactions to mold are common (approximately 1 in 5 individuals). They can be immediate or delayed. Some of the symptoms related to fungal exposures are non-specific, such as discomfort, inability to concentrate, and fatigue. Severe illnesses such as Organic Dust Toxic Syndrome (ODTS), Hypersensitivity Pneumonitis (HP), and pulmonary hemosiderosis have also been attributed to fungal exposures. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-allergic and non-allergic people. Symptoms other than the allergic and irritant types are not commonly reported as a result of inhaling mold.

Symptoms of ODTS are describe as the abrupt onset of fever, flu-like symptoms, and respiratory symptoms in the hours following a exposure to dust containing organic material including fungi. It differs from HP in that it is not an immune-mediated disease and does not require repeated exposures to the same causative agent. ODTS may be caused by a variety of biological agents including common species of fungi (e.g., species of *Aspergillus* and *Penicillium*). ODTS has been documented in farm workers handling contaminated material but is also of concern to workers performing renovation work on building materials contaminated with fungi.

Some studies have suggested an association between *Stachybotrys* and pulmonary hemorrhage/hemosiderosis in infants, generally those less than six months old. Pulmonary hemosiderosis is an uncommon condition that results from bleeding in the lungs. The cause of this condition is unknown, but may result from a combination of environmental contaminants and conditions (e.g., smoking, fungal contaminants and other bioaerosols, and water-damaged homes), and currently its association with *Stachybotrys* is unproven, but not dismissed (USEPA).

#### **Temperature and Relative Humidity Measurements**

Air sampling for concentrations of airborne toxic molds was performed in the commercial space on August 1, 2022. Temperature and relative humidity measurements were recorded to assist in determining conditions that may be favorable for mold growth. A digital Mannix<sup>™</sup> digital sling psychrometer/thermo-hygrometer Model Sam 990 DW was used to measure temperature and relative humidity. The temperature and relative humidity sensors were calibrated prior to the sampling event.

The measured temperature in the commercial space at the time of the sampling was 72°F. The American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE) recommends an acceptable temperature range during the heating season between 69°F and 74.5°F, and between 72°F and 78°F during the cooling (air-conditioning) season. Based on ASHRAE recommendations, the temperature inside of the commercial space at the time of the assessment was within the acceptable range.

The measured relative humidity level in the commercial space was 36%. ASHRAE recommends an acceptable relative humidity range below 70% to prevent bacteria, yeast, and mold growth from occurring in air ducts, heat exchangers and on other surfaces, but suggests that relative humidity levels be kept between 30% and 50% for optimum prevention of mold growth and individual comfort. Commercial buildings with central air conditioning generally range from 20% relative humidity in the winter season to 50% in the summer season. The measured reading was below 70% and within the ASHRAE recommendations for prevention of mold growth; therefore, *there is not* a potential for molds (or bacteria or yeast) to flourish and sustain indoor atmosphere concentration levels that would cause adverse health effects *without a direct source of water*.

#### Air Sampling Results

Air sampling for the project included collection of three air samples inside the commercial space; an air sample was not collected from outside the subject building for comparison purposes (the "control sample") because the subject area was a commercial space with no windows that open to allow outside air to enter the sampling area(s). The air sampling was conducted with Air-O-Cell<sup>®</sup> cassettes based on the recommendations of the manufacturer, Zefon International<sup>TM</sup>. Air sampling for mold with Air-O-Cell<sup>®</sup> cassettes is a widely accepted practice among the industrial hygiene community and is recognized by the American Industrial Hygiene Association (AIHA). Air sampling with Air-O-Cell<sup>®</sup> cassettes identifies and quantifies

(with normal statistical parameters) concentrations of airborne mold spores. The Air-O-Cell<sup>®</sup> cassette consists of a treated microscope slide that is contained within a cassette. The slide is treated with a sticky substance onto which mold spores and allergen particulate will adhere upon impact onto its surface. The cassette is then analyzed with the use of a Phase Contrast Microscope (PCM) for the identification of the materials on the treated microscope slide. During the analysis, the number of countable structures per spore/particle type is documented and those numbers are entered along with the scope field of view, number of traverses of the trace (if different than 6) and the air volume.

The analysis of the Air-O-Cell<sup>®</sup> cassettes was performed by EMSL Analytical, Inc. laboratory (EMSL) in Indianapolis, Indiana. The laboratory is an AIHA accredited environmental microbiology laboratory. The analyses of the samples was supervised and reviewed by Nathan Husted, a mycologist with experience in identifying indoor air molds and bacteria. The analyses of the air samples were performed to identify which contaminants in the commercial space are of a possible health concern. If *Stachybotrys* spores were observed on any of the sampling mediums, a second analyst verified its presence.

The air samples were analyzed for different types of common mold (fungi) spores that are of a potential concern because of their toxicity, commonly found in the environment, and routinely cause adverse health effects or irritation to select individuals. The samples were also analyzed for skin and insect fragments, fibrous particulate, and pollen. No areas of concern were identified from the analyses of the air samples for skin and insect fragments, fibrous particulate, and pollen. The toxic mold spores of potential concern are listed in Table 1. Results of the individual types of mold spores identified in the air samples are present in an attachment to this letter report. Guidelines for relative exposures to mold are presented in Table 2.

Table 1 - Mold Spores of Potential Concern					
Alternaria (Ulocladium)	Cladosporium	Pithomyces			
Ascospores	Curvularia	Rust			
Aspergillus/Penicillium	Epicoccum	Scopulariopsis			
Basidiospores	Fusarium	Stachybotrys			
Bipolaris	Ganoderma	Zygomycetes			
Chaetomium	Myxomycete	Unidentifiable Spores			

Although there are no indoor air quality standards for interpreting mold spore counts, the National Allergy Bureau has set some guidelines based on ecological measurements for outdoor air. The National Allergy Bureau is a section of the American Academy of Allergy, Asthma and Immunology (AAAAI) Aeroallergen Network that is responsible for reporting current pollen and mold spore levels to the media. As health effects are dependent on individual susceptibility, the relative exposure index is not based on health effects. They are relative numbers and limits.

Table 2							
National Allergy Bureau Guideline for Relative Exposures to Outdoor Mold Spores							
(Spores Per Cubic Meter of Air [Spores/m <sup>3</sup> ])							
Very Low	Very Low Low		High	Very High			
<500	500-1,000	1,000-5,000	5,000-20,000	>20,000			

In North Dakota, generally normal outside air counts during summer conditions range from 3,000 to 50,000 total toxic mold spores per cubic meter of air (spores/m<sup>3</sup>), and winter conditions range from 50 to 5,000 spores/m<sup>3</sup>. *Preferred* air counts for indoors (statistically 95% of "clean homes and commercial buildings") should be <u>below 2,000 spores/m<sup>3</sup></u>. Additionally, airborne counts of *Stachybotrys* (the "black mold") should be kept totally absent, but at least less than or equal to 20 spores/m<sup>3</sup>. The following table presents the results of the laboratory analyses of the air samples collected for toxic mold concentrations.

Sample Number	Sample Location	Aspergillus/ Penicillium (Spores/m³)	<i>Stachybotrys</i> (Spores/m³)	Total Result (Spores/m <sup>3</sup> )
MO	Marci's Office	0	0	140
G-O	Between Gallery and (Gift) Shop	80	0	240
BACK	Back Storage Area	0	0	320

The lab analyses results for the commercial space indicate acceptable levels well below the guideline of 2,000 spores/m<sup>3</sup> (i.e. no current concern to occupants). The concentration level of *Stachybotrys* (the "black mold") spores was within the guidelines for a "clean" commercial space (equal to or less than 20 spores/m<sup>3</sup>).

*Aspergillus/Penicillium* is an "indicator" of mold inside walls and ceilings, under cabinets and carpets because they germinate, grow, and multiply quickly. Very low concentrations of *Aspergillus/Penicillium* molds associated with a "clean" commercial space were identified in the air samples. A concentration of *Aspergillus/Penicillium* molds above 1,000 spores/m<sup>3</sup> usually indicates a significant area(s) of hidden mold in a subject building (i.e. a "mold problem").

*Stachybotrys* (the "black mold") spores take 8 to 10 days to germinate while remaining moist or wet. No *Stachybotrys* spores were identified in the air samples collected inside the commercial space. Based on the air sampling results it can be surmised that no *Stachybotrys* mold is currently flourishing inside the commercial space.

#### Conclusions

The total concentration of airborne toxic mold spores in commercial space is within the statistical range of a "clean" commercial space and is acceptable for all individuals, even for infants and individuals with respiratory ailments such as asthma and chronic obstructive pulmonary lung disease (COPD), etc. In addition, a Tramex<sup>™</sup> moisture meter did not identify elevated levels of moisture in the building material(s) throughout the commercial space in the building.

To additionally assess the air quality conditions of the commercial space the assessment included measurements of carbon monoxide (CO), oxygen (O<sub>2</sub>), and hydrogen sulfide (H<sub>2</sub>S). A MSA<sup>TM</sup> multi-gas meter was used to measure these parameters in the commercial space. The CO, O<sub>2</sub>, and H<sub>2</sub>S sensors were calibrated in accordance with manufacturer's instructions prior to the assessment. No level of carbon monoxide (0 ppm) or hydrogen sulfide (0 ppm) was found in the commercial space, and oxygen was identified to be at the standard concentration (20.8%).

### References

Information in the following references was considered for this project:

- *Mold Remediation in Schools and Commercial Buildings*, March 2001, U.S. Environmental Protection Agency.
- *Bioaerosols: Assessment and Controls*, 1999, American Conference of Governmental Industrial Hygienists.
- Field Guide for the Determination of Biological Contaminants in Environmental Samples, 1996, American Industrial Hygiene Association.
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*, New York City Department of Health, 2000.
- Fungal Contamination in Buildings: A Guide to Recognition and Management, 1995, Health Canada.
- Ventilation for Acceptable Indoor Air Quality, ANSI/ASHRAE standard 62-2001.
- Identifying Filamentous Fungi, 1996, Guy St-Germain and Richard Summerbell.
- Standard and Reference Guide for Professional Mold Remediation, December 2005, Institute of Assessment, Cleaning and Restoration (IICRC).
- Indoor Air Quality Sampling Methodologies, 2002, Kathleen Hess-Kosa.
- *Indoor Air Quality Handbook*, 2000, John D. Spengler, Jonathan M. Samet, and John F. McCarthy.
- The Mold Help Organization, 1255 Broadway St. NE Ste. #410, Salem, Oregon.
- Fundamentals of Industrial Hygiene (Third Edition), 1988, National Safety Council.

#### Limitations

Currently, there are no federal standards for treatment of fungal contamination. This report has been prepared to assist the client only. Blacktrail provided services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions, and with similar budget constraints. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of client. The intent of the project is to aid the client in locating fungi growth (mold) and identify concentrations of mold that may be impacting the occupants. This report is not intended to serve as a bidding document nor as a project specification document and actual site conditions and quantities should be field verified. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user. Although every attempt has been made to identify suspect fungal (mold) growth in the areas identified, the assessment techniques used are inherently limited in the sense that only full demolition procedures will reveal all building materials of a structure and therefore all areas of potential fungal growth. The size of the area impacted by fungal impact is based on professional judgment and practicality. Additionally, other possible building material hazards such as asbestos and lead-based paint were not included as part of this evaluation and may require proper sampling for identification prior to disturbance. Other unidentified microbiological impact may be located within walls, ceiling cavities, below flooring or grade, and other non-accessible areas. Precaution should be used during any remediation activities (if any).

Additionally, the passage of time may result in a change in the environmental characteristics of the subject building. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Blacktrail's assessment of the site.

Please call me at 701-527-0274, if you have questions or would like additional information.

Sincerely,

John Spilman, CSP, CHMM Sr. Industrial Hygienist

Attachments: Laboratory Results and Chain-of-Custody Certifications of the Sampling Professional



## **EMSL** Analytical, Inc.

6340 CastlePlace Dr. Indianapolis, IN 46250 Tel/Fax: (317) 803-2997 / (317) 803-3047 http://www.EMSL.com / indianapolislab@emsl.com EMSL Order: 162217506 Customer ID: BTRL34 Customer PO: Project ID:

Attention: John Spilman

Blacktrail Environmental, inc.

1112 Southport Loop Bismarck, ND 58504 Phone: (701) 527-0274 Fax: Collected Date: 08/01/2022 Received Date: 08/02/2022 09:57 AM Analyzed Date: 08/04/2022

Project: THE CAPITAL GALLERY, 109 NORTH 4TH STREET, BISMARCK ND 58501

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	162217506-0001 MO 150 MARCI OFFICE Raw Count Count/M <sup>3</sup> % of Total			162217506-0002 G-O 150 BETWEEN GALLERY AND SHOP Raw Count Count/M <sup>3</sup> % of Total			162217506-0003 BACK 150 BACK STORAGE AREAS Raw Count Count/M <sup>3</sup> % of Total		
Spore Types									
Alternaria (Ulocladium)	1	20	14.3	-	-	-	2	40	12.5
Ascospores	-	-	-	2	40	16.7	2	40	12.5
Aspergillus/Penicillium	-	-	-	4	80	33.3	-	-	-
Basidiospores	2	40	28.6	4	80	33.3	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	4	80	57.1	1	20	8.3	9	200	62.5
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	20	8.3	-	-	-
Myxomycetes++	-	-	-	-	-	-	1	20	6.3
Pithomyces++	-	-	-	-	-	-	1	20	6.3
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	7	140	100	12	240	100	15	320	100
Hyphal Fragment	1	20	-	1	20	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	2	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Kennedie Stansifer, Laboratory Manager or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulates an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber partice) risect fragment. \*\*\* Denotes particels found at 300X. \*\* Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles. Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN AIHA-LAP, LLC-EMLAP Accredited #157245

Initial report from: 08/04/2022 01:05 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com MIC\_M001\_0002\_0002 Printed: 08/04/2022 01:05 PM



-1621	-17.606
	=11.907
EMSL Order Nur	nber (Lab Use Only):

EMSL ANALYTICAL, INC. 6340 CASTLEPLACE DRIVE INDIANAPOLIS, IN 46250 317-803-2997 317-803-3047

Company : Blacktrail Environmental, Inc.				EMSL-Bill to: Same Different If Bill to is Different please note in Comments**					
Street: 1112 Southport Loop			Third Party Billing requires written authorization from third party						
City: Bismarck State/Province: ND				Zip/Postal Code: 58504 Country: US			<u></u>		
Report To (Name): John Spilman				Fax #: NA					
	#: 701-527-0274		E-mail Address: jspilman@blacktrail.co (".co" not ".com")						
	ne/ Number: The Capital Gallery,	109 North 4 <sup>th</sup> Stre	eet, Bism						
í	vide Results: 🗍 Fax 🛛 E-mail	PO#			ples Taken: ND				
Turnaround Time (TAT) Options* - Please Check									
☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Wee									
*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements									
				es (Spore Traps)	<del>-</del>				
<ul> <li>M001 Air</li> <li>M049 Bio</li> </ul>		<ul> <li>M004 All</li> <li>M043 Cy</li> </ul>		<ul> <li>M032 Aller</li> <li>M002 Cycl</li> </ul>		<ul> <li>M172 Versa Trap</li> </ul>			
<ul> <li>M030 Mi</li> </ul>		• M176 Re							
		Other Microl	biology	Test Codes	-				
<ul> <li>M005 Via</li> <li>M006 Via</li> <li>M007 Cu</li> <li>M008 Cu</li> <li>M009 Gr</li> <li>M010 Ba</li> <li>Pr</li> <li>M011 Ba</li> <li>Pr</li> <li>M013 Se</li> <li>Preservatio</li> </ul>	ngal Direct Examination able Fungi ID and Count able Fungi ID and Count (Speciation alturable Fungi and Stain Culturable Bacteria acterial Count and ID – 3 Most cominent acterial Count and ID – 5 Most cominent and ID – 5 Most cominent and ID – 5 Most cominent and ID – 5 Most and ID – 5	Count       • M015 Heterotroph         Count (Speciation)       • M180 Real Time (         eciation)       • Panel         e Bacteria       • M018 Total Colifo         D – 3 Most       • M020 Fecal Strep         D – 5 Most       • M210-215 Legion         on in Buildings       • M027 Mycotoxin /         in nan       Si         occation       Sample Type         Air O Cell       M001		nalysis c Plate Count I-PCR-ERMI 36 m Filtration) <i>ococcus</i> Filtration) <i>illa</i> Detection	<ul> <li>M029 Enterococci</li> <li>M019 Fecal Coliform</li> <li>M133 MRSA Analysis</li> <li>M028 Cryptococcus neoformans Detection</li> <li>M120 Histoplasma capsulatum Detection</li> <li>M033-39 Allergen Testing</li> <li>M044 Group Allergen (Cat, Dog, Cockroach, Dustmites)</li> <li>Other See Analytical Price Guide</li> <li>Temperature (°F)</li> <li>Humidity</li> <li>Date/Time Collected</li> <li>72</li> <li>36</li> <li>8/1/22</li> <li>72</li> <li>36</li> </ul>				
Client Sam	ple # (s): ed (Client): John Spilman	Srils	Date: 8/	Total # of Sample	s: 3 Time: 5:55 p				
	Received (Client): Kenast Journal Date: 8/2/22 Time: 4.57AM GAX Comments:								

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