SAFE ENVIRONMENT OF AMERICA, INC. *dba*
MED-TOX NORTHWEST

March 30, 2016

Lowell Cate
Helix Design Group, Inc.
6021 12th Street East, Suite 201
Tacoma, Washington 98424

Subject: Port of Tacoma Maintenance Building
Tacoma, Washington
Med-Tox Northwest Project A-8470.1

Dear Lowell:

Attached are the air samples we collected in the Port of Tacoma (POT) maintenance building last week. Ten (10) air samples were collected on Zefon *Air-O-Cell*® cassettes and delivered to EMLab P&K in Bothell, Washington for analysis in accordance with Service SOP EM-MY-S-1038. EMLab P&K is an AIHA-LAP accredited laboratory. A copy of the laboratory analytical report is attached.

The *Air-O-Cell*® is a unique air sampling cassette specifically designed for the rapid collection of a wide range of airborne aerosols including mold spores, pollen, insect parts, skin cell fragments, fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers, etc.) and inorganic particulate e.g. ceramic, fly ash, copy toner, etc.). This type of analysis can specifically identify nearly all types of airborne particles, including fungal spores, pollen, dander, man-made fibers and incendiary products. Results are reported in concentrations (particles per cubic meter) for each particle type identified. Currently there is not any level indicating typical or acceptable levels for total particulate. The particulate concentration is made up of components such as amorphous and crystalline particles, fungal spores, soot, dander, insect parts, paint, rust, tire fragments, paper, and various types of fibers and similar materials. The analyses conducted by EMLab P&K evaluated only fungal contaminates and did not evaluate non-fungal contaminates such as soot, dander, etc., that can contribute significant quantities of particulate to the indoor air stream. The Zefon *Air-O-Cell*® samples provide an indication of the range and types of airborne fungal spores that are present in the air at the time of sampling and can vary considerably on a daily basis.

Generally, indoor concentrations of fungal contaminates should be consistent with outdoor concentrations in terms of numbers and species, although indoor concentrations are generally expected to be lower than outside, ambient air levels. If there are species present in the indoor air that are not found in the ambient air it may be indicative of potential mold contamination and, depending on species and

concentration, may warrant further investigation. Many organisms are considered common flora associated with human environments and some species are considered opportunistic pathogens. It must be kept in mind that at this time there are no regulations pertaining to what is considered a healthy or unhealthy concentration of fungi in the indoor environment. In addition, due to individual susceptibilities, or individuals with compromised immune systems, any level of an opportunistic pathogen may be sufficient to cause health related problems.

A review of the laboratory data for the Zefon samples found indoor concentrations of fungal spores at concentrations well below those observed outdoors (see samples 8470.1-01 and 8470.1-10) except for the three samples collected in the high bay maintenance area which, while elevated, were in a space that was open to the outdoors due to the roll-up doors being open during the sampling event. The roof in this area is known to be leaking but most of the construction materials in this area are non-organic and not subject to microbial growth. A majority of the fungal spores observed in the exterior and interior samples were *Ascospores, Aspergillius/Penicillium*-like spores, *Basidiospores* and some *Cladosporium* which are common in the Pacific Northwest. None of the results are indicative of a health concern for the building or occupants.

It is our understanding that the source of the moisture intrusion into the building is the result of failed sealants or flashing on the building exterior and correction is in the process. During our investigation of the building, the following observations were noted:

1. Fiberglass batt insulation in the high bay maintenance area is falling in select locations due to moisture intrusion. While visibly dirty from vehicle exhaust, microbial growth was not readily apparent.
2. Window sills and surrounding GWB was visibly damaged from moisture intrusion and in the lunch room active microbial growth was present; less than 10 square feet visible. Most likely the interstitial wall space has more microbial growth and damage to the GWB system.
3. Mechanical and storage space on the second floor had standing water in the metal wall framing along the south side of the building. The building components affected by this water are inorganic although fiberglass glue in the insulation may be affected over time if the condition is not corrected and it may contribute to moisture intrusion into the GWB wall systems on the floor below.

Microbial growth on the building interior is the result of moisture intrusion and this needs to be corrected prior to any microbial remediation and/or repair of affected building components. Med-Tox Northwest recommends removal and replacement of fiberglass batt insulation affected by water damage and removal of GWB around windows and affected walls to assess the underlying condition. GWB removal should be performed under negative pressure with high efficiency particulate air (HEPA) filtration and a professional mold remediation firm.

If you need additional information or have any questions, please contact me at (253) 351-0677.

Sincerely,

Jon A. Havelock, CSP, CHMM
Senior Project Manager

Attachment

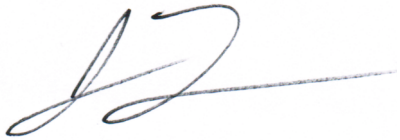
EMLab P&K
A TestAmerica Company

Report for:

Mr. Jon Havelock
Med-Tox Northwest
PO Box 1446
Auburn, WA 98071

Regarding: Project: 8470.1; Port of Tacoma-Mainten
EML ID: 1513979

Approved by:



Technical Manager
Justin Ford

Dates of Analysis:
Spore trap analysis: 03-25-2016

Service SOPs: Spore trap analysis (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #178599

EMLab P&K
19515 North Creek Pkwy N, #100, Bothell, WA 98011
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Med-Tox Northwest
C/O: Mr. Jon Havelock
Re: 8470.1; Port of Tacoma-Mainten

Date of Sampling: 03-24-2016
Date of Receipt: 03-24-2016
Date of Report: 03-25-2016

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	8470.1-01: Outside-SW corner				8470.1-02: Inside-Straddler shop South				8470.1-03: Inside-Straddler Shop-Middle				8470.1-04: Inside-Straddler Shop-NE			
Comments (see below)	None				None				None				None			
Lab ID-Version‡:	7003531-1				7003532-1				7003533-1				7003534-1			
Analysis Date:	03/25/2016				03/25/2016				03/25/2016				03/25/2016			
Sample volume (liters)	150				150				150				150			
Background debris (1-4+)††	4+				2+				2+				2+			
	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%
Hyphal fragments	1	7	7	n/a												
Pollen	1	7	7	n/a									1	7	7	n/a
§ TOTAL FUNGAL SPORES	64	1,700	n/a	100	49	1,300	n/a	100	123	3,300	n/a	100	31	830	n/a	100
Ascospores	39	1,000	27	61	23	610	27	47	61	1,600	27	50	10	270	27	32
Basidiospores	23	610	27	36	26	690	27	53	51	1,400	27	42	11	290	27	35
Chaetomium																
Cladosporium	1	27	27	2									4	110	27	13
Nigrospora									1	7	7	< 1				
Penicillium/Aspergillus types	1	27	27	2					10	270	27	8	6	160	27	19
Smuts, Periconia, Myxomycetes																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Zygomycetes																

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

*The DL/m3 has been rounded to a whole number.

††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher then reported. It is important to account for samples volumes when evaluating dust levels.

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Fungal Spores has been rounded to two significant figures to reflect analytical precision.

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Client: Med-Tox Northwest
C/O: Mr. Jon Havelock
Re: 8470.1; Port of Tacoma-Mainten

Date of Sampling: 03-24-2016
Date of Receipt: 03-24-2016
Date of Report: 03-25-2016

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	8470.1-05: Inside-Power Shop-Middle				8470.1-06: Inside-Break Room				8470.1-07: Inside-Locker Room E				8470.1-08: Inside-Locker Room W			
Comments (see below)	None				A				A				A			
Lab ID-Version‡:	7003535-1				7003536-1				7003537-1				7003538-1			
Analysis Date:	03/25/2016				03/25/2016				03/25/2016				03/25/2016			
Sample volume (liters)	150				150				150				150			
Background debris (1-4+)††	3+				2+				1+				1+			
	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%
Hyphal fragments	1	7	7	n/a												
Pollen	5	33	7	n/a												
§ TOTAL FUNGAL SPORES	38	1,000	n/a	100		< 7	n/a	100		< 7	n/a	100		< 7	n/a	100
Ascospores	20	530	27	53												
Basidiospores	14	370	27	37												
Chaetomium																
Cladosporium	3	80	27	8												
Nigrospora																
Penicillium/Aspergillus types	1	27	27	3												
Smuts, Periconia, Myxomycetes																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Zygomycetes																

Comments: A) No spores detected.

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

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Date of Sampling: 03-24-2016
Date of Receipt: 03-24-2016
Date of Report: 03-25-2016

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	8470.1-09: Inside-Office Hall 2nd FL				8470.1-10: Inside-NW Corner			
Comments (see below)	None				None			
Lab ID-Version‡:	7003539-1				7003540-1			
Analysis Date:	03/25/2016				03/25/2016			
Sample volume (liters)	150				150			
Background debris (1-4+)††	2+				2+			
	Count	Count/m3	DL/m3*	%	Count	Count/m3	DL/m3*	%
Hyphal fragments					2	13	7	n/a
Pollen					4	27	7	n/a
§ TOTAL FUNGAL SPORES	1	27	n/a	100	15	400	n/a	100
Ascospores					8	210	27	53
Basidiospores					5	130	27	33
Chaetomium								
Cladosporium	1	27	27	100	2	53	27	13
Nigrospora								
Penicillium/Aspergillus types								
Smuts, Periconia, Myxomycetes								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Zygomycetes								

Comments:

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Introduction

Molds are a natural and important part of our environment. They are ubiquitous and are found virtually everywhere. Molds produce tiny spores to reproduce. These spores can be found in both indoor and outdoor air and on indoor and outdoor surfaces. When mold spores land on a damp spot, they may begin growing and digesting whatever they are growing on in order to survive, leading to adverse conditions. In response to increasing public concern, a number of government authorities, including the United States EPA, California Department of Health Services and New York City Department of Health, have developed recommendations and guidelines for assessment and remediation of mold. Websites for these organizations can be found at the end of this report.

While it is generally accepted that molds can be allergenic and can lead to adverse health conditions in susceptible people, unfortunately there are no widely accepted or regulated interpretive standards or numerical guidelines for the interpretation of microbial data. The absence of standards often makes interpretation of microbial data difficult and controversial. This report has been designed to provide some basic interpretive information using certain assumptions and facts that have been extracted from a number of peer reviewed texts, such as the American Conference of Governmental Industrial Hygienists (ACGIH). In the absence of standards, the user must determine the appropriateness and applicability of this report to any given situation. Identification of the presence of a particular fungus in an indoor environment does not necessarily mean that the building occupants are or are not being exposed to antigenic or toxic agents.

None of the information contained herein should be construed as medical advice or a call to action for evacuation or remediation. Only a qualified physician should make any decision relative to medical significance.

EMLab P&K did not conduct the site investigation, provide consulting or collect the samples referenced in this report. EMLab P&K's primary involvement in this project is to provide analytical results for the samples submitted. The data presented in this report are based on the samples and accompanying information provided and represents concentrations at a point in time under the conditions sampled.

EMLab P&K's standard terms and conditions govern all aspects of this report.

Materials

Please refer to the chain of custody included with this report.

Methods

1. **Surface Samples – Swab, Dust, Tape and Bulk Samples**
   Swab, Dust and Tape samples are mounted on a glass slide and observed under a bright field microscope for either Qualitative or Quantitative Examination. A bulk sample is also simultaneously observed under a stereomicroscope to look for signs of any visible discoloration or fungal growth, which is then mounted and observed under a bright field microscope for either Qualitative or Quantitative Examination. The samples are analyzed at a minimum of 200X magnification and up to a 1000X magnification. In the qualitative

examination, the prepared samples are observed for the presence of any structures or skewing of spore distribution that may indicate growth in the sample being analyzed. In the quantitative examination, the mold spores detected in the sample are counted and reported as spores per cm^2, spores per gram (or 1000mg), or spores per swab/wipe, etc depending on the sample type. These methodologies do not differentiate between viable and non-viable fungal spores.

2. Air Samples- Spore Trap Device

Spore traps are a unique sampling device designed for the rapid collection and analysis of a wide range of airborne particulates, including fungal spores. While analyzing the sample, the analyst takes a number of variables into account to select the proper analytical method to accurately determine the densities of the various spores on the trace. The densities of the debris and the spores on the trace will determine the approach to analyzing the sample. In general, the sample is directly mounted under the microscope and the various airborne particles detected are counted at a minimum of 200X magnification and up to 1000X magnification, with the entire trace (100% of the sample) being analyzed at 200X or 600X. This method does not differentiate between viable and non-viable fungal spores. This technique does not allow for the differentiation between *Aspergillus* and *Penicillium* spores. Additionally, depending on morphology, other non-distinctive spores are reported in categories such as ascospores or basidiospores. All slides are graded with the following debris scale for data qualification.

Debris Rating	Description	Interpretation
None	No particles detected.	No particulates on slide. The absence of particulates could indicate improper sampling as most air samples typically capture some particles.
<1+	Good visibility. A few particles detected.	Reported values are not affected by debris.
1+	Good visibility. No crowding of particles.	
2+	Decent visibility. Particles beginning to crowd.	Non-microbial particulates can mask the presence of fungal spores. As a result, actual values could be higher than the numbers reported. Higher debris ratings increase the probability of this bias.
3+	Decent visibility. Particles beginning to crowd.	
4+	Poor visibility. Particles beginning to overlap.	Excessive debris detected in the sample. Counts reported may vary drastically and actual values could be higher than the numbers reported. The sample should be collected at a shorter time interval, or other measures taken to reduce the collection of non-microbial debris. In addition, a >4+ rating will only allow for a count from the perimeter of the slide.
>4+	Poor visibility. Particles overlapping.	

3. Comments

Comments identify issues or events that are relevant to your analytical results. A comment includes information about any peculiar observation or situation encountered while analyzing the sample. In each case, the comments provide significant information vital to the interpretation of the laboratory data.

4. Data Interpretation

According to ACGIH, "Data from individual sampling episodes is often interpreted with respect to baseline data from other environments or the same environment under anticipated low exposure conditions." In the absence of established acceptable exposure limits, it is often necessary to use a comparison standard when interpreting data. In this instance, it will be necessary to sample the suspect area as well as a non-suspect area.

According to ACGIH, "...active fungal growth in indoor environments is inappropriate and may lead to exposure and adverse health effects."

a. Total Fungal Spores

According to ACGIH, ".... differences that can detected with manageable sample sizes are likely to be in 10- fold multiplicative steps (e.g., 100 versus 1000...)". Following this logic, if total fungal spores are ten (10) times greater in the sample from a suspect area than in the negative control sample collected from a non-suspect area, then that sample area may be a fungal amplification site.

b. Mycelial Fragments

Mycelium is a fungal mass that constitutes the vegetative or living body of a fungus. Following the same logic above, if total mycelial fragments are ten (10) times greater in the suspect sample than in the negative control, then the sample area is considered to be a fungal amplification site. The presence of mycelial fragments provides evidence of microbial growth.

c. Mycotoxins

Molds can produce toxic substances called mycotoxins. More tha n 200 mycotoxins have been identified from common molds, and many more remain to be identified. Some of the molds that are known to produce mycotoxins are commonly found in moisture-damaged buildings. Exposure pathways for mycotoxins can include inhalation, ingestion, or skin contact. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available, and in some cases research is ongoing. Some molds can produce several toxins, and some molds produce mycotoxins only under certain environmental conditions. The presence of mold in a building does not necessarily mean that mycotoxins are present or that they are present in large quantities.

d. Water Indicator Molds

Certain authorities identify certain molds whose presence indicates excessive moisture. The presence of a few spores of indicator mold should be interpreted with caution. Additionally, it should be recognized that these named molds are not necessarily the only ones of potential significance.

e. Mold Glossary

Specific characteristics of the individual molds listed in the report are presented in Table 1.

f. Useful Resources

i. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health.
www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html

ii. Facts about Mold, New York City Department of Health.
www.ci.nyc.ny.us/html/doh/html/epi/epimold.html

iii. Mold Resources, United States Environmental Protection Agency. http://www.epa.gov/mold/moldresources.html
iv. Mold in My Home, What do I do? California Department of Health Services. www.asbestos.org/Microbial/index.html

Table 1: Summary of Specific Mold Characteristics

Fungi	Environmental Indicator		Typically Found
Alternaria			*Alternaria* is one of the more common fungi found in nature. It is found growing indoors on a variety of substrates including wallboards, painted walls, etc.
Arthrinium			*Arthrinium* is a saprobe and is found on plants. It is rarely found growing indoors.
Ascospores			Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. Some fungi that belong to the ascomycete family include the sexual forms of *Penicillium/ Aspergillus*, *Chaetomium*, etc that may be frequently found growing on damp substrates.
Aureobasidium			*Aureobasidium* is commonly found in a variety of soils. Indoors, it is commonly found where moisture accumulates, especially bathrooms, and kitchens, on shower curtains, tile grout, windowsills, textiles, and liquid waste materials.
Basidiospores			Basidiospores are Saprophytes and plant pathogens and are commonly found in gardens, forests, and woodlands. They also include organisms that are the agent of "dry rot," and other fungi that cause white and brown wood rot, which may grow and destroy the structural wood of buildings.
Bipolaris/ Dreschlera			*Bipolaris* and *Dreschlera* are usually found associated with plant debris, and soil. They are plant pathogens of numerous plants, particularly grasses. *Bipolaris* and *Dreschlera* can grow indoors on a variety of substrates.
Botrytis			*Botrytis* is commonly found in tropical and temperate climates growing on vegetative matter. They may be found indoors in conjugation with indoor plants, fruits and vegetables.
Chaetomium			*Chaetomium* is often found on materials containing cellulose such as sheetrock paper, or other wet materials.
Cladosporium			*Cladosporium* is a common outdoor mold. They are commonly found on dead plants, food, textiles, and a variety of other surfaces. Indoors, they can grow on a variety of substrates including textiles, wood, moist windowsills, etc. It can grow at 0°C and is associated with refrigerated foods.
Curvularia			*Curvularia* is found on plant materials and is considered a saprobe. Indoors, they can grow on a variety of substrates.
Epicoccum			*Epicoccum* is a saprophyte and considered a weekly parasitic secondary invader of plants. They tend to colonize continuously damp materials such as damp wallboard and fabrics.
Fusarium			*Fusarium* requires very wet conditions and is frequently isolated from plants and grains. They colonize continuously damp materials such as damp wallboard and water reservoirs for humidifiers and drip pans.

Memnoniella			*Memnoniella* can be found growing on a variety of cellulose-containing materials.
Nigrospora			*Nigrospora* is especially abundant in warm climates and is rarely found growing indoors.
Oidium/ Peronospora			*Oidium* and *Peronospora* are plant pathogens and are not found growing indoors.
Penicillium/ Aspergillus			*Penicillium* and *Aspergillus* are ubiquitous in environment. *Aspergillus* tends to colonize continuously damp materials such as damp wallboard and fabrics. *Penicillium* is commonly found in house dusts, wallpaper, decaying fabrics, moist clipboards, etc.
Pithomyces/ Ulocladium			*Pithomyces* is commonly found on grass and decaying plant material and are rarely found growing indoors. *Ulocladium* has a high water requirement and therefore colonizes continuously damp materials such as damp wallboard and fabrics.
Rusts			Rusts are plant pathogens and only grow on host plants.
Smuts/ *Periconia*/ Myxomycetes			Smuts and Myxomycetes are parasitic plant pathogens that require a living host. Smuts do not usually grow indoors. *Periconia* are rarely found growing indoors. Myxomycetes are occasionally found indoors, but rarely growing.
Stachybotrys			*Stachybotrys* are commonly found indoors on wet materials containing cellulose, such as wallboard, jute, wicker, straw baskets, and other paper materials.
Stemphylium			*Stemphylium* is either parasitic or saprophytic and is rarely found growing indoors.
Torula			*Torula* can grow indoors on cellulose containing materials such as wallboard, jute, wicker, straw baskets, and other paper materials.
Other brown/ colorless			An uncharacteristic fungal spore that does not lend itself to classification via direct microscopy.

 Potential Water Intrusion/Indicator Mold

 Potential Water Intrusion/Indicator Mold Capable of Mycotoxin Production

Quality Programs

The EMLab P&K's laboratory network is staffed with highly trained analysts, the majority of which hold advanced degrees. The reliability of test results depends on many factors such as the personnel performing the tests, environmental conditions, selection and validation of test methods, equipment functioning, as well as the sampling, storage and handling of test items, all of which are a reflection of the overall quality system of the laboratory.

EMLab P&K has modeled its quality system after ISO 17025, General Requirements for the Competence of Testing and Calibration Laboratories, one of the most stringent sets of standards in the industry, to ensure that its customers receive the highest standard of accuracy, reliability, and impartiality that they have come to expect from the leader in the environmental industry. EMLab P&K's laboratories adherence to the standards set forth in ISO 17025 has been validated and formally recognized through accreditations granted by an independent outside agency, American Industrial Hygiene Association (AIHA), on a site by site basis. As an additional measure to demonstrate its competency to perform the analyses it offers to its clients, EMLab P&K laboratories

also participate in a variety of different proficiency testing programs, including the Environmental Microbiology Proficiency Analytical Testing Program (EMPAT) sponsored by the American Industrial Hygiene Association.

As part of our continuous commitment to excellence, EMLab P&K laboratories are also inspected, licensed and/or accredited by a number of governmental agencies and independent associations in addition to those already mentioned above. The scope of services, accreditation certificates, and proficiency results can all be accessed at www.emlabpk.com.

References

1. Bioaerosols: Assessment and Control. Janet Macher, Ed., American Conference of Government Industrial Hygienists, Cincinnati, OH (1999).

2. EPA: The Inside Story. A Guide to Indoor Air Quality, United States Environmental Protection Agency and the United States Consumer Product Safety Commission, Washington DC (1995).

3. Health Canada: Exposure Guidelines for Residential Indoor Air Quality. Environmental Health Directorate. Health Protection Branch, Health Canada, Ottawa, Ontario (1989).

4. IIRC: Standard and Reference Guide for Professional Water Damage Restoration, 2nd Ed. Institute of Inspection, Cleaning and Restoration, Vancouver, WA (1999).

5. Field Guide for the Determination of Bio logical Contaminants in Environmental Samples. American Industrial Hygiene Association, Fairfax, VA (1996).

6. Standards of Practice for the Assessment of Indoor Environmental Quality, Volume I: Mold Sampling, Assessment of Mold Contamination. Indoor Environmental Standards Organization (2002).

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Client: Med-Tox Northwest
C/O: Mr. Jon Havelock
Re: 8470.1; Port of Tacoma-Mainten

Date of Sampling: 03-24-2016
Date of Receipt: 03-24-2016
Date of Report: 03-25-2016

MoldRANGE™: Extended Outdoor Comparison

Outdoor Location: 8470.1-01, Outside-SW corner

Fungi Identified	Outdoor data	Typical Outdoor Data for: March in Washington† (n‡=1192)						Typical Outdoor Data for: The entire year in Washington† (n‡=12666)					
	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	7	7	13	27	33	7	7	13	20	53	80	17
Bipolaris/Drechslera group	-	-	-	-	-	-	1	7	7	13	27	53	3
Chaetomium	-	7	7	13	40	70	5	7	7	13	27	67	6
Cladosporium	27	43	53	130	370	640	71	53	110	320	1,100	2,200	83
Curvularia	-	-	-	-	-	-	< 1	7	7	13	27	80	2
Nigrospora	-	-	-	-	-	-	< 1	7	7	13	13	27	1
Penicillium/Aspergillus types	27	53	53	190	480	750	85	53	110	270	690	1,200	90
Stachybotrys	-	7	7	18	130	210	2	7	7	13	80	350	2
Torula	-	13	13	13	47	53	2	7	7	13	40	53	5
Seldom found growing indoors**													
Ascospores	1,000	53	60	270	800	1,400	86	53	110	450	1,500	2,700	90
Basidiospores	610	67	140	590	2,000	3,700	94	120	320	1,400	5,000	9,800	96
Rusts	-	7	7	13	53	110	5	7	13	13	53	80	16
Smuts, Periconia, Myxomycetes	-	7	7	19	40	53	30	7	13	33	150	400	46
§ TOTAL SPORES/m3	1,700												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

‡n = number of samples used to calculate data.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor data" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. In addition, EMLab P&K may not have received and tested a representative number of samples for every region or time period. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

EMLab P&K
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Client: Med-Tox Northwest
C/O: Mr. Jon Havelock
Re: 8470.1; Port of Tacoma-Mainten

Date of Sampling: 03-24-2016
Date of Receipt: 03-24-2016
Date of Report: 03-25-2016

MoldRANGE™: Extended Outdoor Comparison

Outdoor Location: 8470.1-10, Inside-NW Corner

Fungi Identified	Outdoor data	Typical Outdoor Data for: March in Washington† (n‡=1192)						Typical Outdoor Data for: The entire year in Washington† (n‡=12666)					
	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	7	7	13	27	33	7	7	13	20	53	80	17
Bipolaris/Drechslera group	-	-	-	-	-	-	1	7	7	13	27	53	3
Chaetomium	-	7	7	13	40	70	5	7	7	13	27	67	6
Cladosporium	53	43	53	130	370	640	71	53	110	320	1,100	2,200	83
Curvularia	-	-	-	-	-	-	< 1	7	7	13	27	80	2
Nigrospora	-	-	-	-	-	-	< 1	7	7	13	13	27	1
Penicillium/Aspergillus types	-	53	53	190	480	750	85	53	110	270	690	1,200	90
Stachybotrys	-	7	7	18	130	210	2	7	7	13	80	350	2
Torula	-	13	13	13	47	53	2	7	7	13	40	53	5
Seldom found growing indoors**													
Ascospores	210	53	60	270	800	1,400	86	53	110	450	1,500	2,700	90
Basidiospores	130	67	140	590	2,000	3,700	94	120	320	1,400	5,000	9,800	96
Rusts	-	7	7	13	53	110	5	7	13	13	53	80	16
Smuts, Periconia, Myxomycetes	-	7	7	19	40	53	30	7	13	33	150	400	46
§ TOTAL SPORES/m3	400												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

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CHAIN OF CUSTODY

www.EMLabPK.com

EMLab P&K A TestAmerica Company

New Jersey: 3000 Lincoln Drive East, Suite A, Marlton, NJ 08053 * (866) 871-1984
Phoenix, AZ: 1501 West Knudson drive, Phoenix, AZ 85027 * (800) 651-4802
SSF, CA: 6000 Shoreline Court, Suite 205, South San Francisco, CA 94080 * (866) 888-6653

Weather	Fog	Rain	Snow	Wind	Clear
Level: None	☒	☐	☒	☐	☐
Light	☐	☐	☐	☒	
Moderate	☐	☐	☐	☐	
Heavy	☐	☐	☐	☐	

CONTACT INFORMATION

Company:	Med-Tox NW	Address:	PO Box 1446 Auburn WA 98071
Contact:	Jon Havelock	Special Instructions:	
Phone:	253 351 0677		

PROJECT INFORMATION

Project ID:	Shore 8470.1		
Project Description:	Port of Tacoma - Mainten		
Project Zip Code:		Sampling Date & Time:	3/24/16 0945
PO Number:	8470.1	Sampled By:	Anna Choate

TURN AROUND TIME CODES (TAT)

STD – Standard (DEFAULT)
ND – Next Business Day
SD – Same Business Day Rush
WH – Weekend / Holiday

Rushes received after 2 pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

Sample ID	Description	Sample Type (Below)	TAT (Above)	Total Volume / Area (as applicable)	Notes (Time of day, Temp, RH, etc.)
8470.1-01	outside - SW corner	ST	STD	150L	0945 46°F
02	Inside - Straddler shop South	ST	STD	150L	0950 46°F
03	Inside - Straddler shop - middle	ST	STD	150L	1005 46°F
04	Inside - Straddler shop - NE	ST	STD	150L	1020 46°F
05	Inside - Power shop - middle	ST	STD	150L	1035 46°F
06	Inside - Break Room	ST	STD	150L	1050 46°F
07	Inside - locker Room E	ST	STD	150L	1105 47°F
08	Inside - locker Room W	ST	STD	150L	1120 47°F
09	Inside - office hall 2nd Fl	ST	STD	150L	1135 47°F
10	Outside - NW Corner	ST	STD	150L	1150 47°F

REQUES[TED ANALYSIS] (Use ch[...])

BioCassette™, Water, Bulk, Dust — 001513979

Non-Culturable: Spore Trap; Tape Swab Bulk

Sample ID	Fungi – Spore Trap Analysis	Spore Trap Analysis – Other particles	Direct Microscopic Exam (Qualitative)	Quantitative Spore Count Direct Exam	1-Media Surface Fungi (Genus ID + Asp. spp.)	2-Media Surface Fungi (Genus ID + Asp. spp.)	3-Media Surface Fungi (Genus ID + Asp. spp.)	Culturable Air Fungi (Genus ID + Asp. spp.)	Gram Stain & Counts (Culturable Air & Surface Bacteria)	Legionella culture	Total Coliform, E. coli (Presence/Absence)	Membrane Filtration (specify organism):	MPN Bacteria (specify organism):	QuantiTray – Sewage Screen	Asbestos Analysis – PCM Airborne Fiber Count (NIOSH 7400)	Asbestos Analysis – PLM (EPA method 600/R-93-116)	PCR (specify test):	
01	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
02	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
03	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
04	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
05	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
06	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
07	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
08	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
09	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

SAMPLE TYPE CODES			
BC – BioCassette™	ST – Spore Trap: Zefon, Allergenco, Burkard ...	T – Tape	D – Dust
A1S – Anderson		SW – Swab	SO – Soil
SAS – Surface Air Sampler	P – Potable Water	B – Bulk	
CP – Contact Plate	NP – Non-Potable Water	O – Other,	

RELINQUISHED BY	DATE & TIME	RECEIVED BY	DATE & TIME
[signature]	3/24/16 1315	[signature]	3/24/16 1314

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at http://www.emlab.com/s/main/serviceterms.html