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October 26, 2022

Mr. Michael Lane
Environmental, Health & Safety Manager
Office of Court Management/ Facilities Management & Capital Planning Lowell District Court
41 Hurd Street
Lowell, MA 01852

Ref: Indoor Air Quality & Microbial Assessment – Visit 15
Springfield Court Complex
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA &
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA
TRC Project 499949

Dear Mr. Lane:

On October 12, 2022, TRC Environmental Corporation (TRC) conducted a limited indoor air quality and microbial assessment at the above-referenced sites. TRC conducted the following scope of work:

- Visual inspection of up to sixty-two (62) locations between the two buildings;
- Direct-reading measurements of selected indoor air quality parameters including temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2); airborne particulate as PM_{10} (particles with aerodynamic diameters of approximately 10 microns or less); total volatile organic compounds (VOC's); and
- Sampling for airborne concentrations of total fungal (mold)[1] spores in eighteen (18) indoor locations.

The site observations, test methods used, results and conclusions, and recommendations are presented below. A copy of the laboratory analytical report and the sample location drawings are included as attachments to this report.

INVESTIGATIVE STRATEGY

Visual Inspection

The readily accessible areas of the above referenced property were visually evaluated for evidence of water staining, water damage, and suspect fungal growth (mold). A reasonable effort was made to identify fungal-impacted building materials.

Carbon Dioxide, Carbon Monoxide, Temperature and Relative Humidity

TRC used a TSI® 7575X Q-Trak to monitor relative humidity, temperature, carbon monoxide (CO), and carbon dioxide (CO_2) levels.

[1] For the purposes of this report, the terms "mold" and "fungi" may be used interchangeably

- *Carbon Dioxide* - Carbon dioxide is exhaled by people and is a useful indicator of adequate make-up (fresh) air and supply per occupant. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 62.1-2019, *Ventilation for Acceptable Indoor Air Quality*, recommends the difference between indoor and outdoor CO_2 concentrations be maintained at 700 parts per million (ppm) or less. Maintaining this condition equates to approximately 15 cubic feet per minute of supply air per occupant. Under this condition, a substantial majority of visitors entering a space will be satisfied with respect to human bioeffluents (body odor). The Massachusetts Department of Public Health (MA DPH) uses a guideline of 800 ppm of CO_2 for publicly occupied buildings[2]. Note that while indoor CO_2 levels are useful for evaluating the outdoor air ventilation provided to a building, these levels are typically well below concentrations that might pose a CO_2-related health risk (greater than 5,000 ppm). Ambient concentrations of CO_2 generally range from 300 - 500 ppm.

- *Carbon Monoxide* - Carbon monoxide is a colorless, odorless gas that can cause fatigue or drowsiness, nausea, headache, and difficulty breathing when present at elevated levels. ASHRAE Standard 62.1-2019 recommends carbon monoxide concentrations less than 9 ppm indoors as an eight-hour average.

- *Temperature and Relative Humidity* - ASHRAE Standard 55-2020, *Thermal Environmental Conditions for Human Occupancy* bases occupant thermal comfort on a combination of metabolic rate, clothing insulation, air temperature (dry bulb temperature as a substitute for operative temperature), radiant temperature, air speed, and humidity. Conditions are considered to be satisfactory when a substantial majority of occupants (80% or more) are not expressing dissatisfaction with thermal comfort.

  ASHRAE standard 62.1-2019 *Ventilation for Acceptable Indoor Air Quality* recommends that the relative humidity be maintained below 65%.

Measurement of Airborne Particulate Matter

A TSI® DustTrak DRX Aerosol Monitor was used to monitor airborne particulate matter of approximately 10 micrometers or less in diameter (PM_{10}).

Airborne particulate in indoor environments originates from various sources including building materials and furnishings, occupant activities, cleaning, construction, and renovation activities, and from outdoors. High concentrations of airborne dust may cause irritation of the eyes, skin, and respiratory tract.

The U.S. EPA has established a health-based National Ambient Air Quality Standard (NAAQS) for PM_{10} to evaluate outdoor air quality. This is not intended to evaluate worker exposure but is meant to protect the health of sensitive individuals within the general population. The NAAQS is based on rolling-24-hour average concentrations over a 3-day period and as such, is not directly comparable to individual PM measurements taken during this assessment; however, the NAAQS

[2] MA DPH "Carbon Dioxide and Its Use in Evaluating Adequacy of Ventilation in Buildings", www.mass.gov/eohhs/docs/dph/environmental/iaq/appendices/carbon-dioxide.pdf

is provided in this report as a benchmark. The NAAQS for PM_{10} is 0.150 milligrams per cubic meter of air (mg/m^3) measured as a 24-hour average concentration.

The OSHA Permissible Exposure Limit (PEL) for occupational exposure to total dust is 15 mg/m^3, and for the respirable dust fraction, 5 mg/m^3, both as 8-hour average concentrations.

The instrument is calibrated approximately annually by the manufacturer and is zeroed prior to use in the field.

Measurement of Total Volatile Organic Compounds (VOCs)

A ppbRAE Model PGM-7240, ppbRAE 3000 photo-ionizing detector (PID) (or similar instrument) was used to monitor VOCs. VOC measurements were performed to determine if unusually elevated concentrations of this group of air contaminants existed at the monitored locations. VOCs have many sources, including, but not limited to the evaporation of paint solvents; adhesives; and office or personal products that are used in the building, such as cosmetic fragrances, air fresheners and deodorizing and sanitizing products.

Although the instrument used in this study is a useful screening method for detecting indoor VOCs, it provides no information on the identities and relative amounts of individual compounds that may be present. If indoor VOC concentrations are significantly and consistently greater than the outdoor VOC concentration, then one or more indoor VOC sources may be present.

The U.S. Green Building Council Leadership in Energy and Environmental Design (USGBC LEED) for New Construction-2009 requirements specify a maximum VOC concentration of 0.500 milligrams per cubic meter of air (mg/m^3) in newly constructed areas and is used in this report as a guideline for evaluating indoor air quality. Assuming an average VOC molecular weight similar to that of n-hexane, this corresponds to approximately 0.140 ppm VOCs.

The instrument was calibrated prior to use in the field using standard isobutylene calibration gas.

Microbial Sampling – Air Samples

Sampling for airborne concentrations of total fungal spores was conducted using Air-O-Cell sampling cassettes. Samples were collected at 15 liters of air per minute for five-minute sampling periods using a high-volume sampling pump. Airborne particulates were drawn through the cassette and directly impacted onto an adhesive collection media. The samples were shipped to Hayes Microbial Consulting of Midlothian, Virginia where they were analyzed to determine the quantity and identity of fungal spore types using bright field microscopy (magnification 300x and 600x). Hayes Microbial participates in the American Industrial Hygiene Association (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP), certification #188863. The Air-O-Cell cassette collects both viable and non-viable fungal spores, and the laboratory can identify some of the collected spores down to the genus level.

TRC collected representative air samples in selected indoor locations and also outdoors, for comparison purposes.

There is currently little information available on total airborne fungal spore dose-response relationships, and there are no recommended allowable exposure limits established for airborne spores. The American Conference of Governmental Industrial Hygienists (ACGIH) publication *Bioaerosols: Assessment and Control*, indicates that an exposure may be considered unusual when indoor concentrations are significantly higher than those outdoors, or when the types of mold detected indoors vs. outdoors differ markedly.

RESULTS

Visual Inspection

On the day of this assessment, no suspect fungal growth was observed in any of the areas inspected. Horizontal surfaces appeared to be clean of any dust or debris.

Indoor Air Quality Measurements

Results of the indoor air quality measurements are presented in the table below. The results are presented in the following units: temperature measurements are presented in degrees Fahrenheit (ºF); relative humidity measurements are presented as percent relative humidity (%); the CO_2, CO, and VOC measurements are presented in concentration units of parts per million parts of air, by volume (ppm); and PM_{10} measurements are presented in concentration units of milligrams per cubic meter of air (mg/m^3).

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
October 12, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA							
001	G28 – Locker Room	70.8	49.0	655	ND (<3)	0.004	ND (<0.020)
002	G27D – Kitchen	72.1	45.7	623	ND (<3)	0.003	ND (<0.020)
003	G01 – Office	71.0	45.9	648	ND (<3)	0.017	0.029
004	G40B – File Room	72.1	46.4	644	ND (<3)	0.003	ND (<0.020)
005	G44 – Mechanical	71.0	44.7	681	ND (<3)	0.022	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts October 12, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
006	G54 – Breakroom	73.2	43.9	680	ND (<3)	0.004	ND (<0.020)
007	138A – District Attorney	71.0	43.9	642	ND (<3)	0.001	ND (<0.020)
008	167 – District Court Probation	72.2	46.9	783	ND (<3)	0.010	ND (<0.020)
009	163 – Office	73.4	44.0	706	ND (<3)	0.005	ND (<0.020)
010	113 – Office	73.6	43.4	745	ND (<3)	0.018	ND (<0.020)
011	100 – Parking Tickets	71.0	44.3	711	ND (<3)	0.010	ND (<0.020)
012	132 – Office	72.0	45.9	707	ND (<3)	0.008	ND (<0.020)
013	2nd Floor, Upper Lobby	72.5	44.5	728	ND (<3)	0.011	ND (<0.020)
014	204B – Judges Lobby	68.6	45.7	667	ND (<3)	0.005	ND (<0.020)
015	239 – Court Officer Office	72.3	48.6	769	ND (<3)	0.005	ND (<0.020)
016	249A – Judges Lobby	77.6	42.2	697	ND (<3)	ND (<0.001)	ND (<0.020)
017	Superior Courtroom 8	74.9	41.4	698	ND (<3)	0.001	ND (<0.020)
018	241 – Office	73.3	42.8	725	ND (<3)	0.004	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts October 12, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
019	204A – Conference Room	68.1	45.8	681	ND (<3)	0.004	ND (<0.020)
020	204 – Judges Lobby Reception	67.9	51.3	770	ND (<3)	0.004	ND (<0.020)
021	309 – Law Library Office	70.9	46.5	723	ND (<3)	0.002	ND (<0.020)
022	Superior Courtroom #3	72.4	45.7	668	ND (<3)	0.003	ND (<0.020)
023	330 – Breakroom	75.2	43.7	751	ND (<3)	0.002	ND (<0.020)
024	331 – Lounge	75.7	41.7	742	ND (<3)	0.004	ND (<0.020)
025	378A – Jury Room	77.0	41.6	762	ND (<3)	0.004	ND (<0.020)
026	363 – Office	77.9	38.6	711	ND (<3)	0.005	ND (<0.020)
027	451 – Conference Room	74.5	36.3	609	ND (<3)	0.003	ND (<0.020)
028	403 – Conference Room	72.5	36.5	583	ND (<3)	0.002	ND (<0.020)
029	427 – Employee Lounge	74.0	38.7	689	ND (<3)	0.004	ND (<0.020)
030	426 – Employee Lounge	75.8	37.0	736	ND (<3)	0.010	ND (<0.020)
031	445E – Office	76.1	35.7	707	ND (<3)	0.006	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts October 12, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
032	442 - Office	76.2	35.2	657	ND (<3)	0.006	ND (<0.020)
033	Outdoor – Front Entrance 50 State Street	69.6	45.2	438	ND (<3)	0.022	ND (<0.020)
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA							
034	Outdoors - Front 80 State Street	70.2	41.2	454	ND (<3)	0.030	ND (<0.020)
035	112 – Stairwell	69.6	49.4	839	ND (<3)	0.008	ND (<0.020)
036	104 – Security	70.7	48.3	849	ND (<3)	0.013	ND (<0.020)
037	142 – Locker/Vault Room	71.9	47.0	802	ND (<3)	0.007	ND (<0.020)
038	135 – Breakroom	71.5	47.0	856	ND (<3)	0.011	ND (<0.020)
039	124 – Waiting Area	72.2	47.5	874	ND (<3)	0.011	ND (<0.020)
040	151A – Conference Room	73.5	43.5	621	ND (<3)	0.015	ND (<0.020)
041	149 – Stairwell	73.2	43.5	586	ND (<3)	0.008	ND (<0.020)
042	B65 – Cell	73.0	45.5	809	ND (<3)	0.007	ND (<0.020)
043	B60 – Storage	72.5	44.6	702	ND (<3)	0.007	ND (<0.020)
044	B46 – Mechanical	71.8	46.4	717	ND (<3)	0.008	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts October 12, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
045	B15 – File Room	71.1	44.2	545	ND (<3)	0.008	ND (<0.020)
046	B09 – Pump/Compressor Room	70.6	46.0	539	ND (<3)	0.010	ND (<0.020)
047	B37 – Office	71.4	46.2	679	ND (<3)	0.015	ND (<0.020)
048	B24 – Copy Room	71.6	44.2	574	ND (<3)	0.015	ND (<0.020)
049	323 – Office	72.3	42.5	536	ND (<3)	0.008	ND (<0.020)
050	330 – Elevator Lobby	73.3	42.1	547	ND (<3)	0.011	ND (<0.020)
051	341 – Office	73.0	40.8	510	ND (<3)	0.010	ND (<0.020)
052	340 – Corridor	72.4	41.0	532	ND (<3)	0.011	ND (<0.020)
053	224 – Judges Lobby	72.9	41.9	543	ND (<3)	0.007	ND (<0.020)
054	248 – Probation Waiting Area	72.9	40.5	551	ND (<3)	0.008	ND (<0.020)
055	251 – Office	73.3	40.6	560	ND (<3)	0.008	ND (<0.020)
056	229 – Stairwell 4	72.8	42.7	677	ND (<3)	0.007	ND (<0.020)
057	220 – Conference Room	72.0	39.9	501	ND (<3)	0.006	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
October 12, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
058	205 – Janitors Closet	71.5	42.5	495	ND (<3)	0.010	ND (<0.020)
059	208 – Jury Deliberation	73.0	40.0	461	ND (<3)	0.005	ND (<0.020)
060	321 – Conference Room	72.9	39.5	476	ND (<3)	0.007	ND (<0.020)
061	305 – Office	73.0	39.9	510	ND (<3)	0.006	ND (<0.020)
062	301 – Conference Room	77.1	38.9	515	ND (<3)	0.009	ND (<0.020)
Desired Comfort Range		~67 to 82	Less than 60 to 65	Less than 800 to ~1,100	< 5 to < 9	≤ 0.150	≤ 0.140

See Attachment B – Floor Plan for location of measurements

ppm = parts per million parts of air, by volume

mg/m^3 = milligrams per cubic meter of air

ND = non-detect, below reliable limit of quantification or detection

REFERENCE VALUES

Carbon Dioxide (CO_2): ASHRAE maximum recommended CO_2 level indicating adequate supply of outdoor air = outdoor concentration + 700 ppm (i.e.,1,100 ppm);

MA DPH maximum recommended CO_2 level = 800 ppm

Carbon Monoxide (CO): USGBC LEED (2009) 9 ppm, if outdoor measurement no greater than 2 ppm above outdoors

Temperature range guidelines based on ASHRAE 55-2020, at various levels of relativehumidity:

Relative Humidity	Winter Temperature	Summer Temperature
< 20%	70 to 79 ºF	76 to 83 ºF
20 to 40%	69 to 78 ºF	75 to 82 ºF
40 to 60%	68 to 77 ºF	74 to 81 ºF

Temperature and Relative Humidity.

Temperatures were generally within the recommended comfort ranges for seasonal occupancy at the observed relative humidity levels.

All relative humidity measurements collected in the Roderick L. Ireland Courthouse were below 65%. As we head into the heating season, the use of dehumidifying equipment and actions to reduce indoor humidity levels throughout the building to improve occupant comfort and for optimum building conditions and maintenance will become less necessary.

With all of the relative humidity measurements below the acceptable range, no corrective measures are required based on the temperature and relative humidity measurements in this building.

Carbon Dioxide.

The average CO_2 concentrations throughout the buildings ranged from 461 to 874 ppm and outdoor concentrations ranged from 438 to 454 ppm. The average CO_2 concentrations during the current occupancy conditions remained below the ASHRAE guideline (i.e., the outdoor concentration of approximately 400 ppm + 700 ppm). All the CO_2 measurements represent favorable findings, reflecting efforts to maintain good ventilation within the buildings.

Carbon Monoxide.

The CO measurements were non-detect (< 3 ppm) and were within the recommended indoor air quality guideline. No corrective measures are indicated based on the CO measurements.

Total Volatile Organic Compounds (VOCs).

All VOC measurements throughout the buildings ranged from non-detect (<0.020 ppm) to 0.020 ppm. All VOC measurements were below the desired comfort range and occupational exposure limits for common VOCs that are likely to be present in buildings. Therefore, no corrective measures are recommended at this time. Note that hand sanitizers and sanitizing wipes may be a source of temporary increases in VOC concentrations.

Airborne Particulate Matter.

The average PM_{10} measurements throughout the buildings ranged from ND (<0.001 mg/m^3) to 0.022 mg/m^3 and were below the guideline of 0.150 mg/m^3. No corrective measures are indicated based on the PM_{10} measurements.

Microbial Sampling.

The results of air sampling for mold are presented in the table below. The air sampling results are presented in concentration units of spores per cubic meter of air (spores/m^3). The laboratory analytical report is included as Attachment A.

Microbial Sampling Results Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts October 12, 2022				
Sample Number	**Location**	**Sample Type**	**Mold Detected (spores/m³)**	**Interpretation**
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA				
34929167	G28 – Locker Room	Air	27	See Comment 1
34922164	138A – District Attorney	Air	13	See Comment 1
34922163	100 – Parking Tickets	Air	53	See Comment 1
34922160	2nd Floor – Upper Lobby	Air	39	See Comment 1
34922158	204B – Judges Lobby	Air	53	See Comment 1
34922171	204A – Conference Room	Air	13	See Comment 1
34922170	204 – Judges Lobby Reception	Air	27	See Comment 1
34922165	309 – Law Library Office	Air	40	See Comment 1
34922161	330 – Breakroom	Air	13	See Comment 1
34921806	427 – Employee Lounge	Air	13	See Comment 1
34922153	Outdoors Front 50 State Street	Air	1,107	-----
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA				
34922152	Outdoors, Front 80 State Street	Air	1,574	-----
34922172	142 – Locker/Vault Room	Air	27	See Comment 1
34922162	B15 – File Room	Air	13	See Comment 1
34922183	124 – Waiting Area	Air	26	See Comment 1
34922181	B24 – Copy Room	Air	26	See Comment 1
34922169	323 – Office	Air	13	See Comment 1
34922174	248 – Probation Waiting Area	Air	13	See Comment 1
34922159	208 – Jury Deliberation	Air	13	See Comment 1
34922156	305 - Office	Air	13	See Comment 1
Comment 1 – Indoor concentrations were below the concurrent outdoor concentration, and the types of spores identified were also detected outdoors or are commonly detected outdoors. These results are not suggestive of an indoor mold source.				

In all the test locations, the air sample results indicated total mold spore concentrations were below the concurrent outdoor concentration, and the types of mold detected indoors were similar to spore types that were or are commonly detected outdoors. Thus, no indoor mold source was indicated in these areas based on the air sampling results.

It is important to note that construction materials, personal belongings, and indoor environments (including indoor air) are normally not sterile. Therefore, no structure can be completely free of microbial organisms including mold. However, under normal circumstances, commonly accepted industry guidelines suggest that the levels of fungi in the indoor environment should be generally similar to (or lower than) the outdoor air outside of the property. It should be understood that natural dust deposition also contains some amount of fungal spores.

RECOMMENDATIONS

Based on the findings of this assessment, TRC recommends the following for consideration:

1. No corrective measures are required based on measurements of temperature, carbon dioxide, carbon monoxide, PM_{10}, or TVOC's.

2. TRC will continue to observe relative humidity through the fall season and will alert building management if any unusual levels are noted. Efforts to maintain relative humidity to levels below 65% are no longer necessary this season, given the lower outdoor temperature and relative humidity conditions.

3. Continue to operate ventilation equipment to introduce the greatest amount of outdoor air feasible based on the equipment parameters and seasonal conditions. This will provide the greatest safety for building occupants and will also help to quickly dilute the air when disinfectant wipes, cleaners and hand sanitizers are used. Routine preventative maintenance of heating, ventilating and air-conditioning equipment should also be emphasized.

CONDITIONS AND LIMITATIONS

The visual inspection performed by TRC is limited to representative areas that were accessible at the time of inspection. Destructive and/or invasive inspections were not within the scope of our investigation. The sampling results reflect conditions at the time of sampling.

TRC has performed the tasks set forth above in a thorough and professional manner consistent with industry standards. TRC cannot guarantee and does not warrant that this limited assessment has revealed all potential adverse environmental conditions affecting the site.

No expressed or implied representation or warranty is included in this report except that the services were performed within the limits of the scope of work authorized by the client and the encountered site conditions.

TRC appreciates the opportunity to provide you with consulting services. If you have any questions or comments, please contact us. We look forward to working with you on future endeavors.

Very Truly Yours,
TRC

Olivia Smaracko

Olivia Smaracko
Senior Industrial Hygienist

Robert King

Robert King, CSP, CIH (1982-2021)
Senior EHS Engineer

Enc.: Attachment A – Laboratory Results and Chain of Custody
Attachment B – Sample Location Drawings

ATTACHMENT A – LABORATORY RESULTS AND CHAIN OF CUSTODY

HAYES MICROBIAL CONSULTING

#22041236

Analysis Report prepared for

TRC Companies

814 Broad Street
Weymouth, MA 02189

Phone: **(781) 337-0016**

499949
Springfield District Court
50 & 80 State St
Springfield, MA

Collected: **October 12, 2022**
Received: **October 17, 2022**
Reported: **October 17, 2022**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 20 samples by FedEx in good condition for this project on October 17th, 2022.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC..

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.

EPA Laboratory ID: VA01419

Lab ID: #188863

DPH License: #PH-0198

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Springfield District Court
50 & 80 State St
Springfield, MA

#22041236

Spore Trap
SOP - HMC#101

Sample Number	1	34929167		2	34922164		3	34922163		4	34922160	
Sample Name	G28- Locker Room			138A- District Attorney			100- Parking Tickets			2nd Floor- Upper Lobby		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			1			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores	2	27	100.0%	1	13	100.0%	3	40	75.0%	1	13	33.3%
Aspergillus|Penicillium												
Basidiospores										1	13	33.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							1	13	25.0%	1	13	33.3%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	1	13	100%	4	53	100%	3	39	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Oct 12, 2022** Received: **Oct 17, 2022** Reported: **Oct 17, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **10 - 17 - 2022**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **10 - 17 - 2022**

HAYES MICROBIAL CONSULTING
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Springfield District Court
50 & 80 State St
Springfield, MA

#22041236

Spore Trap
SOP - HMC#101

Sample Number	5	34922158		6	34922171		7	34922170		8	34922165	
Sample Name	**204B- Judges Lobby**			**204A- Conference Room**			**204- Judges Lobby Reception**			**309- Law Library Office**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores	2	27	50.0%	1	13	100.0%	2	27	100.0%	2	27	66.7%
Aspergillus|Penicillium												
Basidiospores	1	13	25.0%							1	13	33.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	25.0%									
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	4	53	100%	1	13	100%	2	27	100%	3	40	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Oct 12, 2022** Received: **Oct 17, 2022** Reported: **Oct 17, 2022**

HAYES MICROBIAL CONSULTING

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **10 - 17 - 2022**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **10 - 17 - 2022**

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Springfield District Court
50 & 80 State St
Springfield, MA

#22041236

Spore Trap
SOP - HMC#101

Sample Number	9	34922161		10	34921806		11	34922153		12	34922152	
Sample Name	**330- Break Room**			**427- Employee Lounge**			**Outdoor- 50 State**			**Outdoor- 80 State**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	2			2			2			2		
Fragments	ND			ND			27/m^3			40/m^3		
Organism	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**
Alternaria							1	13	1.2%			
Ascospores	1	13	100.0%	1	13	100.0%	44	587	53.0%	32	427	27.1%
Aspergillus|Penicillium										2	27	1.7%
Basidiospores							16	213	19.3%	24	320	20.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							20	267	24.1%	60	800	50.8%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							2	27	2.4%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	1	13	100%	83	1107	100%	118	1574	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Oct 12, 2022** Received: **Oct 17, 2022** Reported: **Oct 17, 2022**

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Spore Trap
SOP - HMC#101

Sample Number	13	34922172		14	34922162		15	34922183		16	34922181	
Sample Name	142- Locker / Vault Room			B1S- File Room			124- Waiting Area			B24- Copy Room		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores	2	27	100.0%	1	13	100.0%	1	13	50.0%	1	13	50.0%
Aspergillus|Penicillium												
Basidiospores										1	13	50.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum							1	13	50.0%			
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	1	13	100%	2	26	100%	2	26	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Oct 12, 2022** Received: **Oct 17, 2022** Reported: **Oct 17, 2022**

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Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **10 - 17 - 2022**

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Spore Trap
SOP - HMC#101

Sample Number	17	34922169		18	34922174		19	34922159		20	34922156	
Sample Name	**323- Office**			**248- Probation Waiting Area**			**208- Jury Deliberation**			**305- Office**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**
Alternaria												
Ascospores				1	13	100.0%				1	13	100.0%
Aspergillus|Penicillium												
Basidiospores	1	13	100.0%				1	13	100.0%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	1	13	100%	1	13	100%	1	13	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Oct 12, 2022** Received: **Oct 17, 2022** Reported: **Oct 17, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **10 - 17 - 2022**

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Spore Trap Information

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.
Blanks	Results have not been corrected for field or laboratory blanks.
Background	The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows: **NBD:** No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD) **1 :** <5% of field occluded. No spores will be uncountable. **2 :** 5-25% of field occluded. **3 :** 25-75% of field occluded. **4 :** 75-90% of field occluded. **5 :** >90% of field occluded. Suggested recollection of sample.
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.
Control Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.
Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality	**Blue:** These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem. **Green:** Although all molds are potential allergens, these are the most common allergens that may be found indoors. **Orange:** The spore count is slightly higher than the outside count and may or may not indicate a source of contamination. **Red:** The spore count is significantly higher than the baseline count and probably indicates a source of contamination. **Violet:** The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.
Color Coding	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.

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Organism Descriptions

Alternaria

Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.

Effects: A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.

Ascospores

Habitat: A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.

Effects: Health affects are poorly studied, but many are likely to be allergenic.

Aspergillus|Penicillium

Habitat: The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.

Effects: This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.

Basidiospores

Habitat: A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.

Effects: Common allergens and are also associated with hypersensitivity pneumonitis.

Cladosporium

Habitat: One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.

Effects: A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

Epicoccum

Habitat: It is found in soil and plant litter and is a plant pathogen. It can grow indoors on a variety of substrates, including paper and textiles and is commonly found on wet drywall.

Effects: It is a common allergen. No cases of infection have been reported in humans.

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Organism Descriptions

Myxomycetes

Habitat: Found on decaying plant material and as a plant pathogen.

Effects: Some allergenic properties reported, but generally pose no health concerns to humans.

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DATE: 10-17-2022

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MOLD

22041236

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA
or: Olivia Smaracko	e: (781) 789-2985 Email: osmaracko@trccompanies.co
Date Collected: 10/12/22	Note:

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

Acc

#	Number	Sample	Analysis	Volume	Notes
1	34922167	G88 - Locker Room	S	75 L	
2	34922164	138A - District Attorney	S	75 L	
3	34922163	100 - Parking Tickets	S	75 L	
4	34922160	2nd Floor - Upper Lobby	S	75 L	
5	34922158	204B - Judges Lobby	S	75 L	
6	34922171	204A - Conference Room	S	75 L	
7	34922170	204 - Judges Lobby Reception	S	75 L	
8	34922165	309 - Law Library Office	S	75 L	
9	34922161	330 - Break Room	S	75 L	
10	34921806	427 - Employee Lounge	S	75 L	
11	34922153	Outdoor - 50 State	S	75 L	
12	34922152	Outdoor - 80 State	S	75 L	
13	34922172	142 - Locker / Vault Room	S	75 L	
14	34922162	B15 - File Room	S	75 L	
15	34922183	124 - Waiting Area	S	75 L	
16	34922151	B24 - Copy Room	S	75 L	

Released by: [signature] Date: 10/12/22 Received By: E.O Date: 10/17

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Weymouth, MA 02189

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MOLD

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Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA	e: (781) 789-2985	Email: osmaracko@trccompanies.co
or: Olivia Smaracko		Note:	
Date Collected: 10/12/22			

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

#	Number	Sample	Analysis	Volume	Notes
AOC 1	34922169	323. Office	S	75 L	
2	34922174	248 · Probation waiting Area	S	75 L	
3	34922159	208 - Jury Deliberation	S	75 L	
4	34922156	305 - Office	S	75 L	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Released by:	Date: 10/12/22	Received By: E.O	Date: 10/17