

September 29, 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 11
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 September 15, 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 (60) locations between the two buildings;
- Direct-reading measurements of selected indoor air quality parameters including temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO₂); airborne particulate as PM₁₀ (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 (CO₂) 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 CO₂ 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 CO₂ for publicly occupied buildings². Note that while indoor CO₂ levels are useful for evaluating the outdoor air ventilation provided to a building, these levels are typically well below concentrations that might pose a CO₂-related health risk (greater than 5,000 ppm). Ambient concentrations of CO₂ 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 (PM₁₀).

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 PM₁₀ to evaluate outdoor air quality. This is not intended to evaluate worker exposure but are 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 PM₁₀ is 0.150 milligrams per cubic meter of air (mg/m³) measured as a 24-hour average concentration.

The OSHA Permissible Exposure Limit (PEL) for occupational exposure for total dust is 15 mg/m³- and for the respirable dust fraction is 5 mg/m³, 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/m³) 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 (°F); relative humidity measurements are presented as percent relative humidity (%); the CO₂, CO and VOC measurements are presented in concentration units of parts per million parts of air, by volume (ppm); and PM₁₀ measurements are presented in concentration units of milligrams per cubic meter of air (mg/m³).

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 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	Registry of Probate, Secretary Pool	72.1	41.1	522	ND (<3)	0.004	ND (<0.020)
002	440 - Vault	72.3	45.8	473	ND (<3)	0.002	ND (<0.020)
003	428 – Judges Lobby	71.9	42.7	567	ND (<3)	0.012	ND (<0.020)
004	415 – Room in Registry of Deeds	69.9	42.1	458	ND (<3)	0.002	ND (<0.020)
005	400 – Registry of Deeds by Counter	70.7	41.3	494	ND (<3)	0.004	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022							
Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM₁₀ (mg/m³)	Volatile Organic Compounds (ppm)
006	446 – Jury Pool	72.6	39.7	742	ND (<3)	0.006	ND (<0.020)
007	346 – Office in Superior Court of Probate	71.6	46.7	564	ND (<3)	0.005	ND (<0.020)
008	Superior Court, Secretary Pool	73.5	48.6	560	ND (<3)	0.008	ND (<0.020)
009	Law Library – Between Rows 10 & 11	73.5	45.4	499	ND (<3)	0.003	ND (<0.020)
010	316 – Storage Closet/ Electrical Panels	72.3	47.8	514	ND (<3)	0.007	ND (<0.020)
011	SC1B - Superior Courtroom #1 Conference Room B	72.1	48.5	587	ND (<3)	0.008	ND (<0.020)
012	367 - Office	73.6	47.0	550	ND (<3)	0.004	ND (<0.020)
013	246 – Conference Room	73.5	47.0	580	ND (<3)	0.034	ND (<0.020)
014	Superior Courtroom #10	73.4	44.1	655	ND (<3)	0.004	ND (<0.020)
015	239 - Office	73.6	45.8	589	ND (<3)	0.005	ND (<0.020)
016	Clerk of District Court Civil	74.2	46.9	625	ND (<3)	0.006	ND (<0.020)
017	204 – Judges Lobby	72.2	46.8	647	ND (<3)	0.008	ND (<0.020)
018	201 – Conference Room	73.0	47.0	516	ND (<3)	0.004	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022							
Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM₁₀ (mg/m³)	Volatile Organic Compounds (ppm)
019	146 – Office in District Court of Probation	73.2	47.0	609	ND (<3)	0.011	ND (<0.020)
020	141 - Office	73.8	46.3	643	ND (<3)	0.006	ND (<0.020)
021	170 – Womens Restroom	73.4	46.1	645	ND (<3)	0.006	ND (<0.020)
022	110B – Clerk of District Court Criminal	71.3	48.1	617	ND (<3)	0.008	ND (<0.020)
023	103 - Office	70.4	48.3	572	ND (<3)	0.016	ND (<0.020)
024	DC2A – District Courtroom #2 Conference Room A	71.4	48.1	569	ND (<3)	0.006	ND (<0.020)
025	Plumbers Shop	74.6	42.8	487	ND (<3)	0.023	ND (<0.020)
026	G42B – Electrical Shop	74.6	43.7	526	ND (<3)	0.016	ND (<0.020)
027	G40C – File Room	74.1	46.0	569	ND (<3)	0.005	ND (<0.020)
028	G32 – Mens Locker Room	74.6	44.1	589	ND (<3)	0.008	ND (<0.020)
029	G68 - Stairwell	74.7	41.9	488	ND (<3)	0.011	ND (<0.020)
030	G01 – Janitors Office	74.0	44.2	525	ND (<3)	0.026	ND (<0.020)
031	Outdoor – North Entrance 50 State Street	68.7	33.5	396	ND (<3)	0.009	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022							
Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM₁₀ (mg/m³)	Volatile Organic Compounds (ppm)
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA							
032	Outdoors - Front 80 State Street	66.5	37.4	387	ND (<3)	0.015	ND (<0.020)
033	329 – Hallway to Stairs	70.7	49.5	643	ND (<3)	0.009	ND (<0.020)
034	324 - Office	72.1	46.8	618	ND (<3)	0.005	ND (<0.020)
035	335 – Janitors Closet	72.3	48.0	668	ND (<3)	0.010	0.041
036	346 - Office	71.4	46.2	573	ND (<3)	0.006	ND (<0.020)
037	247 - Office	70.5	49.6	765	ND (<3)	0.006	ND (<0.020)
038	242 –Office	70.0	47.9	621	ND (<3)	0.006	ND (<0.020)
039	231 – Hallway Outside Offices	69.0	50.8	611	ND (<3)	0.019	ND (<0.020)
040	155 – Public Waiting	71.8	44.8	647	ND (<3)	0.004	ND (<0.020)
041	152 – Juvenile Courtroom #3	72.9	44.7	654	ND (<3)	0.007	ND (<0.020)
042	150 – Waiting Area	72.5	42.8	666	ND (<3)	0.010	ND (<0.020)
043	119 – Juvenile Courtroom #2	66.1	35.4	530	ND (<3)	0.006	ND (<0.020)
044	132 – Clerk Magistrates Office	68.8	50.9	643	ND (<3)	0.012	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022							
Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM₁₀ (mg/m³)	Volatile Organic Compounds (ppm)
045	102 – Western Division Housing Court Clerks Office	71.3	34.8	664	ND (<3)	0.009	ND (<0.020)
046	114 – Womens Restroom	67.8	35.0	591	ND (<3)	0.007	ND (<0.020)
047	307 – Conference/ Break Room	68.2	45.6	489	ND (<3)	0.006	ND (<0.020)
048	305 - Offices	71.8	44.2	475	ND (<3)	0.007	ND (<0.020)
049	231 – Conference Room/ Library	71.8	43.5	489	ND (<3)	0.008	ND (<0.020)
050	215 – Conference Room B	71.5	40.8	481	ND (<3)	0.015	ND (<0.020)
051	220 – Conference Room A	71.2	39.1	457	ND (<3)	0.007	ND (<0.020)
052	235 – Housing Court #1	70.1	38.4	471	ND (<3)	0.010	ND (<0.020)
053	Stairwell #4 2 nd Floor Outside Courtroom	70.5	44.3	582	ND (<3)	0.007	ND (<0.020)
054	B12 – Cubicle Space	69.6	39.4	543	ND (<3)	0.009	ND (<0.020)
055	B11 – District Attorneys Cubicles	66.1	38.7	489	ND (<3)	0.009	ND (<0.020)
056	B16 – Outside Restrooms	64.7	44.8	523	ND (<3)	0.008	ND (<0.020)
057	B36 - Office	66.7	42.9	634	ND (<3)	0.007	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022							
Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM ₁₀ (mg/m ³)	Volatile Organic Compounds (ppm)
058	B33 - Office	70.4	39.8	607	ND (<3)	0.007	ND (<0.020)
059	B27 - Office	70.0	37.9	592	ND (<3)	0.009	ND (<0.020)
060	B15 – Files/ Janitor Storage	65.9	43.5	503	ND (<3)	0.010	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 relative humidity:							
<u>Relative Humidity</u>		<u>Winter Temperature</u>		<u>Summer Temperature</u>			
< 20%		70 to 79 °F		76 to 83 °F			
20 to 40%		69 to 78 °F		75 to 82 °F			
40 to 60%		68 to 77 °F		74 to 81 °F			

Temperature and Relative Humidity. Temperatures were generally within or slightly below recommended comfort ranges for winter 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 CO₂ concentrations throughout the buildings ranged from 457 to 742 ppm and outdoor concentrations of ranged from 387 to 396 ppm. The average CO₂ concentrations during the current occupancy conditions remained below the ASHRAE guideline (i.e., the outdoor concentration of approximately 400 ppm + 700 ppm). All CO₂ measurements in the Roderick L. Ireland Courthouse were also below the more stringent MA DOH guideline of 800 ppm. All the CO₂ 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 were non-detect (<0.020 ppm), with the exception of one room (335 – Janitors Closet) which was 0.041 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 PM₁₀ measurements throughout the buildings ranged from 0.004 mg/m³ to 0.034 mg/m³ and were below the guideline of 0.150 mg/m³. No corrective measures are indicated based on the PM₁₀ 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/m³). The laboratory analytical report is included as Attachment A.

Microbial Sampling Results Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022				
Sample Number	Location	Sample Type	Mold Detected (spores/m ³)	Interpretation
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA				
34545951	Registry of Probate, Secretary Pool	Air	13	See Comment 1
34545943	446 – Jury Pool	Air	27	See Comment 1
34545928	Superior Court, Secretary Pool	Air	13	See Comment 1

Microbial Sampling Results Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts September 15, 2022				
Sample Number	Location	Sample Type	Mold Detected (spores/m ³)	Interpretation
34545937	367 - Office	Air	40	See Comment 1
34546269	Clerk of District Court Civil	Air	27	See Comment 1
34545948	204 – Judges Lobby	Air	13	See Comment 1
34546043	146 - Office in DC of Probation	Air	40	See Comment 1
34545995	110B – Clerk District Court Criminal	Air	13	See Comment 1
34545957	Plumbers Shop, G Level	Air	53	See Comment 1
34545955	Outdoors Front 50 State Street	Air	1,120	-----
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA				
34545949	Outdoors, Front 80 State Street	Air	1,839	-----
34545999	324 - Office	Air	13	See Comment 1
34545950	247 - Office	Air	26	See Comment 1
34545961	152 – Juvenile Courtroom #3	Air	13	See Comment 1
34545958	132 – Clerk of Magistrates Office	Air	26	See Comment 1
34545992	119 – Juvenile Courtroom #2	Air	27	See Comment 1
34545946	321 – Conference Room/ Library	Air	13	See Comment 1
34545978	215 – Conference Room B	Air	13	See Comment 1
34546000	B12 - Cubicles	Air	27	See Comment 1
34545962	B11 – District Attorneys Cubicles	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, PM₁₀, 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

Denise Houseman

Denise Houseman
Industrial Hygienist



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

Analysis Report prepared for

TRC Companies

**814 Broad Street
Weymouth, MA 02189**

Phone: (781) 337-0016

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

Collected: **September 15, 2022**
Received: **September 19, 2022**
Reported: **September 19, 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 September 19th, 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

Denise Houseman
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814 Broad Street
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499949

Springfield District Court
50 & 80 State Street
Springfield, MA

#22036629

Spore Trap
SOP - HMC#101

Sample Number	1	34545951		2	34545943		3	34545928		4	34545937	
Sample Name	Retesting of Probate - Secretary Pool			446 - Jury pool			Secretary pool - Superior Court			367 - 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	3			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	1	13	100.0%	2	27	100.0%	1	13	100.0%	2	27	66.7%
Aspergillus Penicillium												
Basidiospores										1	13	33.3%
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	27	100%	1	13	100%	3	40	100%

Water Damage Indicator

Common Allergen

Slightly Higher than Baseline

Significantly Higher than Baseline

Ratio Abnormality



Collected: **Sep 15, 2022**

Received: **Sep 19, 2022**

Reported: **Sep 19, 2022**

Project Analyst:
Ramesh Poluri, PhD

P. Ramesh

Date:
09 - 19 - 2022

Reviewed By:
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Date:
09 - 19 - 2022

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Springfield District Court
50 & 80 State Street
Springfield, MA

#22036629

Spore Trap
SOP - HMC#101

Sample Number	534546269			634545948			734546043			834545995		
Sample Name	Clerk of District Court Civil			204 - Judges Lobby			146 - Office of District Court of Prob.			110B - Clerk of District Criminal Court		
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%	2	27	66.7%	1	13	100.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium							1	13	33.3%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	1	13	100%	3	40	100%	1	13	100%

Water Damage Indicator

Common Allergen

Slightly Higher than Baseline

Significantly Higher than Baseline

Ratio Abnormality



Collected: **Sep 15, 2022**

Received: **Sep 19, 2022**

Reported: **Sep 19, 2022**

Project Analyst:
Ramesh Poluri, PhD

P. Ramesh

Date:
09 - 19 - 2022

Reviewed By:
Steve Hayes, BSMT

Stephen N. Hayes

Date:
09 - 19 - 2022

3005 East Boundary Terrace, Suite F. Midlothian, VA. 23112

(804) 562-3435

contact@hayesmicrobial.com

Page: 3 of 8

Denise Houseman
TRC Companies

814 Broad Street
Weymouth, MA 02189
(781) 337-0016

499949

Springfield District Court
50 & 80 State Street
Springfield, MA

#22036629

Spore Trap
SOP - HMC#101

Sample Number	9	34545957		10	34545955		11	34545949		12	34545999	
Sample Name	Plumbers Shop			Outdoors - From 50 State Street			Outdoors - Front 80 Stat Street			324 - 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				1	13	1.2%						
Ascospores	3	40	75.0%	56	747	66.7%	96	1280	69.6%	1	13	100.0%
Aspergillus Penicillium												
Basidiospores	1	13	25.0%	18	240	21.4%	40	533	29.0%			
Bipolaris Drechslera				1	13	1.2%						
Chaetomium												
Cladosporium				3	40	3.6%	1	13	<1%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes				5	67	6.0%	1	13	<1%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	4	53	100%	84	1120	100%	138	1839	100%	1	13	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Page: 4 of 8

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TRC Companies

814 Broad Street
Weymouth, MA 02189
(781) 337-0016

499949

Springfield District Court
50 & 80 State Street
Springfield, MA

#22036629

Spore Trap
SOP - HMC#101

Sample Number	13	34545950		14	34545961		15	34545958		16	34545992	
Sample Name	247 - Office			152 - Juvenile Courtroom #3			132 - Clerk of Magistrates Office			119 - Juvenile Courtroom #2		
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	1	13	50.0%	1	13	100.0%	1	13	50.0%	2	27	100.0%
Aspergillus Penicillium												
Basidiospores	1	13	50.0%									
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	1	13	100%	2	26	100%	2	27	100%

Water Damage Indicator

Common Allergen

Slightly Higher than Baseline

Significantly Higher than Baseline

Ratio Abnormality



Collected: **Sep 15, 2022**

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Project Analyst:
Ramesh Poluri, PhD

P. Ramesh

Date:
09 - 19 - 2022

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Steve Hayes, BSMT

Stephen N. Hayes

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Page: 5 of 8

Sample Number	17	34545946		18	34545978		19	34546000		20	34545962	
Sample Name	321 - Conference Rm / Library			215 - Conference Room B			B12 - Cubicles			B11 - District Attorneys Cubicles		
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	1	13	100.0%				2	27	100.0%	1	13	100.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium				1	13	100.0%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	1	13	100%	2	27	100%	1	13	100%

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



Collected: **Sep 15, 2022**

Received: **Sep 19, 2022**

Reported: **Sep 19, 2022**

Project Analyst:
 Ramesh Poluri, PhD *P. Ramesh*

Date:
09 - 19 - 2022

Reviewed By:
 Steve Hayes, BSMT *Stephen N. Hayes*

Date:
09 - 19 - 2022

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	<p>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:</p> <p>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : >90% of field occluded. Suggested recollection of sample.</p>
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.
<div>Water Damage Indicator</div> <div>Common Allergen</div> <div>Slightly Higher than Baseline</div> <div>Significantly Higher than Baseline</div> <div>Ratio Abnormality</div>	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>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.</p>
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.

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.
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.
Bipolaris Drechslera	Habitat: They are found in soil and as plant pathogens. Can grow indoors on a variety of substrates. Effects: They may be allergenic and are very commonly involved in allergic fungal sinusitis. They are opportunistic pathogens but occasionally infect healthy individuals, causing keratitis, sinusitis and osteomyelitis.
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.
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.



TRC Companies

814 Broad Street

Weymouth, MA 02189

N

SHIP: FEDEX - BOX 50

DATE: 09-19-2022

MOLD



22036629

8123 4351 7852



Job Number: 499949
Job Name: Springfield District Court
50 & 80 State Street
Springfield, MA

By: Olivia Smaracko Denise Hascman

Date Collected: 9/15/22

Phone: (781) 789-2985

Email: osmaracko@trccompanies.com

Note: & dhascman@trccompanies.com

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
1	34545951	Registry of Probate - Secretary Pool	S	75 L	
2	34545943	446 - Jury Pool	S	75 L	
3	34545928	Secretary Pool - Superior Court	S	75 L	
4	34545937	367 - Office	S	75 L	
5	34546269	Clerk of District Court Civil	S	75 L	
6	34545948	204 - Judges Lobby	S	75 L	
7	34546043	146 - Office in District Court of Prob	S	75 L	
8	34545995	110B - Clerk of District Criminal Court	S	75 L	
9	34545957	Plumber's Shop	S	75 L	
10	34545955	Outdoors - Front 50 State Street	S	75 L	
11	34545949	Outdoors - Front 80 State Street	S	75 L	
12	34545999	324 - Office	S	75 L	
13	34545950	247 - Office	S	75 L	
14	34545961	152 - Juvenile Courtroom #3	S	75 L	
15	34545958	132 - Clerk of Magistrates Office	S	75 L	
16	34545992	119 - Juvenile Courtroom #2	S	75 L	

Released by: [Signature]

Date: 9/15/22

Received By: [Signature]

Date: 9/19

**TRC Companies**

814 Broad Street

Weymouth, MA 02189

SHIP: FEDEX - BOX 50

DATE: 09-19-2022

N

8123 4351 7852



MOLD



22036629

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA	Phone: (781) 789-2985	Email: osmaracko@trccompanies.co
Dr: Olivia Smaracko DH		Note:	
Date Collected: 9/15/22			

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
17	34545946	321 - Conference Rm / Library	S	75 L	
18	34545978	215 - Conference Room B	S	75 L	
19	34546000	B12 - Cubicles	S	75 L	
20	34545962	B11 District Attorneys Cubicles	S	75 L	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Released by:	Date: 9/15/22	Received By:	Date: 9/19
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