

Monomoy Regional Middle School Air Quality Testing Report

Reason for Testing: Summer 2024 Testing and Remediation

Date of Testing: July 30, 2024

Description: Testing in response to visible mold and discoloration of ceiling tiles and presence of humidity in building

Conducted By: Frank Zelinski of Safe-n-Dry

Summary of Findings: Results varied by location. However, some samples showed high levels of Aspergillus and Cladosporium. Surface tests of ceiling tiles and wall in room E114 found evidence of stachybotrys

District Response: Abatement of mold in ceiling tiles and drywall: The district contracted with ServPro to remove ceiling tiles from the main office and the SROs office, as well as a section of drywall from room E114.

Installation of additional air purifiers.

Additional surface cleaning.

Survey of window sills, and removal and replacement of most damaged sills.

Client Sample ID: School Office
Laboratory ID: 115329-1

Home Air Analysis For: Monomoy Regional Middle School
Home Tested: 425 Crowell Rd
Chatham, MA 02633

Report Number: 115329

Sampling Professional: Frank Zelinski
Mold Proactive
15 Pine Ridge Lane
Orleans, MA 02653

Thank you for using IAQ Home Survey!
If you have questions about your report,
please contact your service provider who
performed this test.

Client Sample ID: School Office
Sample Volume (L): 19.0
Date Sampled: 07/30/2024
Sample Type: TDT AG226
Sample Condition: Acceptable

Receive Date: 08/02/2024
Approve Date: 08/02/2024
Scan Date: 08/02/2024
Report Date: 08/06/2024

IAQ Home Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources and active mold growth in a home. Many indoor air quality (IAQ) issues identified by IAQ Home Survey can be easily remediated or eliminated. This test is an invaluable tool for homebuyers, homeowners, and renters because it provides important information on potential contamination issues in the home that cannot be detected by a visual inspection alone. Acting upon the information in this report will enable you to dramatically improve the air quality in your home, creating a healthier environment for you and your family.

Your Indoor Air Quality Report Summary

Your Indoor Air Quality Report has several sections describing different aspects of your home's air quality. A summary of this data is provided below, additional information and descriptions are included in the full report.

Total Volatile Organic Compounds (TVOC) Level

TVOC is a general indicator of the IAQ in your home (see page 2).

 **Total VOCs** **610 ng/L**

Total Mold Volatile Organic Compounds (TMVOC) Level

TMVOC is an assessment of the actively growing mold in your home (see page 3).

 **Total MVOCs** **5 ng/L**

Contamination Index (CI) Level

The CI shows the types of air-contaminating products and materials that are present in your home (see pages 5, 6, and 7). These levels are estimates based on common home products and activities.

Building Related Sources

See page 5 for more detail.

 M	Coatings (Paints, Varnishes, etc.)
 N	PVC Cement
 N	HFCs and CFCs (Freons™)

Mixed Building and Lifestyle Sources

See page 6 for more detail.

 N	Building Materials-Toluene Based
 N	Gasoline
 N	Fuel Oil, Diesel Fuel, Kerosene
 N	Moth Balls (Naphthalene Based)
 N	Moth Crystals (p-Dichlorobenzene Based)
 N	Light Hydrocarbons
 N	Light Solvents
 N	Methylene Chloride

Lifestyle Related Sources

See page 7 for more detail.

 N	Personal Care Products
 N	Alcohol Products
 N	Odorants and Fragrances
 N	Dry Cleaning Solvents
 N	Medicinals

Note: Severity begin at Normal or Minimal and progress through Moderate, Elevated, High and/or Severe. The color progression from green to red indicates results that are increasingly atypical and suggest potentially higher risk.

All Severity classifications are based on empirical data and should not be taken as a pass/fail or conformance to a published specified limit.

 **Normal**  **Moderate**  **Elevated**  **High**  **Severe**

Enthalpy Analytical, LLC (MTP), the creator of IAQ Home Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Enthalpy Analytical, LLC (MTP) (ID 166272) is accredited by the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC in the Industrial Hygiene accreditation program for GC-MS Field of Testing as documented by the Scope of Accreditation [Certificate](#) and associated Scope. This analysis references methods EPA TO-17 and ISO 16000-6, which fall within the Scope of Accreditation.

Total Volatile Organic Compounds (TVOC)

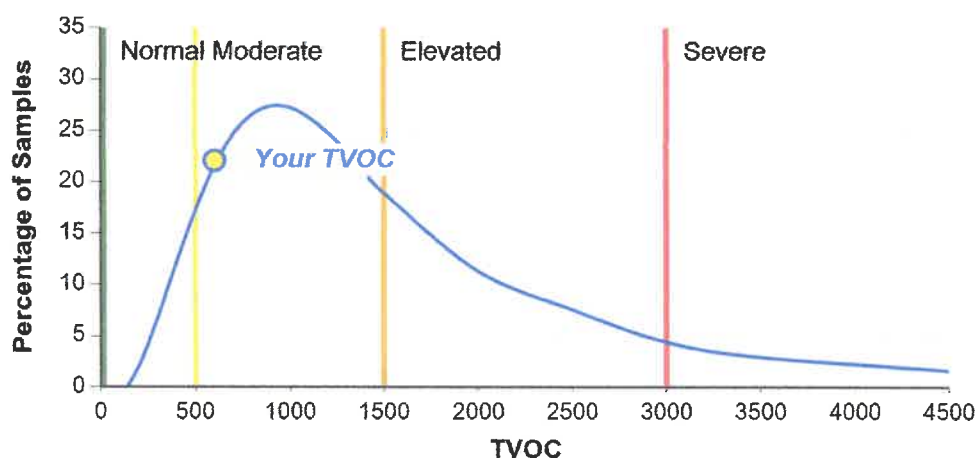
Your TVOC Level is: 610 ng/L

IAQ is borderline acceptable; some effect on occupants is possible; reduce potential sources and consider increasing ventilation.

Your Indoor Air Quality Level (Highlighted)

Normal < 500 ng/L	Moderate 500 - 1500 ng/L	Elevated 1500 - 3000 ng/L	Severe > 3000 ng/L
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All IAQ Survey TVOC Air Quality Indicator



**The average TVOC is
1900 ng/L**

This chart represents the TVOC distribution of over 45,000 samples. Over 80% of these samples indicate improvements in IAQ are necessary to achieve the goal of TVOC less than 500 ng/L.

The chart above shows the TVOC levels for all homes tested using IAQ Home Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TVOC level (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Normal, Moderate, Elevated, and Severe TVOC levels. As the TVOC value increases, individuals may experience aggravated health problems, and therefore, the need to address VOC issues becomes more critical. However, reductions in VOCs can be made at any level.

No government or organization has specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has set 500 ng/L as the recommended TVOC limit.

In general:

- < 500 ng/L IAQ is acceptable for most individuals; however, chemically sensitive persons may require lower levels.
- 500 - 1,500 ng/L some effects on the occupants is possible.
- > 1,500 ng/L IAQ should be improved.

Note: These levels are based on observed health effects and have been determined from a combination of published data and the statistical distribution of TVOC concentrations from the IAQ Home Survey methodology.

The presence of chemicals in your home can cause a wide range of problems, from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). Anyone with respiratory issues like asthma or allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals.

Click [here](#) for more information about VOCs.

The Contamination Index (CI) in the next pages of this report will help guide you through determining what types of products or materials in the home could be problematic for your IAQ, and will provide some recommendations to help reduce or eliminate them.

Total Mold Volatile Organic Compounds (TMVOC)

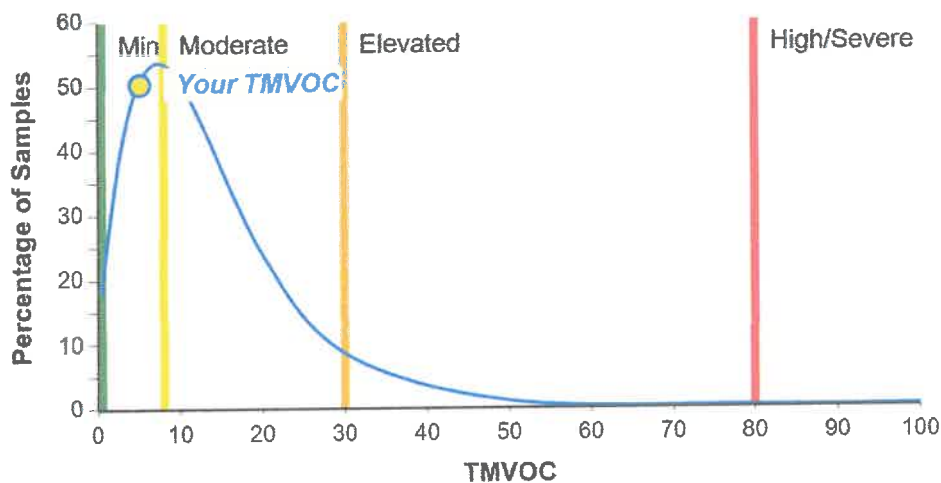
Your TMVOC Level is: 5 ng/L

Actively growing molds may be present, but are at or below levels found in most homes and working environments.

Your Active Mold Level (Highlighted)

Minimal < 8 ng/L	Active-Moderate 8 - 30 ng/L	Active-Elevated 30-80 ng/L	Active-High 80 - 150 ng/L	Active-Severe > 150 ng/L
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All IAQ Survey TMVOC Active Mold Growth Indicator



The average TMVOC is 10 ng/L

This chart represents the TMVOC distribution of over 45,000 samples. Approximately half the samples indicate that some active mold growth is occurring at the time of sample collection.

The chart above shows the TMVOC level for all homes tested using IAQ Home Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TMVOC level (indicated on the horizontal x-axis). For example, a TMVOC of 20 ng/L is reported in ~20% of the samples. The green, yellow, orange, and red vertical bars represent divisions between Minimal, Moderate, Elevated, and High/Severe TMVOC levels.

Molds can be found anywhere in the indoor environment as long as there is a source of water or moisture. Molds produce spores, VOCs (during the metabolic or digestive processes of mold), and mycotoxins (typically when the mold is threatened).

This test detects only the VOCs produced by actively growing molds and does not represent spores or mycotoxins. The TMVOC value is the sum of a select set of VOCs emitted by most molds while growing (when mold is in an inactive or dormant state it does not produce many MVOCs).

The presence of moisture is the primary factor in mold growth, controlling moisture and dampness is the only way to consistently control or limit mold growth.

Click [here](#) for more information about molds and mold VOCs.

Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in your home. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your home compares to thousands of other homes, and provides some suggestions for where these products and materials might be found. The CI is divided into three main source groups: Building-Related Sources, Mixed Building and Lifestyle Sources, and Lifestyle Sources.

1. Building-Related Sources are those that are typically part of the structure of the home and may be more difficult to reduce in the short term. Recent construction or renovation often increases the CI categories in this group to the Elevated, High, or Severe levels. VOCs from these activities often decrease substantially in the month following use/application of these products, especially if the area is flushed with air to dissipate the VOCs off gassed from the new products or materials.

2. Mixed Building and Lifestyle Sources are those that could belong to either category and investigation on your part may be necessary to determine which source is more likely. Recent construction or renovation can often contribute to other source categories in addition to Building-Related Sources.

3. Lifestyle Sources are those that the occupants of the home bring into the home and can usually be readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building-Related Sources.

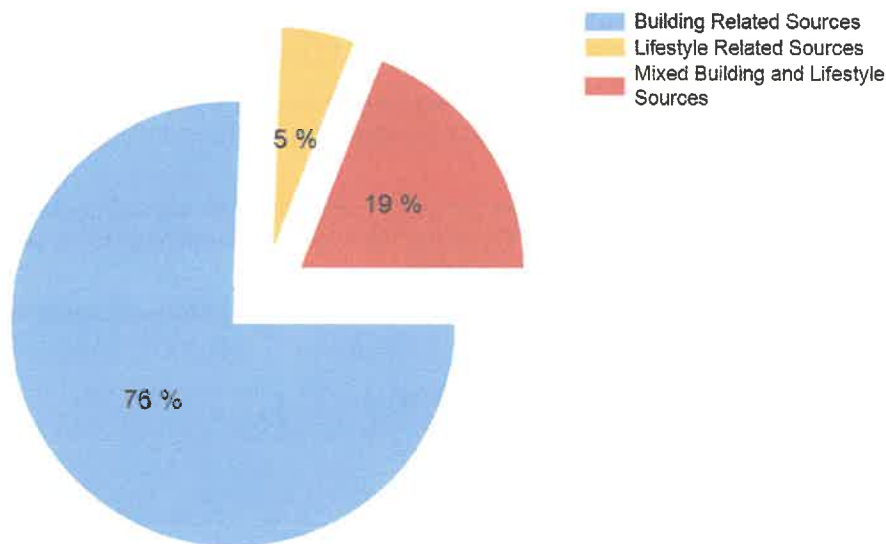
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building source group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or garage could be considered part of the Lifestyle sources group. Always consider all possible sources for a particular CI category.

The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category.

Since there are potentially many sources of VOCs, homes can often be re-contaminated even after sources have been removed because new products are constantly being brought into the home. Home occupants and homebuyers should take note of this fact, and view IAQ as a continuous improvement process.

The chart below depicts the distribution of the Contamination Index source groups. These source groups are estimates and may not indicate all of the VOCs in your air sample.

Contamination Index Source Groups



Contamination Index™ Building Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically part of the structure of the home and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Building Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	330	Moderate	Includes interior and exterior paints (including low- or no-VOC paints), varnishes, lacquers, some sealants, and other products that can be classified as a coating over a surface. Typically, VOCs from these products are in the 10 to 14 carbon size range and can linger for several months, sometimes longer. Ventilate as much as possible during and after application of these products and dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. There is some overlap between chemical compounds associated with 'Coatings (Paints, Varnishes, etc.)' and those found in 'Fuel Oil, Diesel Fuel, Kerosene.'
	PVC Cement	1	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	HFCs and CFCs (Freons™)	12	Normal	Most often used as refrigerants for air conditioners and refrigerator/freezers and propellants for blown-in insulation, cushions, aerosol cans, etc. Many of these chemical compounds are being phased out because of the Montreal Protocol.

Contamination Index™ Mixed Building and Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories could belong to either the Building or Lifestyle groups so additional investigation may be necessary to determine which source is more likely. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Mixed Building and Lifestyle Sources

Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
Building Materials-Toluene Based	0	Normal	Adhesives and glues used in construction and maintenance, arts and crafts; adhesive removers; contact cement; sealants; coatings (paint, polyurethane, lacquer, thinner); automotive products, including parts cleaners. Additional sources include gasoline and other fuels.
Gasoline	8	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers and gas-powered equipment such as lawnmowers, snow blowers, mini-bikes, etc. that are stored in attached garages or basements. Does not include exhaust emissions. These items should be stored externally to the home. Additionally, gasoline VOCs can linger on clothing after refueling an automobile at a gas station. Gasoline includes chemical compounds that are also included in the 'Light Solvents' category.
Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Often found in garages and basements. These fuels are not very volatile so will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. Does not include exhaust emissions. There is some overlap between chemical compounds associated with 'Fuel Oil, Diesel Fuel, Kerosene' and those found in 'Coatings (Paints, Varnishes, etc.).'
Moth Balls (Naphthalene Based)	0	Normal	Naphthalene based moth balls. May be present with p-Dichlorobenzene-based moth crystals.
Moth Crystals (p-Dichlorobenzene Based)	2	Normal	p-Dichlorobenzene based moth crystals. May be present with Naphthalene-based moth balls.
Light Hydrocarbons	2	Normal	Building materials; aerosol cans; fuel for cooking/camping/lighters; LPG; refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
Light Solvents	75	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.
Methylene Chloride	0	Normal	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide.

Contamination Index™ Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically brought into the home by the occupants and can often be readily identified and removed or contained. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Lifestyle Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Personal Care Products	9	Normal	Soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. These products contain many VOCs that will dissipate if use is discontinued or reduced. Consider storing these products in a closed container when not in use, and dispose of unused products. Also, run an exhaust fan or open a window when using these products.
	Alcohol Products	7	Normal	Household cleaning products, antiseptic wipes, hand sanitizers, some solvents, reed diffusers, consumable alcohol, and some pharmaceuticals. These concentrations will be reduced by removing unnecessary products or proper storage of those materials in closed airtight containers.
	Odorants and Fragrances	8	Normal	VOCs in this category can be found in scented candles, potpourri, air fresheners, scented cleaning products, and scented personal care products. Consider reducing use of scented products and store unused products in a tight fitting container.
	Dry Cleaning Solvents	0	Normal	Typical dry-cleaning methods employ the use of carcinogenic chemicals. Dry-cleaning should be allowed to vent outside, without plastics bags, before being placed inside.
	Medicinals	0	Normal	Ointments and creams, topical first aid/pain relievers.

Significant VOCs

Based upon your specific home air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Home Survey Report or are indicative of specific types of products or problems. Compounds from a variety of chemical classes are represented here, although only the most common or most notable are specifically listed. These chemical compounds may come from a variety of sources as shown in the Contamination Index section of this report.

Locating and removing the source of the chemical compound is the most effective way to reduce the concentration of that chemical compound. If removing the source is not possible, try to contain it in some way (e.g., placing the source in an air-tight container when not in use). In addition, many homes have insufficient ventilation so increasing the amount of outside air or filtering or purifying re-circulated inside air will almost always reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods may need to be employed continuously in order to keep the VOC levels low.

The Chemical Abstracts Service (CAS) registry number after the chemical compound name in the table below is a unique identifier for that chemical compound and is often the best means to search for additional information. The two VOC levels in the table below (ng/L and ppb) are different ways of describing the same concentration.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Propylene glycol	57-55-6	180	58	Automotive products, paints and coatings, sealers, caulks, cleaners, personal care products, hair products, pet care, pesticides
Texanol-B	74367-34-3	160	18	Paints and coatings, typically latex paint; glue and adhesive; sealer
Texanol-A	74367-33-2	47	5	Paints and coatings, typically latex paint; glue and adhesive; sealer
2-Butoxyethanol	111-76-2	14	3	Solvent; paints and coatings; strippers and thinners; hydraulic fluid; heavy duty cleaners/degreasers; soaps; pesticides
Diethylene glycol ethyl ether	111-90-0	11	2	DEGMEE; CarbitolAutomotive fluids; cleaners; personal care products, especially hair products; paints and coatings

Supplemental Information: Odorants

Many chemical compounds have odors associated with them, some pleasant and some unpleasant. These odors can combine to create different odors, making odor identification more difficult. The odor descriptions for the compounds reported in this air sample are listed below as well as some of the more common sources.

Compound	CAS	Conc. (ppb)	Odor Range (ppb)	Odor Description
2-Butoxyethanol	111-76-2	3	43 - 390	sweet, ester, musty
Diethylene glycol ethyl ether	111-90-0	2	200 - 1,090	ethereal, mild, pleasant
Propylene glycol	57-55-6	58	5,140 -	-

Supplemental Information: EPA Hazardous Air Pollutants (HAPs)

Hazardous air pollutants, also known as toxic air pollutants or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Listed below are those HAPs that were detected with the IAQ Home Survey VOC test, this list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates that compound is below the reporting limit for this air sample. For more information about HAPs visit the EPA [Air Toxics website](#). The exposure limits listed below can also be found in the [NIOSH Guide to Chemical Hazards](#). The HAPs in the table below may also be listed as Significant VOCs if the concentration of that chemical compound is greater than the threshold level for a Significant VOC.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl Sulfide	463-58-1	2	1	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
1,4-Dichlorobenzene	106-46-7	2	0.3	Carcinogen	Moth balls/crystals; room deodorant

*These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or approved representative.*

This analysis was performed by Enthalpy Analytical, LLC (MTP). The results contained in this report are dependent upon a number of factors over which Enthalpy Analytical, LLC (MTP) has no control, which may include, but are not limited to, the sampling technique utilized, the size or source of sample, the ability of the sampler to collect a proper or suitable sample, the compounds which make up the TVOC, and/or the type of mold(s) present. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Enthalpy Analytical, LLC (MTP), nor its agents, officers, directors, employees, or successors shall be liable for any claims, actions, causes of action, costs, loss of service, medical or other expenses or any compensation whatsoever which may now or hereafter occur or accrue based upon the information or opinions contained herein.

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Customer: Healthy Fresh Air
15 Pine Ridge Lane. Orleans, MA 02653
clearairtobreathe@gmail.com/774-216-9006

Laboratory Analysis Report

Project Information:	Monomoy Regional Middle School 425 Crowell Rd Chatham, MA 02633
Order Number:	2024-13463
Received Date:	August 05, 2024
Analysis Date:	August 06, 2024

Katiuska Acosta

Katiuska Acosta, Laboratory Director or other approved signatory

The results presented pertain only to the samples as presented in the attached Chain of Custody. This report will not be reproduced except in its entirety and with the written approval of NexLab Environmental, LLC. Samples were received in good condition unless otherwise noted in the report. The use or interpretation of the results of laboratory analyses is the exclusive responsibility of the company and/or the individuals who conducted the sampling and does not imply any responsibility on the part of NexLab. It is important to note that neither the EPA nor OSHA have established standards for mold or mildew levels in indoor environments, and NexLab Environmental, LLC makes no express or implied warranties regarding the health of a property based solely on samples submitted to its laboratory for analysis. Any opinions or interpretations expressed in this report are outside the scope of A2LA accreditation. .





Spore Trap Analysis-ASTM

Sample ID:	2024-13463-17
Origin:	Sgt Massey
Volume Sampled (L):	150 L
Media:	My Mold Detective
Percent of Trace Analyzed:	100% of 600X Magnification
Conclusion:	Elevated

Spore Types	Raw Count	Count/m ³	%
Ascospores	33	440	11
Aspergillus/Penicillium-Like	162	2160	52
Cladosporium	114	1520	36
Curvularia	3	40	<1
Unidentified/Miscellaneous Spores	1	13	<1
Total Spores	313	4173	-
Hyphal Fragments	2	53	-
Debris Rating	3		
Detection Limit	13.3333		

Detection Limit:

Based on the volume of air sampled, this is the lowest number of spores that can be detected and is an estimate of the lowest concentration of spores that can be read in the sample. Debris Rating is due to the amount of particles that are not pollen or spores and directly affects the accuracy of the spore counts. The categories 0-5 for Accurate Count, are used to indicate the amount of observed debris, with 1 indicating the lowest amount of debris, and 5 indicating an overloaded sample. Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted

Conclusion Interpretations: The conclusions are intended to help the client understand the results of the analysis report, but do not recommend in any manner health consequences or financial choices derived from the results. The mold analysis is one component of an inspector's evaluation and may be used in conjunction with other findings such as water leaks, excess humidity and damages to the property which may promote the growth of mold. "The opinions/interpretations identified/expressed in this report are outside the scope of this organization's A2LA accreditation."

The "Control" is an outdoor air sample taken adjacent to the property tested to provide a baseline of factors or expected range including spore count and type of spores present when the indoor samples are collected.

"Elevated" means that these factors when compared to the "Control" are higher than expected. Most commonly associated fungi with water issues that are of known potential harm include, but are not limited to: *Chaetomium*, *Stachybotrys*, *Memnoniella*, *Trichoderma*, *Fusarium* and *Aspergillus*.

"Not Elevated" means that the quantity and/or the diversity of spores are lower than the control.

"NA" (Not Applicable) means no control sample was submitted, so no baseline was established.

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Swab Analysis-SOP-004

Sample ID:	2024-13463-9	2024-13463-16	2024-13463-15
Origin:	Ms Jordan	Staff off guidance	E114
Area Swabbed:	1 sqcm	1 sqcm	1 sqcm
Media:	Swab-Mold	Swab-Mold	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification	Analyzed at 600X Magnification	Analyzed at 600X Magnification

Spore Types	Category	Category	Category
Ascospores	Low	Low	-
Aspergillus/Penicillium-Like	Low	High	High
Chaetomium	Low	-	Low
Cladosporium	Low	High	High
Curvularia	Low	-	-
Smut/Myxomyces/Periconia	Low	Low	-
Ulocladium	Low	Low	-
Hyphal Fragments	Low	Medium	High
Background Debris	Medium	High	High
Basidiospores	-	Low	Low
Stachybotrys	-	-	Low
Epicoccum	-	-	-
Rust	-	-	-
Alternaria	-	-	-
Nigrospora	-	-	-
Trichoderma	-	-	-
Torula	-	-	-
Comments:	Elevated	Elevated	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.
Background Debris: Based on the amount of debris observed occluding the field of view.
Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.
N/A means not applicable.

TOP OF
CABINET

OUTSIDE
WALL

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Swab Analysis-SOP-004

Sample ID:	2024-13463-14	2024-13463-13	2024-13463-12
Origin:	E114	B128	125
Area Swabbed:	1 sqcm	1 sqcm	1 sqcm
Media:	Swab-Mold	Swab-Mold	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification	Analyzed at 600X Magnification	Analyzed at 600X Magnification

Spore Types	Category	Category	Category
Ascospores	-	-	-
Aspergillus/Penicillium-Like	High	-	High
Chaetomium	-	-	-
Cladosporium	High	High	High
Curvularia	-	-	-
Smut/Myxomycetes/Periconia	-	-	Low
Ulocladium	-	Low	-
Hyphal Fragments	High	Medium	Low
Background Debris	High	Medium	High
Basidiospores	-	-	Low
Stachybotrys	-	-	-
Epicoccum	-	-	Low
Rust	-	-	Low
Alternaria	-	-	-
Nigrospora	-	-	-
Trichoderma	-	-	-
Torula	-	-	-
Comments:	Elevated	Elevated	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.

Background Debris: Based on the amount of debris observed occluding the field of view.

Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.

N/A means not applicable.

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Swab Analysis-SOP-004

Sample ID:	2024-13463-11	2024-13463-10	2024-13463-1
Origin:	125	E103 Nurse	Office
Area Swabbed:	1 sqcm	1 sqcm	1 sqcm
Media:	Swab-Mold	Swab-Mold	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification	Analyzed at 600X Magnification	Analyzed at 600X Magnification

Spore Types	Category	Category	Category
Ascospores	-	-	-
Aspergillus/Penicillium-Like	Low	Medium	Medium
Chaetomium	-	-	-
Cladosporium	Low	High	High
Curvularia	-	-	-
Smut/Myxomyces/Periconia	-	-	-
Ulocladium	-	-	High
Hyphal Fragments	Low	Medium	High
Background Debris	Medium	Medium	High
Basidiospores	-	-	-
Stachybotrys	-	-	Medium
Epicoccum	-	-	-
Rust	-	-	-
Alternaria	-	-	Low
Nigrospora	-	-	-
Trichoderma	-	-	-
Torula	-	-	-
Comments:	Not Elevated	Elevated	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.
Background Debris: Based on the amount of debris observed occluding the field of view.
Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.
N/A means not applicable.

CEILING
TILE

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Swab Analysis-SOP-004

Sample ID:	2024-13463-8	2024-13463-7	2024-13463-6
Origin:	Sgt Massey	Health Concerns	Asst Principle
Area Swabbed:	1 sqcm	1 sqcm	1 sqcm
Media:	Swab-Mold	Swab-Mold	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification	Analyzed at 600X Magnification	Analyzed at 600X Magnification

Spore Types	Category	Category	Category
Ascospores	-	-	-
Aspergillus/Penicillium-Like	High	High	High
Chaetomium	Low	-	-
Cladosporium	High	High	Low
Curvularia	-	-	-
Smut/Myxomycetes/Periconia	Low	Low	Low
Ulocladium	-	-	-
Hyphal Fragments	Medium	Medium	Low
Background Debris	Medium	Medium	Medium
Basidiospores	-	-	-
Stachybotrys	-	-	-
Epicoccum	-	-	Low
Rust	-	-	-
Alternaria	Low	-	-
Nigrospora	-	-	Low
Trichoderma	-	-	-
Torula	-	-	-
Comments:	Elevated	Elevated	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.
Background Debris: Based on the amount of debris observed occluding the field of view.
Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.
N/A means not applicable.

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Swab Analysis-SOP-004

Sample ID:	2024-13463-5	2024-13463-4	2024-13463-3
Origin:	Guidance Office	Principle Office	Office
Area Swabbed:	1 sqcm	1 sqcm	1 sqcm
Media:	Swab-Mold	Swab-Mold	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification	Analyzed at 600X Magnification	Analyzed at 600X Magnification

Spore Types	Category	Category	Category
Ascospores	Low	-	-
Aspergillus/Penicillium-Like	High	High	High
Chaetomium	-	-	-
Cladosporium	High	Low	Medium
Curvularia	-	Low	-
Smut/Myxomyces/Periconia	Low	Low	Low
Ulocladium	-	-	Low
Hyphal Fragments	Low	Low	Medium
Background Debris	Medium	Medium	Medium
Basidiospores	-	-	-
Stachybotrys	-	-	-
Epicoccum	-	-	-
Rust	-	-	-
Alternaria	-	-	-
Nigrospora	-	-	-
Trichoderma	-	High	-
Torula	-	-	Low
Comments:	Elevated	Elevated	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.
 Background Debris: Based on the amount of debris observed occluding the field of view.
 Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.
 N/A means not applicable.

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Swab Analysis-SOP-004

Sample ID:	2024-13463-2
Origin:	Guidance Office
Area Swabbed:	1 sqcm
Media:	Swab-Mold
Percent of Trace Analyzed:	Analyzed at 600X Magnification

Spore Types	Category
Ascospores	-
Aspergillus/Penicillium-Like	High
Chaetomium	-
Cladosporium	High
Curvularia	-
Smut/Myxomyces/Periconia	-
Ulocladium	Medium
Hyphal Fragments	High
Background Debris	High
Basidiospores	-
Stachybotrys	-
Epicoccum	Low
Rust	-
Alternaria	High
Nigrospora	Low
Trichoderma	-
Torula	-
Comments:	Elevated

Category Count: Based on the amount of spores observed. Not Present: (0), Very Low: (1-9), Low (10 -100), Medium (101-1000), High (>1000). N/A means not applicable.

Background Debris: Based on the amount of debris observed occluding the field of view.

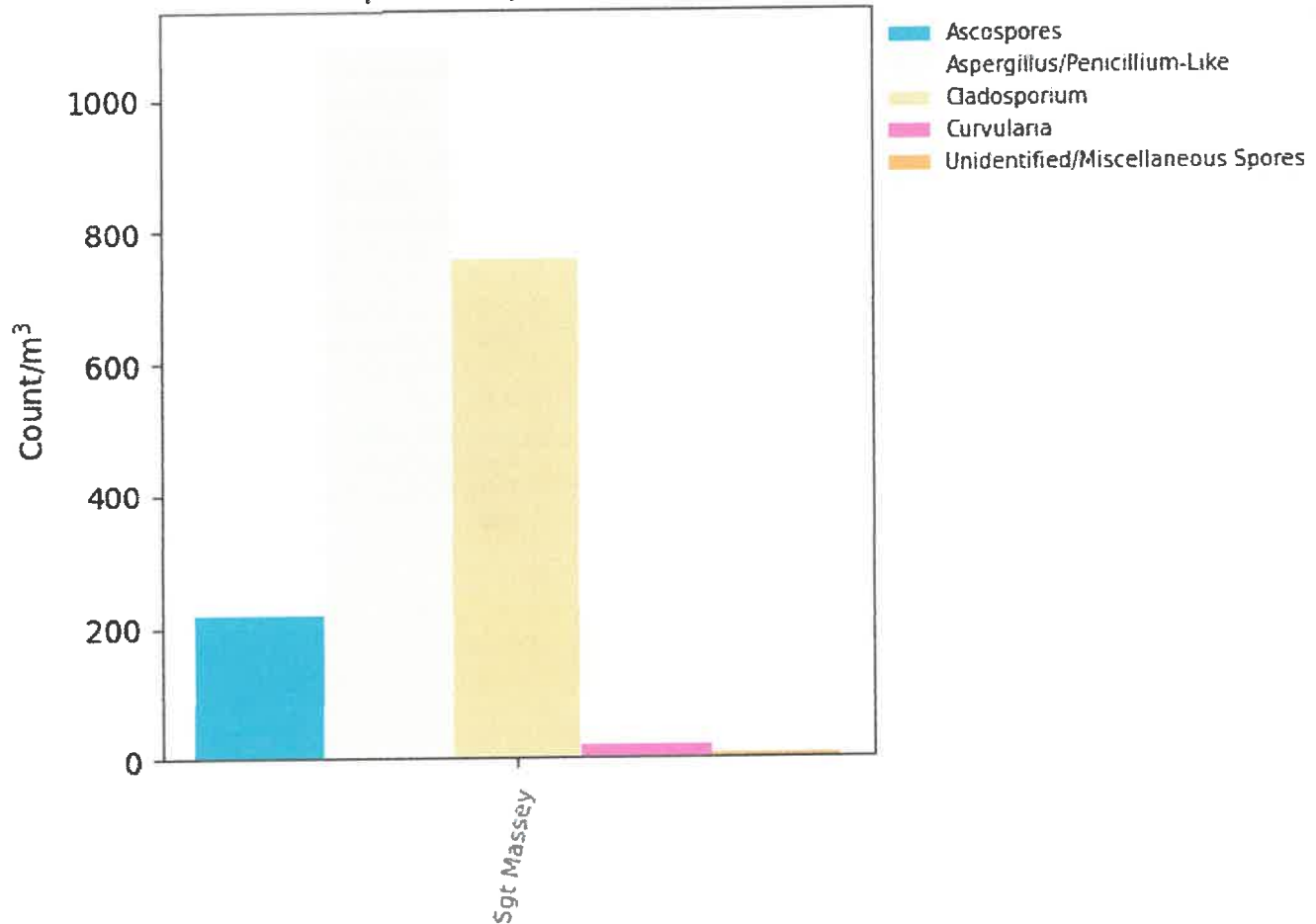
Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report, it was not observed in the samples submitted.

N/A means not applicable.

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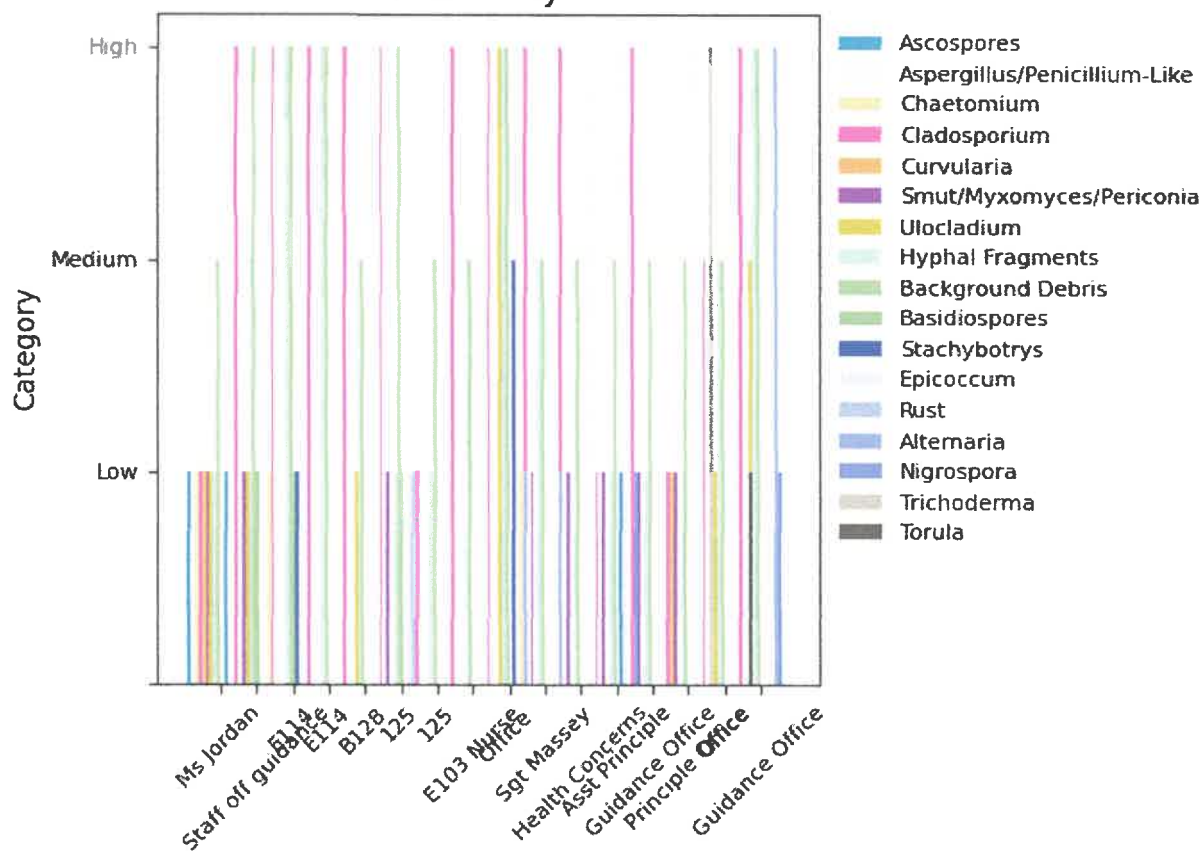
Spore Trap Analysis



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Swab Analysis



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Client Sample ID: Room 128
Laboratory ID: 115329-2

Home Air Analysis For: Monomoy Regional Middle School
Home Tested: 425 Crowell Rd
Chatham, MA 02633

Sampling Professional: Frank Zelinski
Mold Proactive
15 Pine Ridge Lane
Orleans, MA 02653

Client Sample ID: Room 128
Sample Volume (L): 5.6
Date Sampled: 07/30/2024
Sample Type: TDT AL196
Sample Condition: Acceptable

Report Number: 115329

Thank you for using IAQ Home Survey!
If you have questions about your report,
please contact your service provider who
performed this test.

Receive Date: 08/02/2024
Approve Date: 08/02/2024
Scan Date: 08/02/2024
Report Date: 08/06/2024

IAQ Home Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources and active mold growth in a home. Many indoor air quality (IAQ) issues identified by IAQ Home Survey can be easily remediated or eliminated. This test is an invaluable tool for homebuyers, homeowners, and renters because it provides important information on potential contamination issues in the home that cannot be detected by a visual inspection alone. Acting upon the information in this report will enable you to dramatically improve the air quality in your home, creating a healthier environment for you and your family.

Your Indoor Air Quality Report Summary

Your Indoor Air Quality Report has several sections describing different aspects of your home's air quality. A summary of this data is provided below, additional information and descriptions are included in the full report.

Total Volatile Organic Compounds (TVOC) Level

TVOC is a general indicator of the IAQ in your home (see page 2).

 **Total VOCs 4500 ng/L**

Total Mold Volatile Organic Compounds (TMVOC) Level

TMVOC is an assessment of the actively growing mold in your home (see page 3).

 **Total MVOCs 19 ng/L**

Contamination Index (CI) Level

The CI shows the types of air-contaminating products and materials that are present in your home (see pages 5, 6, and 7). These levels are estimates based on common home products and activities.

Building Related Sources

See page 5 for more detail.

H	Coatings (Paints, Varnishes, etc.)
N	PVC Cement
N	HFCs and CFCs (Freons™)

Mixed Building and Lifestyle Sources

See page 6 for more detail.

N	Building Materials-Toluene Based
N	Gasoline
N	Fuel Oil, Diesel Fuel, Kerosene
N	Moth Balls (Naphthalene Based)
N	Moth Crystals (p-Dichlorobenzene Based)
N	Light Hydrocarbons
N	Light Solvents
N	Methylene Chloride

Lifestyle Related Sources

See page 7 for more detail.

N	Personal Care Products
N	Alcohol Products
N	Odorants and Fragrances
N	Dry Cleaning Solvents
N	Medicinals

Note: Severity begin at Normal or Minimal and progress through Moderate, Elevated, High and/or Severe. The color progression from green to red indicates results that are increasingly atypical and suggest potentially higher risk. All Severity classifications are based on empirical data and should not be taken as a pass/fail or conformance to a published specified limit.

Normal **Moderate** **Elevated** **High** **Severe**

Enthalpy Analytical, LLC (MTP), the creator of IAQ Home Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Enthalpy Analytical, LLC (MTP) (ID 166272) is accredited by the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC in the Industrial Hygiene accreditation program for GC-MS Field of Testing as documented by the Scope of Accreditation [Certificate](#) and associated Scope. This analysis references methods EPA TO-17 and ISO 16000-6, which fall within the Scope of Accreditation.

Total Volatile Organic Compounds (TVOC)

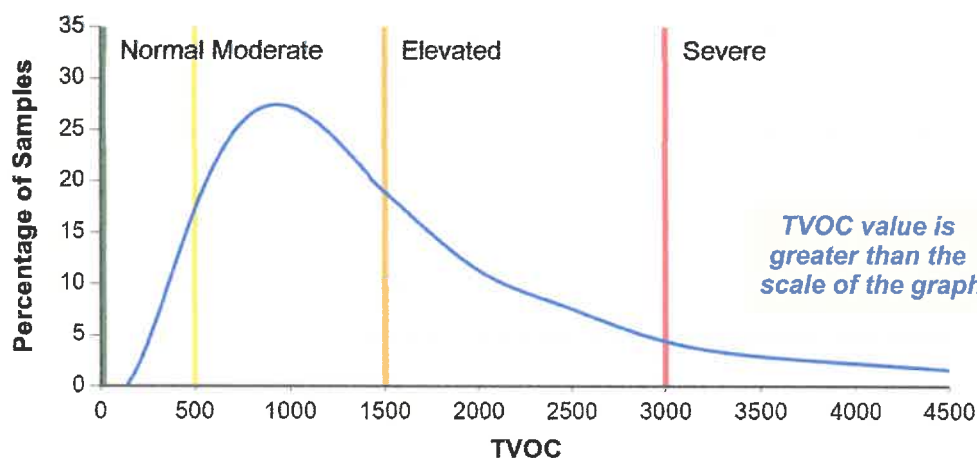
Your TVOC Level is: 4500 ng/L

IAQ needs improvement; effect on occupants probable; reduce potential sources and increase ventilation; investigate other causes of poor IAQ.

Your Indoor Air Quality Level (Highlighted)

Normal < 500 ng/L	Moderate 500 - 1500 ng/L	Elevated 1500 - 3000 ng/L	Severe > 3000 ng/L
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All IAQ Survey TVOC Air Quality Indicator



**The average TVOC is
1900 ng/L**

This chart represents the TVOC distribution of over 45,000 samples. Over 80% of these samples indicate improvements in IAQ are necessary to achieve the goal of TVOC less than 500 ng/L.

The chart above shows the TVOC levels for all homes tested using IAQ Home Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TVOC level (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Normal, Moderate, Elevated, and Severe TVOC levels. As the TVOC value increases, individuals may experience aggravated health problems, and therefore, the need to address VOC issues becomes more critical. However, reductions in VOCs can be made at any level.

No government or organization has specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has set 500 ng/L as the recommended TVOC limit.

In general:

- < 500 ng/L IAQ is acceptable for most individuals; however, chemically sensitive persons may require lower levels.
- 500 - 1,500 ng/L some effects on the occupants is possible.
- > 1,500 ng/L IAQ should be improved.

Note: These levels are based on observed health effects and have been determined from a combination of published data and the statistical distribution of TVOC concentrations from the IAQ Home Survey methodology.

The presence of chemicals in your home can cause a wide range of problems, from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). Anyone with respiratory issues like asthma or allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals.

Click [here](#) for more information about VOCs.

The Contamination Index (CI) in the next pages of this report will help guide you through determining what types of products or materials in the home could be problematic for your IAQ, and will provide some recommendations to help reduce or eliminate them.

Total Mold Volatile Organic Compounds (TMVOC)

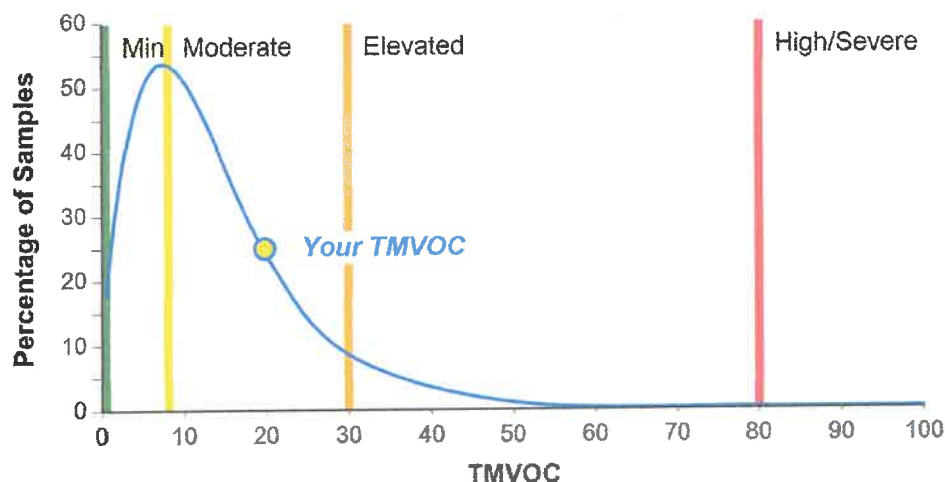
Your TMVOC Level is: 19 ng/L

Actively growing molds are present, individuals sensitive to molds will likely be affected.

Your Active Mold Level (Highlighted)

Minimal < 8 ng/L	Active-Moderate 8 - 30 ng/L	Active-Elevated 30-80 ng/L	Active-High 80 - 150 ng/L	Active-Severe > 150 ng/L
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All IAQ Survey TMVOC Active Mold Growth Indicator



The average TMVOC is 10 ng/L

This chart represents the TMVOC distribution of over 45,000 samples. Approximately half the samples indicate that some active mold growth is occurring at the time of sample collection.

The chart above shows the TMVOC level for all homes tested using IAQ Home Survey. Results for this air sample are displayed on the chart as a yellow circle. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TMVOC level (indicated on the horizontal x-axis). For example, a TMVOC of 20 ng/L is reported in ~20% of the samples. The green, yellow, orange, and red vertical bars represent divisions between Minimal, Moderate, Elevated, and High/Severe TMVOC levels.

Molds can be found anywhere in the indoor environment as long as there is a source of water or moisture. Molds produce spores, VOCs (during the metabolic or digestive processes of mold), and mycotoxins (typically when the mold is threatened).

This test detects only the VOCs produced by actively growing molds and does not represent spores or mycotoxins. The TMVOC value is the sum of a select set of VOCs emitted by most molds while growing (when mold is in an inactive or dormant state it does not produce many MVOCs).

The presence of moisture is the primary factor in mold growth, controlling moisture and dampness is the only way to consistently control or limit mold growth.

Click [here](#) for more information about molds and mold VOCs.

Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in your home. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your home compares to thousands of other homes, and provides some suggestions for where these products and materials might be found. The CI is divided into three main source groups: Building-Related Sources, Mixed Building and Lifestyle Sources, and Lifestyle Sources.

1. Building-Related Sources are those that are typically part of the structure of the home and may be more difficult to reduce in the short term. Recent construction or renovation often increases the CI categories in this group to the Elevated, High, or Severe levels. VOCs from these activities often decrease substantially in the month following use/application of these products, especially if the area is flushed with air to dissipate the VOCs off gassed from the new products or materials.

2. Mixed Building and Lifestyle Sources are those that could belong to either category and investigation on your part may be necessary to determine which source is more likely. Recent construction or renovation can often contribute to other source categories in addition to Building-Related Sources.

3. Lifestyle Sources are those that the occupants of the home bring into the home and can usually be readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building-Related Sources.

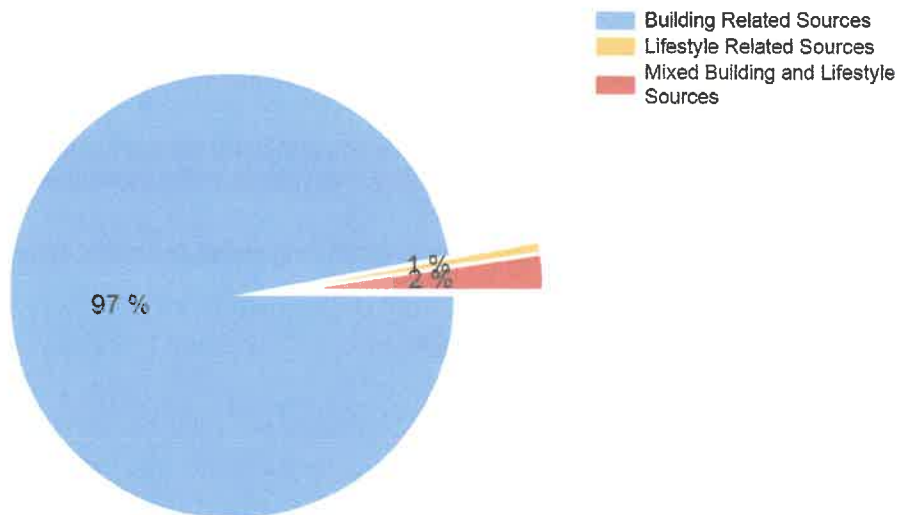
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building source group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or garage could be considered part of the Lifestyle sources group. Always consider all possible sources for a particular CI category.

The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category.

Since there are potentially many sources of VOCs, homes can often be re-contaminated even after sources have been removed because new products are constantly being brought into the home. Home occupants and homebuyers should take note of this fact, and view IAQ as a continuous improvement process.

The chart below depicts the distribution of the Contamination Index source groups. These source groups are estimates and may not indicate all of the VOCs in your air sample.

Contamination Index Source Groups



Contamination Index™ Building Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically part of the structure of the home and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Building Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	3900	High	Includes interior and exterior paints (including low- or no-VOC paints), varnishes, lacquers, some sealants, and other products that can be classified as a coating over a surface. Typically, VOCs from these products are in the 10 to 14 carbon size range and can linger for several months, sometimes longer. Begin ventilating the home immediately and locate and dispose of product containers and related supplies. If application was performed more than 4 weeks before your air test, please contact your service provider for further discussion and recommendations. There is some overlap between chemical compounds associated with 'Coatings (Paints, Varnishes, etc.)' and those found in 'Fuel Oil, Diesel Fuel, Kerosene.'
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	HFCs and CFCs (Freons™)	17	Normal	Most often used as refrigerants for air conditioners and refrigerator/freezers and propellants for blown-in insulation, cushions, aerosol cans, etc. Many of these chemical compounds are being phased out because of the Montreal Protocol.

Contamination Index™ Mixed Building and Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories could belong to either the Building or Lifestyle groups so additional investigation may be necessary to determine which source is more likely. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Mixed Building and Lifestyle Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Building Materials-Toluene Based	0	Normal	Adhesives and glues used in construction and maintenance, arts and crafts; adhesive removers; contact cement; sealants; coatings (paint, polyurethane, lacquer, thinner); automotive products, including parts cleaners. Additional sources include gasoline and other fuels.
	Gasoline	16	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers and gas-powered equipment such as lawnmowers, snow blowers, mini-bikes, etc. that are stored in attached garages or basements. Does not include exhaust emissions. These items should be stored externally to the home. Additionally, gasoline VOCs can linger on clothing after refueling an automobile at a gas station. Gasoline includes chemical compounds that are also included in the 'Light Solvents' category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Often found in garages and basements. These fuels are not very volatile so will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. Does not include exhaust emissions. There is some overlap between chemical compounds associated with 'Fuel Oil, Diesel Fuel, Kerosene' and those found in 'Coatings (Paints, Varnishes, etc.).'
	Moth Balls (Naphthalene Based)	0	Normal	Naphthalene based moth balls. May be present with p-Dichlorobenzene-based moth crystals.
	Moth Crystals (p-Dichlorobenzene Based)	0	Normal	p-Dichlorobenzene based moth crystals. May be present with Naphthalene-based moth balls.
	Light Hydrocarbons	31	Normal	Building materials; aerosol cans; fuel for cooking/camping/lighters; LPG; refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	49	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.
	Methylene Chloride	0	Normal	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide.

Contamination Index™ Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically brought into the home by the occupants and can often be readily identified and removed or contained. The CI classifications begin at Normal and progress through Moderate, Elevated, High and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Lifestyle Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Personal Care Products	12	Normal	Soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. These products contain many VOCs that will dissipate if use is discontinued or reduced. Consider storing these products in a closed container when not in use, and dispose of unused products. Also, run an exhaust fan or open a window when using these products.
	Alcohol Products	7	Normal	Household cleaning products, antiseptic wipes, hand sanitizers, some solvents, reed diffusers, consumable alcohol, and some pharmaceuticals. These concentrations will be reduced by removing unnecessary products or proper storage of those materials in closed airtight containers.
	Odorants and Fragrances	4	Normal	VOCs in this category can be found in scented candles, potpourri, air fresheners, scented cleaning products, and scented personal care products. Consider reducing use of scented products and store unused products in a tight fitting container.
	Dry Cleaning Solvents	1	Normal	Typical dry-cleaning methods employ the use of carcinogenic chemicals. Dry-cleaning should be allowed to vent outside, without plastics bags, before being placed inside.
	Medicinals	0	Normal	Ointments and creams, topical first aid/pain relievers.

Significant VOCs

Based upon your specific home air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Home Survey Report or are indicative of specific types of products or problems. Compounds from a variety of chemical classes are represented here, although only the most common or most notable are specifically listed. These chemical compounds may come from a variety of sources as shown in the Contamination Index section of this report.

Locating and removing the source of the chemical compound is the most effective way to reduce the concentration of that chemical compound. If removing the source is not possible, try to contain it in some way (e.g., placing the source in an air-tight container when not in use). In addition, many homes have insufficient ventilation so increasing the amount of outside air or filtering or purifying re-circulated inside air will almost always reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods may need to be employed continuously in order to keep the VOC levels low.

The Chemical Abstracts Service (CAS) registry number after the chemical compound name in the table below is a unique identifier for that chemical compound and is often the best means to search for additional information. The two VOC levels in the table below (ng/L and ppb) are different ways of describing the same concentration.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Diethylene glycol ethyl ether	111-90-0	4300	780	DEGMEE; Carbitol/Automotive fluids; cleaners; personal care products, especially hair products; paints and coatings
2-Butoxyethanol	111-76-2	190	39	Solvent; paints and coatings; strippers and thinners; hydraulic fluid; heavy duty cleaners/degreasers; soaps; pesticides
Isobutane	75-28-5	28	12	Gasoline and fuel additive; aerosol propellant; refrigerant; cooking/camping/lighter fluids
Dipropylene glycol	110-98-5; 106-62-7; 108-61-2	10	2	Paints and coatings; solvents; cosmetics and personal care products; fragrances; cleaners; automotive products; antifreeze
Trichlorofluoromethane	75-69-4	10	2	Refrigerant, phased out
Dimethyl ether	115-10-6	9	5	Refrigerant; aerosol propellant
Carbonyl Sulfide	463-58-1	6	2	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels

Supplemental Information: Odorants

Many chemical compounds have odors associated with them, some pleasant and some unpleasant. These odors can combine to create different odors, making odor identification more difficult. The odor descriptions for the compounds reported in this air sample are listed below as well as some of the more common sources.

Compound	CAS	Conc. (ppb)	Odor Range (ppb)	Odor Description
2-Butoxyethanol	111-76-2	39	43 - 390	sweet, ester, musty
Carbonyl Sulfide	463-58-1	2	57 - 102	unpleasant
Diethylene glycol ethyl ether	111-90-0	780	200 - 1,090	ethereal, mild, pleasant
Dimethyl ether	115-10-6	5	161,000 - 228,000	ethereal
Trichlorofluoromethane	75-69-4	2	5,000 - 200,057,000	-

Supplemental Information: EPA Hazardous Air Pollutants (HAPs)

Hazardous air pollutants, also known as toxic air pollutants or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Listed below are those HAPs that were detected with the IAQ Home Survey VOC test, this list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates that compound is below the reporting limit for this air sample. For more information about HAPs visit the EPA [Air Toxics website](#). The exposure limits listed below can also be found in the [NIOSH Guide to Chemical Hazards](#). The HAPs in the table below may also be listed as Significant VOCs if the concentration of that chemical compound is greater than the threshold level for a Significant VOC.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl Sulfide	463-58-1	6	2	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Toluene	108-88-3	1	0.3	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner

*These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or approved representative.*

This analysis was performed by Enthalpy Analytical, LLC (MTP). The results contained in this report are dependent upon a number of factors over which Enthalpy Analytical, LLC (MTP) has no control, which may include, but are not limited to, the sampling technique utilized, the size or source of sample, the ability of the sampler to collect a proper or suitable sample, the compounds which make up the TVOC, and/or the type of mold(s) present. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Enthalpy Analytical, LLC (MTP), nor its agents, officers, directors, employees, or successors shall be liable for any claims, actions, causes of action, costs, loss of service, medical or other expenses or any compensation whatsoever which may now or hereafter occur or accrue based upon the information or opinions contained herein.

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Areas where samples taken

Sample types: SW swab, A Air-O-Cell, B Bulk, T Tape lift

SGT MASSEY TWO	SW	A	
MS JORDAN	SW		
STAFF OFF GUIDANCE	SW		
E114 TWO	SW		ENTHALPY
B128	SW		
125 TWO	SW		1
E103 NURSE	SW		
OFFICE 2 + ENTHALPY			ENTHALPY PRISM
HEALTH CONCERNS	SW		
ASST PRINCIPAL	SW		
GUIDANCE TWO	SW		
PRINCIPAL	SW		

Scope of the inspection code: It is a visual assessment and a collection of samples of mold taken and sent to outside lab, in the client defined areas for the property only. This type of sampling is ONLY to determine if mold exists in the area defined by the client to be tested. This inspection **does not include** detecting mold in areas outside the client's definition and outside the scope of the inspector's inspection and testing requirements. It is not a guarantee that the mold does or does not exist in other areas of the property.

What this inspection is: it is a visual inspection of readily accessible areas defined by the client for inspection. The inspector will not move furniture or remove either floor or wall coverings. There will be areas unable to be inspected such as, but not limited to: **A.** beneath floor coverings, **B.** interior of walls and ceilings, **C.** in attics below insulation or stored items, **D.** inside ductwork, **E.** behind or under appliances or furniture. Sampling will not be able to determine the extent, or in many instances, the types of all microbial contaminants from the results of the visual inspection.

Notice of Claims: you understand and agree that any claims or complaints arising out of or related to any alleged act or omission in connection with the inspection shall be reported to us in writing, within 10 business days of discovery. Unless there is an emergency condition, you agree to allow us a reasonable period of time to investigate the claims are complaints by, among other things, reinspection before you or anyone acting on your behalf, repairs, replaces, alters or modifies the system or component that is the subject matter of decline. You understand and agree that any failure to timely notify us and allow adequate time to investigate as stated above shall constitute a complete bar and waiver of any and all claims you may have against us related to the alleged act or omission unless otherwise prohibited by law.

Arbitration: Any dispute concerning the interpretation of this agreement arising from the Inspection and Report (unless based on payment fee) shall be resolved by binding, non-appealable arbitration conducted in accordance with the rules of the American Arbitration Association except that the parties shall mutually agree upon an arbitrator who is familiar with the home inspection industry.

Limitation Period: Legal action resulting from this agreement, or from the inspection and report, must be initiated within one year from the inspection period failure. If you don't file a lawsuit within this timeframe, you won't be able to pursue any legal action and you'll waive all your rights and claims. The time limitation period might be briefer than what state law allows.

We agree to: The undersigned Client(s) acknowledges that they have read and understand what the limited mold assessment agreement does and does not cover, and they have been advised and encouraged to have the subject property tested for mold, and that they understand that the presence of certain types of mold prevalent in housing can pose severe health hazards. It is understood if the clients declined the inspector conducting any of the services recommended above, the clients agree to hold harmless the inspector for any damages or responsibility for building conditions which remain undiscovered regarding the discovery of mold and mold spores.

Property Address 425 CROWELL RD, CHATHAM, MA 02

Acceptance of this agreement/contract is by client signature, or payment.

Signature of Client [Signature] **Date** 7/8/24

Signature of Inspector [Signature] **Date** 8/8/24

Frank Zelinski, Healthy Fresh Air

See attached list of areas requested to be inspected as well as samples taken and their location.

IAQ/MOLD ASSESSMENT REPORT



FOR: Monomoy Regional Middle School

BY: HealthyFreshAir.com/Frank Zelinski

NORMI™ Certified IAQ/Mold Inspector and Assessor (CMI/CMA)

Frank M Zelinski
Mold ProActive.com
15 Pine Ridge Lane
Orleans, MA 02653
August 7, 2024

www.healthyfreshair.com 774-216-9006 clearairtobreathe@gmail.com

Scott Carpenter scarpenter@monomoy.edu 508-945-5130

Michael MacMillan mmacmillan@monomoy.edu 617-848-0460

Middle School inspected at 425 Crowell Rd, Chatham, MA 02633

Re: Occupant IAQ Concerns

We want to personally thank you for the time you have taken with us to help expedite this NORMI™ Certified IAQ/Mold Assessment. We are satisfied that we now have enough information to draw some important conclusions and make some specific recommendations to significantly improve the indoor air quality of the referenced property.

Attached find the report, labs, documentation, and summary report for your home. This report meets the guidelines of ASTM, IICRC S-520, and NORMI Professional Practices. We are eager to assist you in resolving the problems we have found and hope you will help us expedite a solution.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'Frank M. Zelinski', is written over a faint, large 'HealthyFresh Air' watermark.

MOLD ASSESSORS Minimum Level of Insurable Practices

These general standards and practices are minimum requirements and do not constitute complete or sufficient specifications for mold assessment in all cases. More detailed requirements developed by a NORMI Certified Mold Assessor (CMA) for a mold assessment project may be required and shall take precedence over the provisions of this section. The NORMI professional shall work only under the provisions stated in a contract for services rendered, which should be presented to the client prior to the beginning of any project.¹

Index of Sections²

- General Information and History
- Visual/Olfactory Inspection and Walk-thru.
- Lab Reports and Diagnostics
- Interpretation of Results
- NORMI Sanitization Plan
- IAQ/Mold Management Plan
- Closing Paragraph

General Information and History

A tour of the building was done with the Superintendent and the Business Manager, as well as Ryanna, the custodian. Also on the tour was a representative of the building engineering firm and the architectural firm. In the walk through, several areas were shown to have stained ceiling tiles, as in the Main Office, several window sills that were stained or cupped with visible drywall damage. The stained ceiling tiles in the office were related to incoming lines from the split system AC units. The affected wooden windowsills were as a result of failure of the exterior flashing between the windows and siding.

Interpretation of Results.

When references are made to NexLab report, explanations of the various items found are on the last few pages headed "Microfungi of the Indoor and Outdoor Environment". Hyphal fragments are mainly skin cells.

All the rooms tested show various types of molds that are allergenic.

There are two attached reports from Enthalpy Analytical. One is for Room 128, and one is for the Main Office.

Room 128

The Enthalpy report for Room 128 shows "Severe" levels of VOC's but about two rooms away new flooring was being installed using UltrabondECO 575 mastic which had been freshly spread and now yet covered with tile. That would account for that reading. However, note on page 3 the TMVOC, or mold reading, is in the "Moderate" range, with 10 ng/L detected. The paragraph to the right mentions that in half the samples taken historically would "indicate that some active mold growth is occurring at the time of sample collection". Meaning there is a

possibility of some hidden mold not readily seen. For this room, all other VOCs are in the "Normal" level. NexLab swab samples have been taken in this room and are commented on page 4, #2024-13463-13 showing "High" amounts of "Cladosporium" and "Aspergillus/Penicillium".

Main Office

The Enthalpy report for "School Office" was taken on the desk next to where Roberta works. The "TVOC" Level was considered in the low "Moderate" range, and as described on page 5 is in the "Coatings" category. It is noted that work is being done in a connected office that involves redoing drywall and then repainting. It is interesting that although two moldy ceilings tiles are present in the connected rooms, as well as water damaged oak windowsills, the TMVOC's or mold readings are in the "Minimum" range.

The swab sample report taken from the moldy ceiling tile in the office, from NexLab on page 5, sample #2024-13463-1 does show *Stachybotris* as "medium", but ANY level of *Stachybotris* requires professional remediation. This is not to be handled by untrained, unprotected personnel. Note that other molds are seen as well. It could thus be assumed that the stained ceiling tile off the central office is also to be regarded as having high levels of undesirable mold.

See page 7 of the NexLab report, #2024-13463-3 which shows "High" amounts of *Aspergillus/Penicillium*, and a "medium" of *Cladosporium*. This would make the Office complex a #1 priority for professional remediation. All the connected offices are showing several types of molds. For remediation in the office complex, the causes must first be fixed. This would include the roof leakage bringing water to the split systems. The exterior siding and trim on those windows would need to be cared for first to prevent water intrusion. Then the drywall under and beside the outside windows needs to be removed, as well as the oak sills. Any new drywall should be the newer fiberglass backed sheetrock, *not greenboard*, and the oak sills replaced with a non-organic material such as Azak, tile, or stone.

Whenever a mold remediation is done, the ducted HVAC system must be cleaned. To keep the air clean and continuously eliminate mold, bacteria, and VOCs a purification system using either MCISynAIRgPure (HVAC probe) should be installed. Thus the air flow will send out into the area serviced, air and surface cleansing hydroxyls. In all instances it has been proven to improve the air breathed by the occupants. These may be seen and ordered at: www.blsproducts.com/fmz. See video <https://www.youtube.com/watch?v=mkhsV2AVUhk>

This would be a good area to place the MCI Protect to immediately improve the air quality. It can be left in place before, during and after the remediation.

Room 114

To be considered as a priority as well would be the outside wall of Room 114. See page 3, samples #2024-13463-15. That was taken from the bottom of the sheetrock near the dirt area of the outside wall. *Stachybotris* is noted in the "Low" range, with other types of molds noted. Any amount of *Stachybotris* requires professional remediation.

Sgt Massey Office

Sgt. Massey's office is one where the odor and mold growing on the cloth chairs makes

it an important room to improve. See Air-O-Cell report on page 2 showing "Elevated" amounts of several molds, including "Ulocladium" as "Medium". Then for the swab findings go to page 6 #2024-13463-8 showing Aspergillus/Penicillium and Cladosporium "High". Also shown is Chaetomium (one of 5 types of undesirable mold) "Low", Cladosporium "High". This would definitely make Sgt Massey's room a #1 or #2 priority. Some remediation in order. This would be good room to place the MCI Protect purifier to improve the air quality before, during, and after proper remediation on the outside wall under and beside the window.

Ms Jordan Room

Although no high levels are seen, there is a good variety of molds present, reading in the "Low" range. No visible signs of water damage, and perhaps a cleaning remediation recommended and constant use of an MCI Protect air purifier with a single DBI cell due to the smaller size of the room. A visible inspection of the area above the ceiling tiles would be in order to note if any visible mold or water damage.

All other rooms tested

Almost all of them do show Aspergillus/Penicillium-like mold to be present in the "High" range. Some are connected to the Main Office and should be included in the professional remediation as suggested for the Main Office.

Vertex and Custodians Awareness

The walk thru Monday, July 29 indicated that Jason and the custodial staff have a good awareness of other problems to address. This would include some wrapping of ducts or pipes to stop condensation. My report has only addressed Sgt Massey and Ms Jordan's room, as well as the Main office and connecting rooms, the Guidance Office and connecting rooms, and rooms E114, B125, B128, and E103.

I am always available for any further questions. 774-216-9006

THE FOLLOWING ARE GENERAL GUIDELINES FOR CLEANING OR PREVENTING MOLD AND MAY NOT ALL BE SPECIFIC TO THIS JOB.

Yearly "Spring" Cleaning

In generations past, an entire household would engage in Spring cleaning, including all parts of the home. The #1 mold prevention in all homes and offices is a yearly "Spring" cleaning, doing areas not regularly done. That is because dust is organic and thus food for mold. Of special note is pulling furniture and other items away from the wall. It would also include pulling out the refrigerator. Then vacuum dust using a HEPA bag on the vacuum. The person doing the work definitely wants to use an N95 type dust mask since dust and mold spores will be fluffed up and made airborne. Always wear disposable gloves and when taken off, dispose of them. Then spray the surfaces with a mildecide cleaner*. Hydrogen Peroxide is safe and readily available. DO NOT use your favorite cleaning cloth as you are inclined to use it on several surfaces, thus spreading mold spores. *Instead, use paper towels and dispose of them in a container with you after doing each item.*

** We highly recommend an enzyme cleaner as it actually "eats" mold and bacteria and is environmentally friendly. Professionals use it for mold remediation. It is called "EVERYDAY" and*

can be ordered at www.blsproducts.com/fmz. Click on "Products" and then below Chemistries click on [Preparation Products for Cleaning](#). A quart of concentrate costs \$99 and makes 30 quarts which equals \$3.30 per quart.

NORMI Sanitization Plan

From the **NORMI Professional Practices**, this protocol shall be used on all projects where mold counts are elevated, as interpreted by the NORMI certified professional, whether remediation has taken place.

- a. Thorough fogging and wiping down of the entire environment with an approved anti-microbial being careful to avoid spotting of leather, marble, tile, glass, and/or other surfaces which might be prone to spotting. This could include the fogging of a protectant, as a second step, to reduce the possibility of mold proliferation in the indoor environment. (See Recommended Products List.)
- b. Recommendation, where necessary, that the HVAC system be cleaned by an approved and trained mechanical contractor and/or duct cleaner. Where ducts are cleaned the NADCA guidelines should be followed.
- c. The installation of air filtration and purification equipment in accordance with NORMI IAQ training recommendations. This holistic approach to IAQ will improve any environment and reduce contaminants including the potential growth of mold and bacteria. (See Recommended Products List.)
- d. The installation of passive fresh-air makeup to reduce randomized air infiltration and enhance the effectiveness of air filtration and purification equipment.
- e. Ongoing use of water-based green chemistries to reduce VOCs and odors. These chemistries should be bio-degradable, water-based and used as an all-purpose cleaner. (See Recommended Products List.)
- f. Deliver to the client the NORMI Sanitization Protocol which includes "36 Ways to Have a Healthier Indoor Environment" from *Mold-Free Construction*.
- g. Recommend post screening after the Sanitization Protocol is in place and that on an annual basis to insure maintenance of a clean, healthy environment.³

It is our recommendation, based on all the information we gathered, our expertise, experience, and the clear IAQ/Mold Profile we have developed from this inspection, that you sanitize the indoor air environment using the following protocol. By partnering with us in this process, you will be able to provide a clean air environment for years to come and create a healthier living space for your home.

- 1) Fogging of recommended preparation product (see Recommended Products List)—this is a concentrated no VOCs, biodegradable water-based enzyme cleaner available that can also be used as a general all-purpose cleaner and mold/mildew remover. Surfaces cleaned with an enzyme cleaner will remain cleaner longer with no toxicity or harmful residue...this product is safe for food contact surfaces.
- 2) Fogging of recommended protectant product (see Recommended Products List)—this is

a concentrated no VOCs, biodegradable water-based protectant that utilizes a mechanical method of killing mold and bacteria as it settled on surfaces.

- 3) Utilize recommended 1" filter in HVAC systems to reduce dust, bio-nesting and eliminate filter blow by. This will keep the duct system and internal working parts of the HVAC cleaner and reduce the possibility of mold growth inside the systems. (See Recommended Products List)
- 4) Utilize pro-active air purification technologies which should include stand-alone air purifiers and HVAC probes installed on the return plenum and supply plenum of each system to keep it clean and reduce the growth of mold, bacteria and the odors associated with them. (See Recommended Products List)

IAQ/Mold Management Plan

An IAQ/Mold Management Plan involves controlling contaminants in the indoor environment. By following this checklist and utilizing the recommended products, indoor air contaminants including mold and bacteria will be reduced in the air and on surfaces. Testing data is available upon request.⁴

- 5) This checklist is an excerpt from *Mold Free Construction*⁵ and should become part of any IAQ Management Plan.

- ☐ Keep the premises clean and regularly dust, vacuum, and mop.
- ☐ Install an efficient air purification system in your home or office to maintain good indoor air quality and reduce dust. This would require installation of air filtration/purification equipment in the HVAC system(s), general living areas and moisture prone areas. Your IAQ professional can design an efficient system for you.
- ☐ Use hood vents when cooking, cleaning, and dishwashing.
- ☐ Keep closet doors ajar, where possible, to increase airflow in the closets or install vented doors.
- ☐ Avoid excessive amounts of indoor plants.
- ☐ Use exhaust fans when bathing/showering.
- ☐ Leave exhaust fans on long enough to remove moisture from the room.
- ☐ Use ceiling fans.
- ☐ Water all indoor plants outdoors, if possible.
- ☐ Wipe down any moisture and/or spillage.
- ☐ Wipe down bathroom walls and fixtures after bathing/showering. There are some good products out there for this very purpose.
- ☐ Wipe down any vanities/sink tops.
- ☐ Avoid drying clothes by hand drying indoors.
- ☐ Avoid air-drying dishes.
- ☐ Open blinds/curtains to allow light into premises.
- ☐ Wipe down floors after any water spillage.

- ☐ Hang shower curtains within the bath when showering.
- ☐ Securely close shower doors, if present, when showering.
- ☐ Leave bathroom and showers door open after use.
- ☐ Use a dryer if present for wet towels.
- ☐ Use household cleaners (we prefer biodegradable enzyme cleaners) on any hard surfaces.
- ☐ Remove any moldy or rotting food.
- ☐ Remove garbage regularly.
- ☐ Wipe down all visible signs of moisture.
- ☐ Regularly scan the ceiling for evidence of roof leaks.
- ☐ Periodically check the air conditioning vents to be sure they are clean.
- ☐ Change the air conditioning filter regularly.
- ☐ Perform scheduled maintenance on your air conditioning system, including, but not limited to, cleaning the evaporator coil.
- ☐ Wipe down windows and sills if moisture is present.
- ☐ Regularly, inspect for leaks under the sinks and around the base of the water closets, around the washing machine and water heater.
- ☐ Check all washer hoses and outside garden hose connections.
- ☐ Regularly empty dehumidifier.
- ☐ Clean behind the refrigerator and around the air conditioning air handler if possible.
- ☐ Empty the refrigerator condensation pan where possible.
- ☐ If possible, pour a small amount of bleach in the drip pan of the air conditioning air handler to decrease the potential for mold growth.
- ☐ Answer this question regularly and check for the signs of mold: "If I were mold and liked moisture, where would I feel most comfortable to set up a home and build a family?"

Recommended Products List

- Preparation Product—we recommend "EVERYDAY" enzyme concentrate, 30:1 ratio water-based, biodegradable all-purpose cleaner that reduces contaminants like mold, bacteria and the odors associated with them. It can be ordered at www.blsproducts.com/fmz.
- Protectant— we recommend BacShield, a 64:1 concentrate, because it has no VOCs, is a biodegradable water-based protectant that utilizes a mechanical method of killing mold and bacteria as it settles on surfaces. As seen at www.blsproducts.com/fmz and available thru Frank Zelinski.
- HVAC Filter—we recommend the PerfectFit Filter which fits any size return and reduces bio-nesting, blow by, and has an internal frame rather than cardboard so mold will not grow on it. This filter can be purchased by subscription with FREE shipping at www.90dayfilter.com/02574.
- Proactive Air Purification Technologies—we recommend "Active" air purification technology from Best Living Systems, www.blsproducts.com/fmz, as well as thru

Greentech Environmental www.fmz.greentechaffiliate.com. A complete line of air and laundry purification products can be reviewed at those sites. Purchasing and sizing for your specific environment can be made by your NORMIPro Management IAQ/Mold Assessor, Frank Zelinski. *In all cases, immediate improvement of the air you breathe is accomplished with our "Active" air purifiers. So, if fixing the cause is delayed or even unable to be solved, you want to improve the air you are breathing immediately.*

- Mold preventive paints as seen at <https://www.rustoleum.com/product-catalog/consumer-brands/zinsser/specialty-coatings>. I have a 25 year long satisfactory experience with Perma-White paint for the interior. Most paint and big box stores carry Perma White. It can be tinted to pastel levels also.
- Use of proper dehumidification equipment. Either a dehumidifier, or dehumidifier alternative such as the XCHANGER as seen at https://www.tjernlund.com//xchanger_basement_fan.htm. Watch three videos at bottom of the page.
- For basement remodeling, a highly recommended framing and insulation product is seen at www.insofast.com. I have used it and highly recommend it as there is nothing organic for mold to grow on, and a bonus is that it does not provide space as living quarters for mice, as framed walls do. Also, if there is flooding, nothing needs to be torn out.

Closing Paragraph

It is our opinion that these recommendations will substantially improve the indoor air environment of your home and, in addition, reduce the potential for mold or other IAQ problems in the future. There is no "over-night" solution, but we believe the improvement will be significant and, over a relatively short period, the occupants and visitors in your home will feel better about their environment. If we may be of further service to you in the future, please do not hesitate to call. We appreciate your business and thank you for choosing a NORMI Certified IAQ/Mold Inspector.

Respectfully yours,



Frank M Zelinski
Certified Mold Assessor
Safe N Dry

¹ NORMI Professional Practices, Revision 10/08/2015, page 1

² NORMI Professional Practices, Mold Assessor, (5) **Mold Assessment Report (MAR)**, page 2

³ NORMI Professional Practices, Mold Remediator (15) **NORMI Sanitization Protocol**, pages 12-13

⁴ Best Living Systems, LLC Manufacturer Rep Binder, **Clinical Field Tests** by request

⁵ *Mold Free Construction*, D. Douglas Hoffman, revised 01/01/2005