



## **APPENDIX E – USER QUESTIONNAIRE**



**Site Address:** 141 Danbury Road, Wilton, Connecticut

**Person Completing Questionnaire**

**Name:** Samuel B. Fuller

**Title:** Manager of Buyer LLC

**Signature:** 

**Date:** 4-21-21

*The following are a series of questions from ASTM 1527-13 that must be answered in order to qualify for Landowner Liability Protection under CERCLA. Please provide an answer to each question or attach pertinent information.*

1. Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law?

☒ No

☐ Yes (Describe or attach information)

Attachment No. \_\_\_\_\_

2. Are you aware of any Activity and Use Limitations (AULs), such as engineering controls (e.g. engineered caps, foundations, liners, treatment methods, etc. in use to prevent contamination from migrating to surrounding areas), land use restrictions or institutional controls (e.g. administrative measures restricting groundwater use, construction, or property use) that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

☒ No

☐ Yes (Describe or attach information)

Attachment No. \_\_\_\_\_

3. Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

☒ No

☐ Yes (Describe or attach information)

Attachment No. \_\_\_\_\_

4. Does the purchase price being paid for this property reasonably reflect the fair market value of the property?

☐ No

☒ Yes



- a. If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

☐ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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5. Are you aware of commonly known or reasonable ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as User,

- a. Do you know the past uses of the property?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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- b. Do you know of specific chemicals that are present or once were present at the property?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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- c. Do you know of spills or other chemical releases that have taken place at the property?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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- d. Do you know of any environmental cleanups that have taken place at the property?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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6. As the User of the ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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7. ASTM identifies certain documents as “Helpful Documents” for the understanding of environmental conditions at the Site. Are you aware of any of the following documents; and if so, can they be made available?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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<input type="checkbox"/> Prior Environmental Assessments	<input type="checkbox"/> Risk Assessments
<input type="checkbox"/> Compliance Reports	<input type="checkbox"/> Hazardous Waste Generation Notices
<input type="checkbox"/> Environmental Permits	<input type="checkbox"/> Notices from Environmental Agencies
<input type="checkbox"/> Tank Registrations	<input type="checkbox"/> Underground Injection System Registrations
<input type="checkbox"/> Material Safety Data Sheets (MSDS)	<input type="checkbox"/> Community Right to Know Plans
<input type="checkbox"/> Safety or Spill Protection Plans	<input type="checkbox"/> Hydrogeologic or Geotechnical Reports

8. Do you know who the past owners of the property are and can you provide contact information?

☒ No ☐ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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9. Do you have a complete site plan of the property that shows property boundaries and can you make it available?

☐ No ☒ Yes (Describe or attach information) Attachment No. \_\_\_\_\_

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 <b>First American Title™</b>	ALTA Commitment for Title Insurance
	ISSUED BY <b>First American Title Insurance Company</b>
<b>Commitment</b>	

I E F I E I A E

Issued by

S A A S A A

**NOTICE**

**IMPORTANT—READ CAREFULLY:** THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

**COMMITMENT TO ISSUE POLICY**

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, **First American Title Insurance Company**, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I—Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

**First American Title Insurance Company**



Dennis J. Gilmore, President



Jeffrey S. Robinson, Secretary

If this jacket was created electronically, it constitutes an original document.

*This page is only a part of a 0 ALTA Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule , Part I—Requirements; Schedule , Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.*

## COMMITMENT CONDITIONS

### 1. DEFINITIONS

- (a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
- (b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
- (c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
- (d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
- (e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
- (f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
- (g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
- (h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:

- (a) the Notice;
- (b) the Commitment to Issue Policy;
- (c) the Commitment Conditions;
- (d) Schedule A;
- (e) Schedule B, Part I—Requirements;
- (f) Schedule B, Part II—Exceptions; and
- (g) a counter-signature by the Company or its issuing agent that may be in electronic form.

### 4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

### 5. LIMITATIONS OF LIABILITY

- (a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
  - (i) comply with the Schedule B, Part I—Requirements;
  - (ii) eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
  - (iii) acquire the Title or create the Mortgage covered by this Commitment.
- (b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
- (c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
- (d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
- (e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
- (f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
- (g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

### 6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

- (a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
- (b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.

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- (c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
- (d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
- (e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
- (f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

**7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT**

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

**8. PRO-FORMA POLICY**

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

**9. ARBITRATION**

The Policy contains an arbitration clause. All arbitrable matters when the Proposed Policy Amount is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.

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**First American Title™**

## ALTA Commitment for Title Insurance

ISSUED BY

**First American Title Insurance Company**

### Schedule A

**Transaction Identification Data for reference only**

Issuing Agent: **Pinna Real Estate Partners**

ALTA® Universal ID:

Commitment No.:

Property Address: **11 Danbury Road, Milford, Connecticut**

Revision No.:

Issuing Office:

Loan ID No.:

Issuing Office File No.:

#### ED E A

1. Commitment Date: **March 1 at 12:00 p.m.**

2. Policy or Policies to be issued:

(a) ☐ ALTA® Owner's Policy of Title Insurance (6-17-06)

☐ EAGLE Owner's Policy (2-3-10)

Proposed Insured:

Proposed Policy Amount: \$

(b) ☐ ALTA® Loan Policy of Title Insurance (6-17-06)

☐ EAGLE Loan Policy (7-26-10)

Proposed Insured:

Proposed Policy Amount: \$

(c) ☐ \_\_\_\_\_ ALTA® \_\_\_\_\_ Policy

Proposed Insured:

Proposed Policy Amount: \$

3. The estate or interest in the Land described or referred to in this Commitment is **FEE SIMPLE**

4. Title to the estate or interest in the Land is at the Commitment Date vested in:

**FA**

5. The Land is described as follows:

**11 Danbury Road, Milford, Connecticut**

See Schedule A, Property Description, attached

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ALL THAT CERTAIN piece or parcel of land, together with the buildings and improvements thereon, situated in the Town of Wilton, County of Fairfield and State of Connecticut, on Danbury Road, so-called, bounded and described as follows:

PARCEL B-1, in area 4.62 acres, more or less, as shown on that certain map entitled, "Revised Map of Property Prepared for Robert O. Banks and Ernest Rau at Wilton, Conn., Scale 1" = 40', June 16, 1967", by Leo Leonard – Civil Engineer & Surveyor, Norwalk, Connecticut and on file in the Office of the Wilton Town Clerk as Map No. 3609, reference to such map being hereby made and had for a more particular description hereof.

LESS AND EXCEPTING THEREFROM those premises situated in the Town of Wilton, County of Fairfield and State of Connecticut and described as follows:

Parcel One: A certain piece or parcel of land located on the westerly side of Route U.S. 7, covering an area of 0.12 of an acre, more or less, bounded and described as follows:

SOUTHWESTERLY,  
WESTERLY and

NORTHWESTERLY: by land now or formerly of Frederick W. Jayne et al, 209 feet, more or less;

EASTERLY: by owners' remaining land, a total distance of 183 feet, more or less, by a line designated as "Taking Line and Non Access Highway Line" as shown on the map hereinafter referred to as Sheet #1.

Parcel Two: A certain piece or parcel of land located on the westerly side of Present Route U.S. 7, covering an area of 0.16 acre, more or less, bounded and described as follows:

EASTERLY: by Present Route U.S. 7, 348 feet, more or less;


SOUTHERLY and

WESTERLY: by owners' remaining land, a total distance of 364 feet, more or less, by a line designated as "Taking Line" as shown on the map hereinafter referred to as Sheet #2;

NORTHERLY: by land now or formerly of Adeline Whitlock Gorham, 20 feet, more or less.

And these two parcels contain 0.28 of an acre, more or less, together with all appurtenances, all of which more particularly appear on a map on file in the Office of the Wilton Town Clerk entitled, "Town of Wilton, Map Showing Land Acquired from Robert O. Banks et al by the State of Connecticut, Relocation of Route U.S. 7 (Limited Access Highway), Scale 1" = 40', Oct. 1969", Ralph L. Hager, Deputy Transportation Commissioner – Bureau of Highways". (102-125-130)

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 <b>First American Title™</b>	<b>ALTA Commitment for Title Insurance</b>
<b>Schedule I II</b>	ISSUED BY <b>First American Title Insurance Company</b>

**OWNER'S AFFIDAVIT**  
**Requirements**

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records
5. The Seller/Borrower must execute the Company's Owner's Affidavit
6. If there is a current survey of the Land, the Seller/Borrower must complete the survey update portion of the Company's Owner's Affidavit. The survey must be submitted, and any adverse matters shown on the survey must be excepted on Schedule B.
7. If labor or materials have been supplied to the premises within the 90 days prior to and including the Date of Policy, or if labor and/or materials have been contracted for future construction or if any contractor has been hired for contemplated work, service or materials, the Company's applicable affidavits, indemnities, subordinations and/or lien waiver forms must be fully completed and submitted prior to closing, all in accordance with the Company's current underwriting standards and guidelines.
8. If there are tenants or parties in possession other than recorded leases shown in Schedule B, rights of those tenants and parties in possession must be excepted on Schedule B.
9. All municipal taxes, special tax district taxes, water and sewer use charges, and municipal and private association charges and/or assessments including common interest community common charges and special assessments must be paid current to date of policy.
10. Authority documentation for the transaction and the entities involved as may be required by the Company.

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 <b>First American Title™</b>	<b>ALTA Commitment for Title Insurance</b>
<b>Schedule I II</b>	ISSUED BY <b>First American Title Insurance Company</b>

**ED E A II**  
**E ceptions**

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I—Requirements are met.
2. Rights or claims of parties other than the insured in actual possession or under unrecorded leases of any or all of the land.
3. Easements or claims of easements not shown by the public records, encroachments, violations, variations or adverse circumstances affecting the Title that would be disclosed by an accurate survey of the Land.
4. Any lien or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Liens for taxes and assessments which become due and payable subsequent to date of policy.
6. Water use charges as may be due and payable.
7. Real Estate Taxes to the Town of Wilton on the list of October 1, 2019, due and payable July 1, 2020 and January 1, 2021.

List No. 236, Map 70, Lot 2.

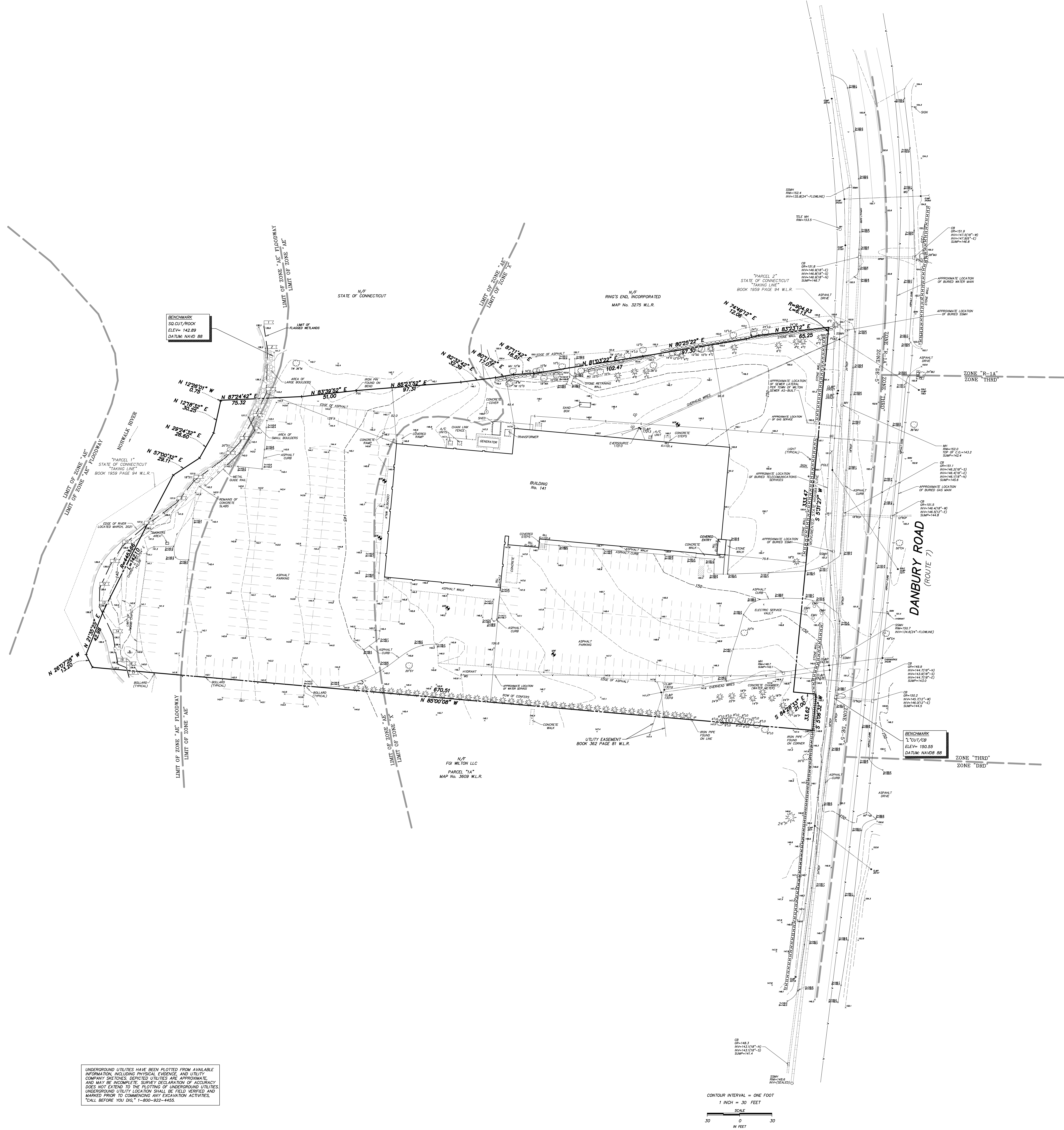
Assessment: \$4,095,091.00, Total Tax: \$112,457.76; paid in full.

8. Real estate taxes on the list of October 1, 2020, not yet due and payable
9. Sewer use charges to the Town of Wilton as may be due and payable.
10. Mortgage from Fab 5, LLC to Douglas and Melissa Bernstein in the original principal amount of \$3,973,314.00 dated February 3, 2011 and recorded in Volume 2171 at Page 129 of the Wilton Land Records.
11. Rights and easements of other in and to the Norwalk River, including rights to filled-in-land or land lying below the present or any former mean high water line.
12. Notes, facts, conditions and matters as shown on Map No. 3609 on file in the Office of the Wilton Town Clerk.

**E D F ED E II**

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1) REFERENCE IS MADE TO A CERTAIN UNFILED MAP ENTITLED "MAP OF PROPERTY PREPARED FOR U.S. SURGICAL CORPORATION" WILTON, CONNECTICUT, PREPARED BY GREGORY SURVEYORS CIVIL ENGINEERS, LAND SURVEYORS AND SITE PLANNERS AND DATED OCTOBER 5, 1990.



EDWIN W. RHODES, III CT LS No. 70436  
RIVERSIDE, CONNECTICUT APRIL 22, 2021

TOPOGRAPHIC SURVEY  
DEPICTING  
141 DANBURY ROAD  
IN  
MILTON, CONNECTICUT  
PREPARED FOR  
TDSPIN 141 DR LLC



December 2, 2019

Christina Boccuzzi  
Melissa & Doug  
141 Danbury Road  
Wilton, CT 06897

Dear Christina,

This report includes results of a visual inspection as well as mold samples collected from the commercial building located at 141 Danbury, Road, Wilton, CT on November 24, 2019. This inspection was performed as a precaution to assess mold conditions in the building. Below is our summary of findings and recommendations. For details of our sample findings, please see the attached laboratory report.

## SUMMARY OF FINDINGS

- On the day of inspection, it was reported by the client that several roof leaks have occurred in the past. The roof had been repaired in all areas of known leaks and the affected ceiling tiles had been replaced.
- In the front level storage room, there was evidence of water staining to the ceiling tiles and drywall in the rear left corner of the room. Normal moisture readings were identified when compared to other unaffected areas. A tape lift sample (#33) taken from the suspect staining did not detect any fungi, however the tape was moderately covered with debris which might have occluded additional fungi.
- In the front level loading dock/workroom, there was evidence of water staining to the overhead wood structure. Normal moisture readings were identified when compared to other unaffected areas. The staining is likely a result of a past leak from the roof.
- In the front level janitors' closet, there was evidence of water damage and water staining to the drywall (next to the mop sink). Elevated moisture readings were identified when compared to other unaffected areas. A tape lift sample (#32) taken from the suspect staining did not detect any fungi, however the tape was heavily covered with debris which might have occluded additional fungi.
- In the lower level stairway, there was evidence of water staining to the ceiling tiles. Normal moisture readings were identified when compared to other unaffected areas. The staining is likely a result of a past leak from the roof.
- The supply vents and return vents throughout the building were visually clean and free of debris. It was reported by the client that routine maintenance is performed on the HVAC units every three months.
- Mold in air samples were taken from multiple areas of the building. The sample (#3) taken from the front level janitors' closet is considered unacceptable. The remaining samples are considered acceptable.



## RECOMMENDATIONS

- **IMPORTANT:** Mold remediation is recommended in this section and specific steps for your project are below. When the remediation is underway the scope of work indicated here may change. This process involves working in the area of the remediation and possibly cleaning of the air and other surfaces further outside of the actual remediation area. The actual remediation areas should be separately contained with 6 mil plastic with adequate negative air pressure to prevent mold spores from migrating into other areas. Generally, affected materials that may include wallboard, insulation and/or flooring or other cellulose materials are removed a minimum of 18" beyond the affected area. All remaining materials in the affected areas, including HVAC equipment and ducting, are thoroughly cleaned using the HEPA method of cleaning in conjunction with the use of air scrubbers to clean the air. The cleaning refers to the "HEPA sandwich" method of cleaning as recommended by the Institute of Inspection Cleaning and Restoration Certification (IICRC). This includes a process of HEPA vacuuming, then damp wiping, and then HEPA vacuuming again. If staining remains on any components following cleaning these areas should be sealed with an antimicrobial sealer such as Fiberlock IAQ 6000.

The use of biocides such as Microban or Shockwave may also be part of the remediation and cleaning process. Any of these products are allowable so long as they remain registered with the United States Environmental Protection Agency for the intended use.

The contractor should be aware of any reaction to these compounds by the inhabitants of the dwelling or commercial space and then should be changed if needed.

The remediation and cleaning are to be performed by experienced workers with the proper use of personal protective equipment including, but not limited to, Tyvek coveralls with attached hood and booties, N-95 respirator masks, goggles and gloves. Depending on the type of project different respirators may be required.

In a building that is currently occupied where remediation will occur, occupants shall be notified of project details including estimated start and completion times and the restricted remediation areas. All remediation projects shall have proper posting at the entrance to the work area indicating the remediation being performed. Only the workers of the actual remediation are permitted to enter until final clearance is achieved by the assessor in a satisfactory manner. It is recommended that air cleaning equipment be removed from the job site 24 hours prior to final sampling if possible.

- The location of building components (walls, ceiling, floors, etc.) in each room is indicated clockwise from the entry into the room.
- The front level janitors' closet and rear left corner of the front level storage room should be separately contained from the remainder of the building prior to remediation activities. In the janitors' closet, the source of the leak should be determined and repaired.
- In the front level janitors' closet, the affected drywall should be removed and discarded. If the adjoining rooms have evidence of water staining or visible mold on the backside of the drywall, remove and discard the material as indicated above.
- In the front level storage room, investigatory holes should be made in the rear left corner drywall to



identify a possible hidden mold source. If there is evidence of water staining or visible mold on the drywall, remove and discard the material as indicated above.

- All water stained ceiling tiles (front level storage room and lower level stairway) should be removed and discarded.
- The front level janitors' closet and rear left corner of the front level storage room should then be cleaned using the HEPA method of cleaning as indicated above in conjunction with the use of air scrubbers to help clean the air back to normal levels. If staining remains on any structural wood components following cleaning then these areas should be sealed using an antimicrobial sealer.
- Final sampling helps assure a successful remediation and cleaning process. The front level janitors' closet and rear left corner of the front level storage room shall be the areas of clearance sampling at the assessor's discretion.

Thank you for working with RTK Environmental Group. **We appreciate your business. RTK also offers testing and consulting for lead, asbestos, soil, water and other indoor air quality issues.** Please contact our office at 800-392-6468 with any questions.

Sincerely,

A handwritten signature in dark ink, appearing to read "David L. Roberts".

David Roberts  
NY Licensed Mold Assessor, #MA01102  
[dr@rtkenvironmental.com](mailto:dr@rtkenvironmental.com)



## REPORT DISCLAIMER

THE INFORMATION PROVIDED IN THIS REPORT IS LIMITED BY THE SCOPE OF THE ASSESSMENT REQUESTED BY THE CLIENT. NOT ALL ASSESSMENTS YIELD INFORMATION REGARDING THE PRESENCE OF MOLD AND THE EXISTENCE OF MOLD HAZARDS IN ALL MEDIA. YOU ARE ADVISED TO CLARIFY THE SCOPE OF THE ASSESSMENT PROVIDED WITH THE ASSESSOR.

It is generally acknowledged that the level of mold spores in or on any structure will determine the extent of hazard arising from such mold. However, THERE ARE CURRENTLY NO REGULATIONS REGARDING WHAT LEVELS OF ANY MOLD TYPES ARE ACCEPTABLE OR UNACCEPTABLE. The results of this assessment are open to interpretation by the person reading them. Accordingly, any change in the condition of the property in question will alter the validity of the assessment report provided herewith. The accuracy of any mold assessment performed is, therefore, limited to the condition of the property at the time the assessment report herewith was conducted. The assessor assumes no responsibility for retesting or reinvestigating the property to determine changed conditions. Any and all changes in the premises or its condition may result in the creation of mold hazards not in existence at the time of assessment.

The assessor does not normally move any furniture or personal items (i.e. clothing, shoes, wall hangings, etc.) for purposes of this assessment. Additionally, the assessor will not remove any trim work, ceiling, insulation, walls or flooring to investigate internal conditions. This type of invasive investigation could potentially create a more hazardous mold condition than may already exist.

Not every area was tested or was made accessible for testing. The assessor makes no representation with respect to the presence of mold or the condition of any areas not tested, or with respect to any lead painted or asbestos containing surfaces that may be disturbed during mold remediation work. Areas which were not tested may, if tested, yield results which indicate the presence of mold or other environmental hazards in addition to mold prior to beginning mold remediation work. The client is advised to take such factors into account when undertaking any activities which may have an impact upon such areas.

This report may include estimates for the cost and duration of mold remediation. If so, the cost of remediation is estimated and is in no way guaranteed. The cost may be higher or lower based on multiple factors and RTK Environmental Group is not liable in any way if costs are different than estimated. The estimated time of completion, if included in this report, is also not guaranteed and RTK Environmental Group holds no responsibility if the project takes more or less time than estimated.

This report is intended only for the benefit of the assessor and the client and does not create any rights in any third parties. Use of these test results or reports or other materials by the client without written permission or adaptation by RTK Environmental Group for the specific purpose intended shall be at the user's sole risk, without liability on RTK Environmental Group's part, and the client agrees to indemnify and hold RTK Environmental Group harmless from all claims, damages and expenses, including attorney's fees, arising out of such unauthorized use.





**The Identification Specialists**

Analysis Report  
prepared for  
RTK Environmental Group

**Report Date: 12/2/2019**

**Project Name: 141 Danbury Road, Amended Report EF 12.2.19**

**Project #: Wilton, CT**

**SanAir ID#: 19060776**



1551 Oakbridge Dr. Suite B | Powhatan, Virginia 23139-8061  
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SanAir ID Number

19060776

FINAL REPORT

12/2/2019 9:32:10 AM

**Name:** RTK Environmental Group  
**Address:** 29 Bank Street  
Stamford, CT 06901  
**Phone:** 203-921-4144

**Project Number:** Wilton, CT  
**P.O. Number:** 24257  
**Project Name:** 141 Danbury Road, Amended Report EF  
12.2.19  
**Collected Date:** 11/24/2019  
**Received Date:** 11/26/2019 10:00:00 AM

Dear Dave Roberts,

We at SanAir would like to thank you for the work you recently submitted. The 33 sample(s) were received on Tuesday, November 26, 2019 via FedEx. The final report(s) is enclosed for the following sample(s): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink that reads "L. Claire Macdonald". The signature is written in a cursive, flowing style.

L. Claire Macdonald  
Microbiology Laboratory Manager  
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Air Cassette Analysis
- Direct ID Analysis
- Disclaimers and Additional Information

Sample conditions:

- 33 samples in Good condition.



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SanAir ID Number  
**19060776**  
FINAL REPORT  
12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-001			19060776-002			19060776-003			19060776-004		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	1			2			3			4		
Sample Identification	Exterior			Front Level Cafeteria			Front Level Janitor Closet			Front Level Storage Room		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			1+			2			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores	1	13	17									
Aspergillus/Penicillium												
Basidiospores	5	67	83	4	53	>99	3	40	37	3	40	>99
Chaetomium species							2	27	25			
Cladosporium species												
Smuts/Myxomycetes							2	27	25			
Stachybotrys species							1	13	12			
TOTAL	6	80		4	53		8	107		3	40	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-005			19060776-006			19060776-007			19060776-008		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	5			6			7			8		
Sample Identification	Front Level Loading Dock			Front Level Left Entrance			Front Level Mail Room			Front Level Showroom		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			1+			1			1		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores	5	67	21	2	27	22				2	27	22
Aspergillus/Penicillium												
Basidiospores	19	253	79	7	93	78				7	93	78
Chaetomium species												
Cladosporium species												
Smuts/Myxomycetes												
Stachybotrys species												
TOTAL	24	320		9	120					9	120	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-009			19060776-010			19060776-011			19060776-012		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	9			10			11			12		
Sample Identification	Front Level HR Office			Front Level Photography Studio			Front Level Right Hall			Front Level Main Entrance		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1			1			1+			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments							1	13	n/a			
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores							1	13	33			
Aspergillus/Penicillium												
Basidiospores	2	27	>99	1	13	>99	2	27	67	10	133	>99
Chaetomium species												
Cladosporium species												
Smuts/Myxomycetes												
Stachybotrys species												
TOTAL	2	27		1	13		3	40		10	133	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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**19060776**  
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12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-013			19060776-014			19060776-015			19060776-016		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	13			14			15			16		
Sample Identification	Front Level Main Entrance Hall			Front Level Large Showroom			Front Level Finance			Lower Level Melissa's Desk Area		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			1+			1+			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores												
Aspergillus/Penicillium	2	27	20									
Basidiospores	8	107	80	4	53	>99	2	27	>99	4	53	>99
Chaetomium species												
Cladosporium species												
Smuts/Myxomycetes												
Stachybotrys species												
TOTAL	10	133		4	53		2	27		4	53	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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FINAL REPORT  
12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-017			19060776-018			19060776-019			19060776-020		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	17			18			19			20		
Sample Identification	Lower Level Kitchen			Lower Level Front Bullpen			Lower Level Rear Bullpen			Front Stairway		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			1+			2			2		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores	1	13	>99									
Aspergillus/Penicillium												
Basidiospores				2	27	>99	4	53	80	8	107	89
Chaetomium species												
Cladosporium species							1	13	20	1	13	11
Smuts/Myxomycetes												
Stachybotrys species												
TOTAL	1	13		2	27		5	67		9	120	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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SanAir ID Number  
**19060776**  
FINAL REPORT  
12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-021			19060776-022			19060776-023			19060776-024		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	21			22			23			24		
Sample Identification	Lower Level Bullpen (Near Stairway)			Lower Level Hall Near Bathrooms			2nd Fl Front Right Bullpen			2nd Fl Front Left Bullpen		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			2			1+			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores												
Aspergillus/Penicillium										2	27	50
Basidiospores	1	13	>99	4	53	>99	1	13	>99	2	27	50
Chaetomium species												
Cladosporium species												
Smuts/Myxomycetes												
Stachybotrys species												
TOTAL	1	13		4	53		1	13		4	53	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019





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FINAL REPORT  
12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-025			19060776-026			19060776-027			19060776-028		
Analysis Using STL	105C			105C			105C			105C		
Sample Number	25			26			27			28		
Sample Identification	2nd Fl Rear Right Bullpen			2nd Fl Rear Left Bullpen			2nd Fl Hall Near Dave's CR			2nd Fl Kitchen		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	2			2			1+			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments												
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores	1	13	20									
Aspergillus/Penicillium	2	27	40									
Basidiospores	2	27	40	2	27	>99	3	40	>99	3	40	75
Chaetomium species												
Cladosporium species												
Smuts/Myxomycetes										1	13	25
Stachybotrys species												
TOTAL	5	67		2	27		3	40		4	53	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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12/2/2019 9:32:10 AM

Analyst: Tucker, Crystal

## Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19060776-029			19060776-030			19060776-031		
Analysis Using STL	105C			105C			105C		
Sample Number	29			30			31		
Sample Identification	Lower Level Bullpen In-Ceiling			Front Level Showroom In-Ceiling			2nd Fl Bullpen In-Ceiling		
Sample Type	Air Cassette - Allergenco-D			Air Cassette - Allergenco-D			Air Cassette - Allergenco-D		
Volume	75 Liters			75 Liters			75 Liters		
Analytical Sensitivity	13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>			13 Count/M <sup>3</sup>		
Background Density	1+			1			1+		
Other	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Mycelial Fragments									
Fungal Identification	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%	Raw Count	Count/M <sup>3</sup>	%
Ascospores				2	27	11			
Aspergillus/Penicillium	4	53	40						
Basidiospores	6	80	60	13	173	72	4	53	>99
Chaetomium species									
Cladosporium species				3	40	17			
Smuts/Myxomycetes									
Stachybotrys species									
<b>TOTAL</b>	<b>10</b>	<b>133</b>		<b>18</b>	<b>240</b>		<b>4</b>	<b>53</b>	

Signature:

Crystal Tucker

Date: 11/26/2019

Reviewed:

Chris Fair

Date: 11/26/2019



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Analyst: Acharya, Uttam

## Direct Identification Analysis

SanAir ID: 19060776-032 Sample #:32 Front Level Janitor Closet Wall

### D1 - Direct Identification Analysis on Bio-Tape using STL 104

Direct ID of Mold

Fungi	Estimated Amount
No Fungi Detected	

Tape was heavily covered with debris which might have occluded fungi.

SanAir ID: 19060776-033 Sample #:33 Front Level Storage Rm Ceiling Tile

### D1 - Direct Identification Analysis on Bio-Tape using STL 104

Direct ID of Mold

Fungi	Estimated Amount
No Fungi Detected	

Tape was moderately covered with debris which might have occluded fungi.

Amended: Revised project name EF 12.2.19

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments/Conidiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

\*Refer to additional information page for further details

Signature:

Date: 11/26/2019

Reviewed:

Date: 11/26/2019



SanAir ID Number

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## Organism Descriptions

*The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.*

**Mycelial Fragments** - A mycelium (plural = mycelia) is the "body" of a fungus. It is a collective term for hyphae (singular = hypha), which are the tubular units of the mycelium usually composed of chitin. The terms hyphae and mycelial fragments are used interchangeably. [This information was referenced from the mycology text "The Fifth Kingdom"] In some cases a fungal identification cannot be obtained due to lack of sporulation. Only the mycelial fragments are present, and cannot be identified without the distinguishing characteristics of the spores or the structures they grow from.

**Health Effects:** Allergic reactions may occur in the presence of spores (conidia) or mycelial/hyphal fragments.

**Ascospores** - From the fungal Subphylum Ascomycotina. Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. This class contains the "sac fungi" and yeasts. Some ascospores can be identified by spore morphology, however; some care should be exercised with regard to specific identification. They are identified on tape lifts and non-viable analysis by the fact that they have no attachment scars and are sometimes enclosed in sheaths with or without sacs. Ascomycetes may develop both sexual and asexual stages. Rain and high humidity may help asci to release, and disperse ascospores, which is why during these weather conditions there is a great increase in counts.

**Health Effects:** This group contains possible allergens.

**Aspergillus/Penicillium** - These spores are easily aerosolized. Only through the visualization of reproductive structures can the genera be distinguished. Also included in this group are the spores of the genera Acremonium, Phialophora, Verticillium, Paecilomyces, etc. Small, round spores of this group lack the necessary distinguishing characteristics when seen on non-viable examination.

**Health Effects:** Can cause a variety of symptoms including allergic reactions. Most symptoms occur if the individual is immunocompromised in some way (HIV, cancer, etc). Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group.

**Basidiospores** - From the Subphylum Basidiomycotina which contains the mushrooms, shelf fungi, and a variety of other macrofungi. They are saprophytes, ectomycorrhizal fungi or agents of wood rot, which may destroy the structure wood of buildings. It is extremely difficult to identify a specific genera of mushrooms by using standard culture plate techniques. Some basidiomycete spores can be identified by spore morphology; however, some care should be exercised with regard to specific identification. The release of basidiospores is dependant upon moisture, and they are dispersed by wind.

**Health Effects:** Many have the potential to produce a variety of toxins. Members of this group may trigger Type I and III fungal hypersensitivity reactions. Rarely reported as opportunistic pathogens.

**Chaetomium species** - It is an ascomycete. It is found on a variety of substrates containing cellulose including paper and plant compost. It can be found on the damp or water damaged paper in sheetrock after a long term water damage. Several species have been reported to play a major role in decomposition of cellulose made materials. These fungi are able to dissolve the cellulose fibers in cotton and paper, and thus cause these materials to disintegrate. The process is especially rapid under moist conditions.

**Health Effects:** Chaetomium can produce type I fungal hypersensitivity and has caused onychomycosis (nail infections).

**References:** Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.



SanAir ID Number

19060776

FINAL REPORT

12/2/2019 9:32:10 AM

**Name:** RTK Environmental Group  
**Address:** 29 Bank Street  
Stamford, CT 06901  
**Phone:** 203-921-4144

**Project Number:** Wilton, CT  
**P.O. Number:** 24257  
**Project Name:** 141 Danbury Road, Amended Report EF  
12.2.19  
**Collected Date:** 11/24/2019  
**Received Date:** 11/26/2019 10:00:00 AM

## Organism Descriptions

*The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.*

**Cladosporium species** - The most commonly identified outdoor fungus. The outdoor numbers are reduced in the winter and are often high in the summer. Often found indoors in numbers less than outdoor numbers. It is commonly found on the surface of fiberglass duct liner in the interior of supply ducts. A wide variety of plants are food sources for this fungus. It is found on dead plants, woody plants, food, straw, soil, paint and textiles. Often found in dirty refrigerators and especially in reservoirs where condensation is collected, on moist window frames it can easily be seen covering the whole painted area with a velvety olive green layer.

**Health Effects:** It is a common allergen. It can cause mycosis. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeohyphomycosis, chromoblastomycosis, hay fever and common allergies.

**References:** Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. *Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control*. London and New York: Taylor & Francis, 2001.

**Smuts/Myxomycetes** - Smuts and Myxomycetes are parasitic plant pathogens. They are typically grouped together due to their association with plants, the outdoors and because they share similar microscopic morphology.

**Health Effects:** Can produce type I fungal hypersensitivity reactions.

**References:** Martin, G.W., C.J. Alexopoulos, and M.L. Farr. *The Genera of Myxomycetes*. Iowa City, Iowa: University of Iowa Press, 1983.

**Stachybotrys species** - This organism is rarely found in outdoor samples. It is usually difficult to find in indoor air samples unless it is physically disturbed because the spores are in a gelatinous mass. Grows well on wet media, preferably containing cellulose. It proliferates in the indoor environment with long term water damage, growing on wallpaper, gypsum board, and textiles. As a general rule, air cultures for *Stachybotrys* yields unpredictable results, mainly due to the fact that this fungus is usually accompanied by other fungi such as *Aspergillus* and *Penicillium* that normally are better aerosolized than *Stachybotrys*. This is a slow growing fungus on media. It does not compete well with other rapidly growing fungi. The black fungi grow on building material with high cellulose content and low nitrogen content. Appropriate media for the growth of this organism will have high cellulose content and low nitrogen content.

**Health Effects:** It has worldwide distribution and has been reported to cause dermatitis, cough, rhinitis, and headache, although no definitive reports of human infections have been verified. It has the ability to cause type I hypersensitivity. It is a documented mycotoxin producer.

**References:** Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. *Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control*. London and New York: Taylor & Francis, 2001.

## Additional Information

### Air cassette Analyses

Air cassette reports indicate the genus and concentration of viable (living) and non-viable mold spores detected on the slide (A2 Analysis). Whether or not these spores are viable cannot be determined using this type of analysis. However, keep in mind that spores can remain allergenic even after cellular death. Other possible allergens include dander, pollen and fibers which are included in air cassette reports for the A1 Analysis. A1 and A2 analyses are performed on several types of air cassettes. Light microscopy at a 400 to 1000x magnification is used for air cassette sample analysis. SanAir always analyzes 100% of the impacted slide.

### Explanation of Background Densities

The background density of an air cassette aids in the overall interpretation of results as it indicates the level of background debris present (e.g. dander, pollen, fibers, insect parts, soot, fly ash, etc.). Excessive background debris may mask the presence of fungal spores thereby reducing the accuracy of the count. It may also serve as an alert that the volume of air pulled was too high or too low. The following table explains background densities.

Air cassette Density	Amount of articulate on slide	Explanation
1	Insignificant	Should not skew any counts
1+	Low	Should not skew any counts
2	Low to Moderate	Should not skew any counts
2+	Moderate to High	May cause occlusion of small spores
3	High	May cause occlusion of small to medium spores
3+	Very High	Will cause occlusion of spores
4	Overloaded	Level of particulate too high to perform analysis

### Note About the Fungal Spores

In some instances certain groups of fungi cannot be identified due to a lack of distinguishing characteristics. These fungi will be categorized as "unknown spores" on the final report.

The genera *Aspergillus* and *Penicillium* are typically composed of small, round spores that are difficult to distinguish from each other; therefore, they are grouped into the category *Aspergillus / Penicillium*. Other fungi that produce spores of similar characteristics may also be placed into this category, including *Paecilomyces*, *Gliocladium*, and *Trichoderma*, among others.

*Stachybotrys* and *Memnoniella* spores are coated with a sticky "lime" layer that may inhibit aerosolization.

Any genus of fungi detected on an air cassette with a high raw count (i.e. exceeding 500 spores) may be estimated. Any estimate higher than 12,000 spores will be reported as >12,000.

### Understanding the Air cassette report

Each sample has 3 columns of information provided. The left is the raw count which is the number of spores for that fungal type detected on the trace. The middle column is the count per cubic meter (Count/m<sup>3</sup>) which is the raw count converted based on the total volume pulled for that sample. It represents the number of spores that should be expected in a cubic meter of air from the location in question *if* the spores were distributed evenly throughout the air. This column is helpful for interpreting results when the samples were pulled at different total volumes. In other words, the raw count of a cassette pulled at 75 liters should not be compared to the raw count of a cassette pulled at 150 liters because there may be higher counts associated with the higher volume. By comparing the "Count/m<sup>3</sup>" columns the difference in volumes are accounted for.

The limit of detection is the lowest spore count detectable with reasonable certainty, and it is calculated this way using a raw count of one. Keep in mind there are 1,000 liters in a cubic meter.

$$1 \times (1,000 / \text{Total Volume in Liters})$$

How to calculate the count per cubic meter:

$$\text{Raw Count} \times (1,000 / \text{Total Volume in Liters})$$

The last column on the right shows the percentage for which each spore type comprised the total spore count.

### **Understanding the Air Assette Graph If included in the final report**

The graph is a visual representation of the baseline sample (usually the outdoor air sample) compared individually against each indoor sample. Each spore type found on the indoor sample is compared to what was found outdoors per cubic meter.

The graph shows the percentile representation of each indoor spore count derived by dividing the indoor Count/m<sup>3</sup> by the outdoor Count/m<sup>3</sup>. If the percentage is below 50% of the outside count, then the bar is below 50 on the chart, which corresponds to %Within 50% of Baseline Count/m<sup>3</sup>.+ If the percentage is between 50 and 100%, then the bar on the chart will stop between 50 and 100, which corresponds to %Count/m<sup>3</sup> comparable to Baseline.+ If the percentage is greater than 100%, then the bar will be above 100 on the chart, which corresponds to %Count/m<sup>3</sup> higher than Baseline.+

Each organism is given a threshold level for the Count/m<sup>3</sup>. If this threshold level is not met in an inside sample, then the organism will not be graphed on the chart. This is used to prevent the graph from showing every spore type that is commonly found outside and doesn't typically indicate a possible moisture problem inside. For example, most common outdoor spores (e.g. ascospores, basidiospores, and *Cladosporium*) have a threshold level of 100. Therefore, in order to show up on the chart, the inside Count/m<sup>3</sup> must be above 100. On the other hand, fungi that may indicate water damage (e.g. *Stachybotrys*, *Ulocladium*, *Chaetomium*, *Memnoniella*, etc.) are given lower threshold levels. These fungi have a higher water activity value and therefore require more moisture to grow. *Stachybotrys* and *Chaetomium* have threshold values of 14 and 30, respectively, as even a low count of those types of spores may indicate an issue with excess moisture.

Keep in mind that this graph is to be used only as a tool in the inspection of a building. Visual examination and knowledge of water damage, past remediation, and weather conditions, among other elements, is essential in the decision regarding the indoor air quality of a building.

### **Assistance with Remediation Projects**

**\*\*more information pertaining to interpretation of results is available on our website [www.sanair.com](http://www.sanair.com)\*\***

For assistance in a remediation project you may consult the Institute of Inspection, Cleaning and Restoration Certification® (IICRC) S500 and S520 protocols. The S500 is a reference guide for water-damage restoration and the S520 pertains specifically to mold remediation. Other standards and guidelines regarding Indoor Air Quality that may assist in remediation projects:

- AIHA (Recognition, Evaluation, and Control of Indoor Mold)
- AIHA (The Facts About Mold)
- NADCA (ACR 2006)
- IESO (Standards of Practice for the Assessment of Indoor Air Quality)
- EPA (Mold Remediation in Schools and Commercial Buildings)
- New York City Department of Health and Mental Hygiene (Guidelines on Assessment and Remediation of Fungi in Indoor Environments)

## **Disclaimer**

*SanAir Technologies Laboratory does not make contamination corrections to reports based upon analysis of laboratory and/or field blanks.*

*This report is the sole property of the client named on the SanAir Technologies Laboratory chain-of-custody. Neither results nor reports will be discussed with or released to any third party without our client's written permission. The information provided in this report applies only to the samples submitted and is relevant only for the date, time and location of sampling. SanAir assumes no responsibility for the method of sample procurement. Evaluation reports are based solely on the sample(s) in the condition in which they arrived at the laboratory and on the information provided by the client on the COC. SanAir will not provide any opinion on the safety of a building as visual inspection and knowledge of water damage, past remediation and weather conditions during sampling, among other elements, is essential in this decision. All samples are disposed of after 90 days unless otherwise requested by the client. SanAir is accredited by AIHA-LAP, LLC in the EMLAP program. Refer to our accreditation certificate or [www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org) for an up to date list of the Fields of Testing for which we are accredited.*

*This report does not constitute endorsement by AIHA-LAP, LLC/NVLAP and/or any other U.S. governmental agencies; and may not be certified by every local, state and federal regulatory agency.*



## Additional Information

### Direct Identification Analyses

Direct identification analyses can be performed on tape, bulk, dust and swab samples. Direct identification reports indicate the evidence of possible active growth for each genus of fungi present. Whether or not these spores are viable or nonviable cannot be determined using this type of analysis; the sample would have to be cultured in order to determine viability. Keep in mind that this report can only be inferred for the exact spot in which the sample was taken. Light microscopy at a 400 to 1000x magnification is used for direct identification analysis.

It is encouraged to include a blank tape sample in order to check for contamination during sampling or shipment. Be sure to check the expiration date of any tape. It is recommended not to use expired tapes as the gel on the slide deteriorates thereby losing the tackiness necessary to retain fungi.

The genera *Aspergillus* and *Penicillium* are typically composed of small, round spores that are difficult to distinguish from each other without the presence of intact conidiophores (structures from which spores are formed and released). In this case, they are grouped into the category *Aspergillus / Penicillium*. Other fungi that produce spores of similar characteristics to *Aspergillus* and *Penicillium* may also be placed into this combined category in the absence of intact conidiophores (e.g. *Paecilomyces*, *Gliocladium*, *Trichoderma*, etc.).

### D1 Analysis: Fungal Identification with “Evidence of Growth” Description

Results for the direct identification analysis describe the amount of evidence indicating possible fungal growth. The presence of associated mycelial fragments and conidiophores help the analyst to determine which description to use: rare, light, moderate, or heavy. Please refer to the following table for interpretation of direct identification results.

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments / Conidiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

NOTE: Swabs are not the best media to use for direct analyses as all organisms may not be recovered intact, if at all, when analyzed.

NOTE: Tapes should not be overloaded with debris as that may occlude fungi.

### Disclaimer

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**Microbiology**  
**Chain of Custody**  
Form 68, Revision 5, 1/20/2017

SanAir ID Number

19060776

Company: RTK Environmental Group	Project Number: Wilton, CT	Phone #: 203-921-4144
Address: 29 Bank Street	Project Name: 141 Danbury Road	Phone #: 203-984-5457
City, State, Zip: Stamford, CT 06901	Date Collected: 11/24/19	Fax #: 203-921-4145
Samples Collected By: DAVE ROBERTS	P.O. Number: 24257	Email:
Account #:		Email:

Sample Types		Analysis Types	Turn Around Time
AC	Air Cassette	A1 - Identification and Enumeration of Fungal spores, plus total dander, fiber, and pollen count	3/6/24/48 Hour
		A2 - Identification and Enumeration of Fungal spores only	3/6/24/48 Hour
T B S	Tape Bulk Swab	D1 - Direct Identification of Fungi	3/6/24/48 Hour
		D2 - Direct Identification of Mites, Insects, Pollen, etc.	3/6/24/48 Hour
		D3 - Direct Identification and Enumeration of Fungi	3/6/24/48 Hour
AP B S	Air Plate Bulk Swab	C1 - Culture Identification and Enumeration of Fungi only	5-10 Days
		C2 - Culture Identification and Enumeration of Bacteria only	2-4 Days
		C3 - Culture Identification and Enumeration of Fungi and Bacteria	5-10 Days
		C4 - Culture Identification and Enumeration of Thermophilic Bacteria with C2 or C3 analysis	2-4 or 5-10 Days
D	Dust	DA1 - Dust Mite Allergen Test	3/6/24/48 Hour

SanAir offers *Legionella* testing and other specialized culture analyses. Please call for details, COC and pricing.

Sample #	Sample Identification	Sample Type	Analysis Type(s)	Turn Around Time	Flow Rate (Liters/min)	Total Volume (L) or Area (in <sup>2</sup> )	Time Start - Stop	
1	Exterior	AC	A2	24Hrs	15	75L		
2	Front Level Cafeteria							
3	Front Level Janitor Closet							
4	Front Level Storage Room							
5	Front Level Loading Dock							
6	Front Level Left Entrance							
7	Front Level Mail Room							
8	Front Level Showroom							
9	Front Level HR Office							
10	Front Level Photography Studio							
11	Front Level Right Hall							
12	Front Level Main Entrance							
13	Front Level Main Entrance Hall							

Special Instructions	
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Relinquished by	Date	Time	Received by	Date	Time
DAVE ROBERTS	11/24/19	18:00	Ull	11/26/19	10:00 AM

If no technician is provided, the primary contact for your account will be selected. Unless scheduled, the TAT for all samples received after 3 pm Friday will begin at 8 am Monday morning. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3 hr. TAT rate. There is a minimum charge of \$100 for weekend work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.





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**Microbiology**  
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Form 68, Revision 5, 1/20/2017

SanAir ID Number

1906077U

Company:	RTK Environmental Group	Project Number:	Wilton, CT	Phone #:	203-921-4144
Address:	29 Bank Street	Project Name:	141 Danbury Road	Phone #:	203-984-5457
City, State, Zip:	Stamford, CT 06901	Date Collected:	11/24/19	Fax #:	203-921-4145
Samples Collected By:	DAVE ROBERTS	P.O. Number:	24257	Email:	
Account #:				Email:	

Sample Types		Analysis Types	Turn Around Time
AC	Air Cassette	A1 - Identification and Enumeration of Fungal spores, plus total dander, fiber, and pollen count	3/6/24/48 Hour
		A2 - Identification and Enumeration of Fungal spores only	3/6/24/48 Hour
T B S	Tape Bulk Swab	D1 - Direct Identification of Fungi	3/6/24/48 Hour
		D2 - Direct Identification of Mites, Insects, Pollen, etc.	3/6/24/48 Hour
		D3 - Direct Identification and Enumeration of Fungi	3/6/24/48 Hour
AP B S	Air Plate Bulk Swab	C1 - Culture Identification and Enumeration of Fungi only	5-10 Days
		C2 - Culture Identification and Enumeration of Bacteria only	2-4 Days
		C3 - Culture Identification and Enumeration of Fungi and Bacteria	5-10 Days
		C4 - Culture Identification and Enumeration of Thermophilic Bacteria with C2 or C3 analysis	2-4 or 5-10 Days
D	Dust	DA1 - Dust Mite Allergen Test	3/6/24/48 Hour

SanAir offers *Legionella* testing and other specialized culture analyses. Please call for details, COC and pricing.

Sample #	Sample Identification	Sample Type	Analysis Type(s)	Turn Around Time	Flow Rate (Liters/min)	Total Volume (L) or Area (in <sup>2</sup> )	Time Start - Stop	
14	Front Level Large Showroom	AC	A2	24/48	15	75L		
15	Front Level Finance							
16	Lower level Melissa's Desk Area							
17	Lower level Kitchen							
18	Lower level Front Bullpen							
19	Lower level Rear Bullpen							
20	Front Stairway							
21	Lower level Bullpen (Near Stairway)							
22	Lower level Hall Near Bathrooms							
23	2 <sup>nd</sup> Fl Front Right Bullpen							
24	2 <sup>nd</sup> Fl Front Left Bullpen							
25	2 <sup>nd</sup> Fl Rear Right Bullpen							
26	2 <sup>nd</sup> Fl Rear Left Bullpen							

Special Instructions	
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Relinquished by	Date	Time	Received by	Date	Time
EJRL	11/24/19	18:00	Ull	11/26/19	10:00am

If no technician is provided, the primary contact for your account will be selected. Unless scheduled, the TAT for all samples received after 3 pm Friday will begin at 8 am Monday morning. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3 hr. TAT rate. There is a minimum charge of \$100 for weekend work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.



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**Microbiology  
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Form 68, Revision 5, 1/20/2017

SanAir ID Number

19060770

Company: <b>RTK Environmental Group</b>	Project Number: <i>Wilton, CT</i>	Phone #: <b>203-921-4144</b>
Address: <b>29 Bank Street</b>	Project Name: <i>141 Danbury Road</i>	Phone #: <b>203-984-5457</b>
City, State, Zip: <b>Stamford, CT 06901</b>	Date Collected: <i>11/24/19</i>	Fax #: <b>203-921-4145</b>
Samples Collected By: <b>DAVE ROBERTS</b>	P.O. Number: <i>24257</i>	Email:
Account #:		Email:

Sample Types		Analysis Types	Turn Around Time
AC	Air Cassette	A1 - Identification and Enumeration of Fungal spores, plus total dander, fiber, and pollen count	3/6/24/48 Hour
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T B S	Tape Bulk Swab	D1 - Direct Identification of Fungi	3/6/24/48 Hour
		D2 - Direct Identification of Mites, Insects, Pollen, etc.	3/6/24/48 Hour
		D3 - Direct Identification and Enumeration of Fungi	3/6/24/48 Hour
AP B S	Air Plate Bulk Swab	C1 - Culture Identification and Enumeration of Fungi only	5-10 Days
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		C3 - Culture Identification and Enumeration of Fungi and Bacteria	5-10 Days
		C4 - Culture Identification and Enumeration of Thermophilic Bacteria with C2 or C3 analysis	2-4 or 5-10 Days
D	Dust	DA1 - Dust Mite Allergen Test	3/6/24/48 Hour

SanAir offers *Legionella* testing and other specialized culture analyses. Please call for details, COC and pricing.

Sample #	Sample Identification	Sample Type	Analysis Type(s)	Turn Around Time	Flow Rate (Liters/min)	Total Volume (L) or Area (in <sup>2</sup> )	Time Start - Stop	
27	2 <sup>nd</sup> Fl Hall Near Dave's CR	AC	A2	24 Hrs	15	75L		
28	2 <sup>nd</sup> Fl Kitchen	↓	↓	↓	↓	↓		
29	Lower level Bullpen In-ceiling	↓	↓	↓	↓	↓		
30	Front level Showroom In-ceiling	↓	↓	↓	↓	↓		
31	2 <sup>nd</sup> Fl Bullpen In-ceiling	↓	↓	↓	↓	↓		
32	Front level Janitor Closet Wall	T	D1	↓				
33	Front level Storage Rm Ceiling Tile	↓	↓	↓				

Special Instructions	
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Relinquished by	Date	Time	Received by	Date	Time
<i>[Signature]</i>	11/24/19	18:00	<i>[Signature]</i>	11/24/19	10:00 am

If no technician is provided, the primary contact for your account will be selected. Unless scheduled, the TAT for all samples received after 3 pm Friday will begin at 8 am Monday morning. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3 hr. TAT rate. There is a minimum charge of \$100 for weekend work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.



December 2, 2019

Christina Boccuzzi  
Melissa & Doug  
141 Danbury Road  
Wilton, CT 06897

Dear Christina,

This report includes results of a visual inspection as well as volatile organic compound (VOCs) and formaldehyde samples collected from 141 Danbury Road, Wilton, CT on November 24, 2019. This assessment was performed to assess VOC and formaldehyde conditions in the building. Below is our summary of findings and recommendations. For details of our sample findings, please see the attached laboratory report(s).

## SUMMARY OF FINDINGS

- On the day of inspection, children's toys (plastic toys, stuffed animals, board games, etc.) were present throughout the building, however the majority of the toys were located in the front-level showroom.
- Carpet flooring was present throughout the majority of the building.
- Cleaning supplies were present in the janitor closets and kitchen areas on each level of the building.
- Personal care products (hand sanitizers, lotions, etc.) were present in the lower level bullpen, front level finance area and second-floor bullpen.
- Office supplies (printers, printer ink, etc.) were located in multiple areas of the building (mail room, lower level/second-floor bull pens, front level finance area, etc.).
- There were multiple HVAC units that supplied air throughout the building. The supply and return vents throughout the building were clean and free of debris.
- Nine VOC air samples and nine formaldehyde air samples were taken throughout the building. The attached laboratory reports indicate levels of VOCs in these nine areas, whether they are considered elevated and, if so, what efforts can be taken in order to lower these levels. Pages 1-3 of each laboratory report are the primary summary pages for each sample taken. The remaining pages contain details of what any elevations are likely originating from and what can be done in order to lower these levels.
- Normal levels of VOCs were identified in the samples taken throughout the building.
- Moderate to elevated levels of formaldehyde were identified in the samples taken throughout the building. These conditions are likely due to the presence of carpeting, cleaning supplies, office supplies, personal care products and children's toys throughout the building. The sample taken in the show room indicated the highest formaldehyde levels when compared to the other samples.
- Relative humidity readings are also within a normal range.





## RECOMMENDATIONS

- *Below are recommendations that can help reduce the level of VOCs in your home. The US Federal Government has not specified a Total-VOC (TVOC) limit for indoor air, however the US Green Building Council has recommended 500 nanograms/liter (ng/L) as the upper TVOC limit. Although this level is ideal, it is common for levels to be between 500 and 1500 ng/L.*
- Cleaning products, personal care products and office supplies should be stored in sealed containers when they are not in use.
- The use of carbon filtration can reduce levels of VOCs and formaldehyde. Consideration should be given to utilizing standalone air purifiers in the front level show room which can help to reduce formaldehyde conditions identified with this sampling.
- For additional suggestions on reducing VOC levels please refer to the recommendations in the laboratory report for each sample.

Thank you for working with RTK Environmental Group. **We appreciate your business. RTK also offers testing and consulting for mold, lead, asbestos, soil, water and other indoor air quality issues.** Please contact our office at 800-392-6468 with any questions.

Sincerely,

A handwritten signature in purple ink that reads "David Roberts".

David Roberts  
Environmental Consultant  
[dr@rtkenvironmental.com](mailto:dr@rtkenvironmental.com)



## REPORT DISCLAIMER

THE INFORMATION PROVIDED IN THIS REPORT IS LIMITED BY THE SCOPE OF THE INSPECTION REQUESTED BY THE CLIENT. NOT ALL INSPECTIONS YIELD INFORMATION REGARDING THE PRESENCE OF VOLATILE ORGANIC COMPOUNDS AND THE EXISTENCE OF SUCH HAZARDS IN ALL MEDIA. YOU ARE ADVISED TO CLARIFY THE SCOPE OF THE INSPECTION PROVIDED WITH THE INSPECTOR.

It is generally acknowledged that the level of VOCs in any structure will determine the extent of hazard arising from such contaminants. Accordingly, any change in the condition of the property in question will alter the validity of the inspection report provided herewith. The accuracy of any indoor air quality investigation performed is, therefore, limited to the condition of the property at the time the investigation report herewith was conducted. The inspector assumes no responsibility for retesting or reinvestigating the property to determine changed conditions. Any and all changes in the premises or its condition may result in the creation of air quality hazards not in existence at the time of inspection.

Not every area was tested or was accessible for testing. The inspector makes no representation with respect to the presence of VOCs or the condition of any areas not tested, or with respect to any lead painted or asbestos containing surfaces that may be disturbed during subsequent work. Areas which were not tested may, if tested, yield results which indicate the presence of VOCs or other environmental hazards. The client is advised to take such factors into account when undertaking any activities which may have an impact upon such areas.

Furthermore, the human system and sensitivities vary from each individual to the next. The individual human system and/or pre-existing medical and health conditions may be impacted by varying degrees of exposure to VOCs. If any symptoms exist or remain, it is strongly suggested to consult a medical or health professional.

This report is intended only for the benefit of the inspector and the client and does not create any rights in any third parties. Use of these test results or reports or other materials by the client without written permission or adaptation by RTK Environmental Group for the specific purpose intended shall be at the user's sole risk, without liability on RTK Environmental Group's part, and the client agrees to indemnify and hold RTK Environmental Group harmless from all claims, damages and expenses, including attorney's fees, arising out of such unauthorized use.

**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-18

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** 2nd Fl. Rear Left Bullpen  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AD899  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

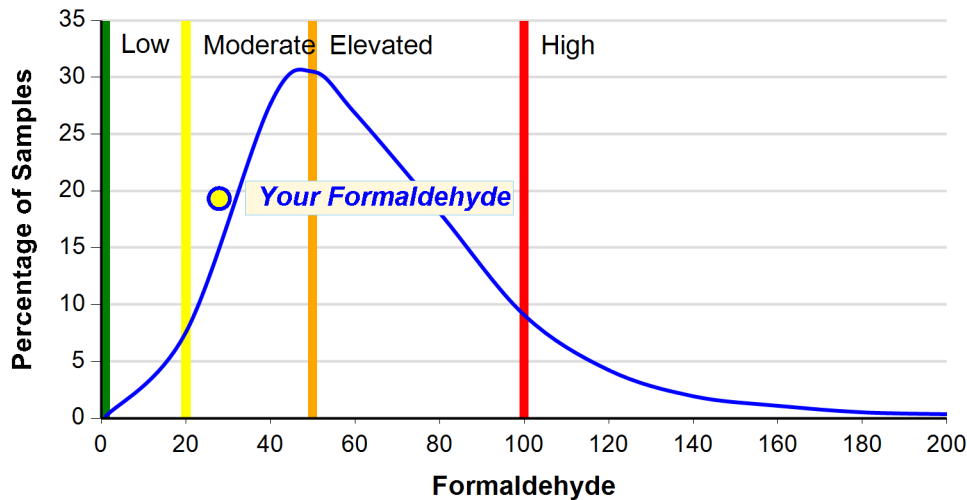
**Formaldehyde Concentration:** 28 ng/L (23 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.



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## Formaldehyde Exposure Guidelines

The US Occupational Safety and Health Administration (OSHA) has set a workplace **permissible exposure limit** (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a **recommended exposure limit** (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
	940	750	PEL (8 hour)
	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

LEED: Leadership in Energy & Environmental Design (Green Building Council)

WHO: World Health Organization

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m³ = 0.001 mg/m³

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

## Additional Resources

US OSHA [Toxic and Hazardous Substances-Formaldehyde](#)

US OSHA [Fact Sheet-Formaldehyde](#)

US NIOSH [Formaldehyde](#)

World Health Organization (WHO) [Air Quality Guidelines for Europe, 2nd Edition \(2000\): pg 87-91](#)

Europe: [Report No. 7-Indoor Air Pollution by Formaldehyde in European Countries \(1990\)](#)

US Consumer Product Safety Commission (CPSC) [Update on Formaldehyde \(2013\)](#)

US Environmental Protection Agency: [Formaldehyde](#)

US Agency for Toxic Substances and Disease Registry (ATSDR): [Formaldehyde ToxFAQs™](#)

US National Institutes of Health (NIH): [ToxTown: Formaldehyde](#)

Chemical Reviews (Journal): [Formaldehyde in the Indoor Environment](#)

Household Products Database: [Formaldehyde](#)

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies (Prism) using the Hantzsch, or acetylacetone (acac), method. This test method has been correlated with or is compliant with the California Air Resources Board (CARB) § 93120, European DIN Standard EN-717, and ASTM methods D-5582 and E-1333. It has also been compared with DNPH testing used in NIOSH 2016 and found to be in good agreement.

The results contained in this report are dependent upon a number of factors over which Prism has no control, which may include, but are not limited to, the sampling technique utilized, the size or source of sample, and the ability of the sampler to collect a proper or suitable sample. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-17

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** 2nd Fl. Front Right Bullpen  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AD519  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

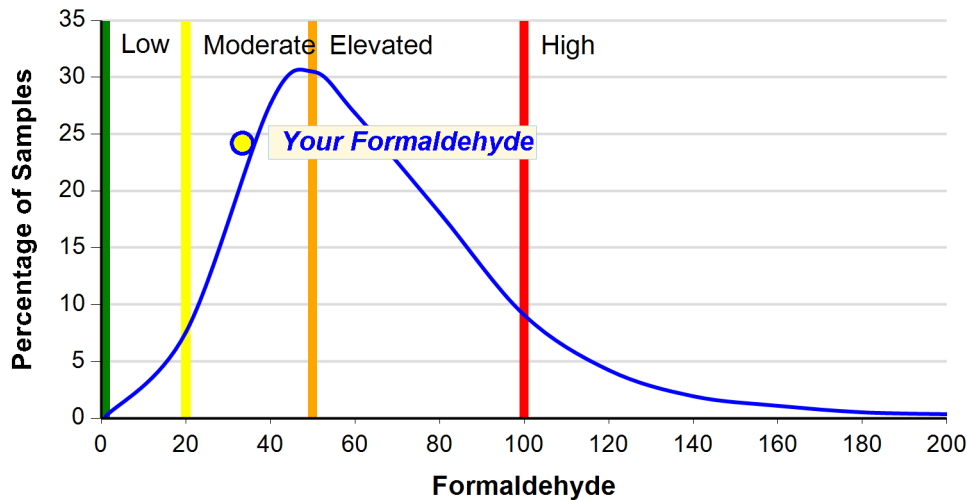
**Formaldehyde Concentration:** 34 ng/L (27 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.

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## Formaldehyde Exposure Guidelines

The US Occupational Safety and Health Administration (OSHA) has set a workplace **permissible exposure limit** (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a **recommended exposure limit** (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
	940	750	PEL (8 hour)
	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
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WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

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STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m³ = 0.001 mg/m³

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

## Additional Resources

US OSHA [Toxic and Hazardous Substances-Formaldehyde](#)

US OSHA [Fact Sheet-Formaldehyde](#)

US NIOSH [Formaldehyde](#)

World Health Organization (WHO) [Air Quality Guidelines for Europe, 2nd Edition \(2000\): pg 87-91](#)

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US Consumer Product Safety Commission (CPSC) [Update on Formaldehyde \(2013\)](#)

US Environmental Protection Agency: [Formaldehyde](#)

US Agency for Toxic Substances and Disease Registry (ATSDR): [Formaldehyde ToxFAQs™](#)

US National Institutes of Health (NIH): [ToxTown: Formaldehyde](#)

Chemical Reviews (Journal): [Formaldehyde in the Indoor Environment](#)

Household Products Database: [Formaldehyde](#)

These results are authorized by the Laboratory Director or approved representative.

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-16

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Lower Level: Kitchen  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AB073  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

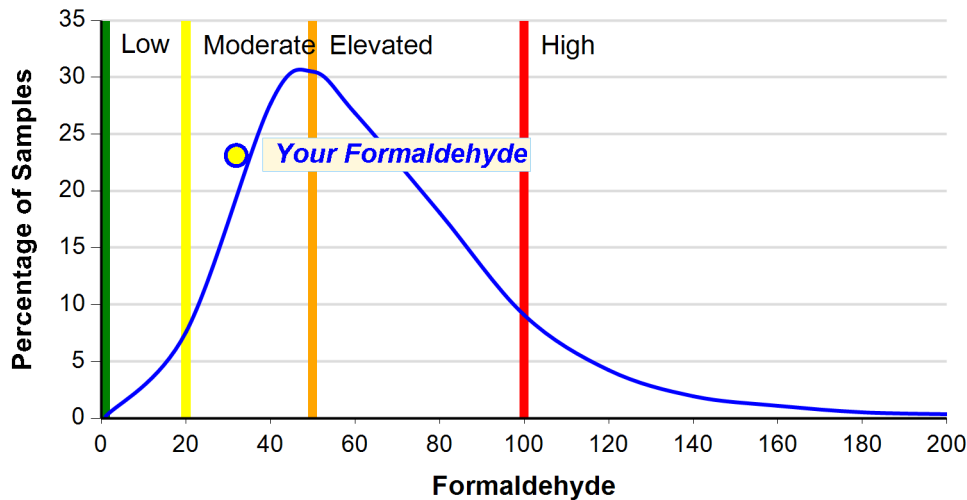
**Formaldehyde Concentration:** 32 ng/L (26 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.



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Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
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	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
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OSHA: Occupational Health and Safety Administration

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1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

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  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

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## Additional Resources

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US NIOSH [Formaldehyde](#)

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US Agency for Toxic Substances and Disease Registry (ATSDR): [Formaldehyde ToxFAQs™](#)

US National Institutes of Health (NIH): [ToxTown: Formaldehyde](#)

Chemical Reviews (Journal): [Formaldehyde in the Indoor Environment](#)

Household Products Database: [Formaldehyde](#)

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-15

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Lower Level: Rear  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AB324  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

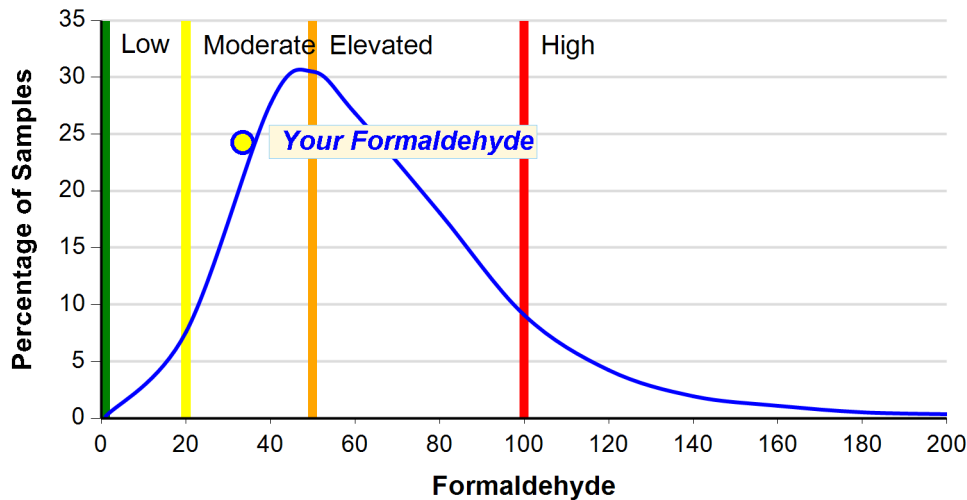
**Formaldehyde Concentration:** 34 ng/L (27 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.

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## Formaldehyde Exposure Guidelines

The US Occupational Safety and Health Administration (OSHA) has set a workplace **permissible exposure limit** (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a **recommended exposure limit** (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
	940	750	PEL (8 hour)
	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

LEED: Leadership in Energy & Environmental Design (Green Building Council)

WHO: World Health Organization

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m³ = 0.001 mg/m³

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

## Additional Resources

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-14

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Lower Level: Front  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AD965  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

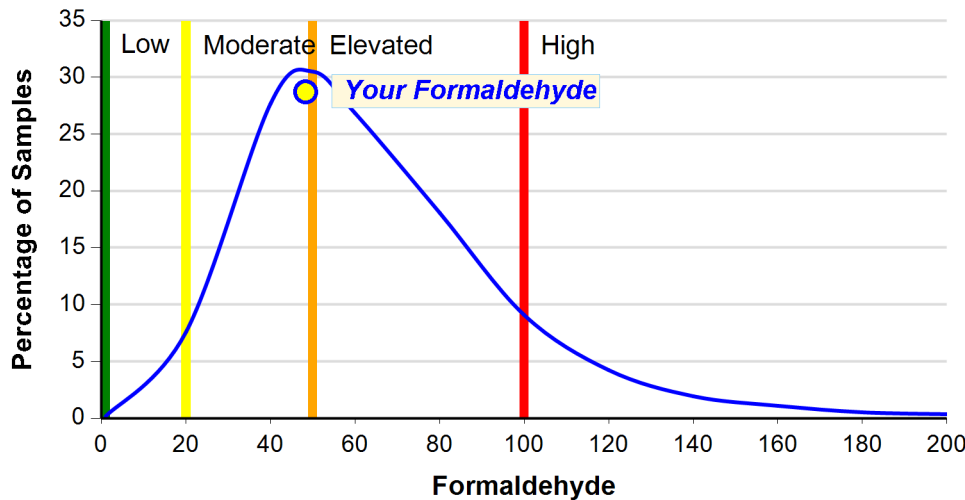
**Formaldehyde Concentration:** 48 ng/L (39 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.



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NIOSH	20	16	REL (8 hour)
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To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

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- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

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US OSHA [Fact Sheet-Formaldehyde](#)

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-13

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Front Level: Photography Studio  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT TT596  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

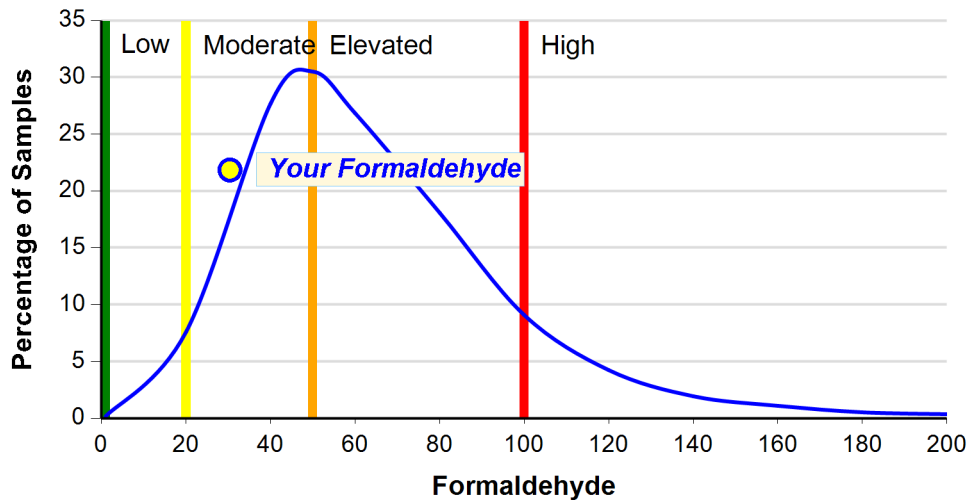
**Formaldehyde Concentration:** 31 ng/L (25 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
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30-70 ng/L range.

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## Formaldehyde Exposure Guidelines

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Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
	940	750	PEL (8 hour)
	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
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1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

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- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
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- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-12

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Thank you for using**

**IAQ Commercial Survey!**

If you have questions about your report,  
please contact your service provider who  
performed this test.

**Client Sample ID:** Front Level: Finances  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AD975  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

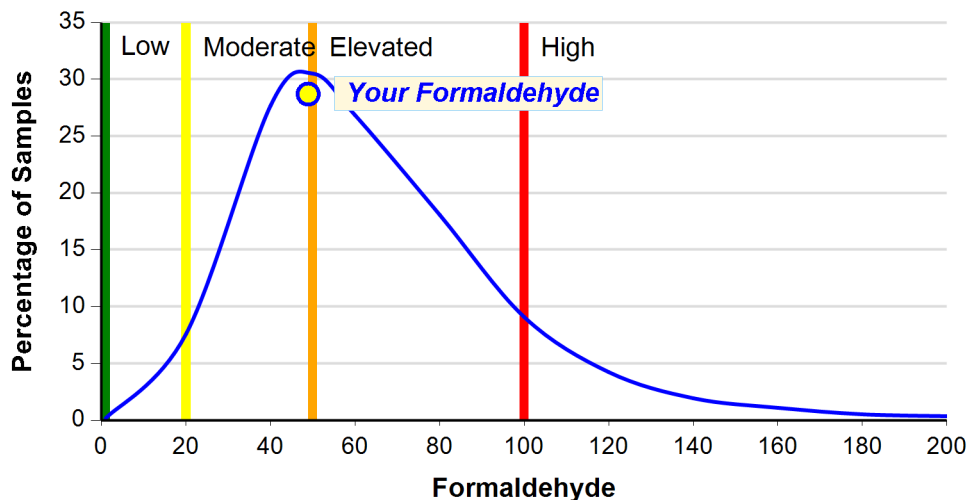
**Formaldehyde Concentration:** 49 ng/L (39 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



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- Glues and adhesives
- Paints and coatings
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- Disinfectant cleaning products and soaps
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- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

## Additional Resources

US OSHA [Toxic and Hazardous Substances-Formaldehyde](#)

US OSHA [Fact Sheet-Formaldehyde](#)

US NIOSH [Formaldehyde](#)

World Health Organization (WHO) [Air Quality Guidelines for Europe, 2nd Edition \(2000\): pg 87-91](#)

Europe: [Report No. 7-Indoor Air Pollution by Formaldehyde in European Countries \(1990\)](#)

US Consumer Product Safety Commission (CPSC) [Update on Formaldehyde \(2013\)](#)

US Environmental Protection Agency: [Formaldehyde](#)

US Agency for Toxic Substances and Disease Registry (ATSDR): [Formaldehyde ToxFAQs™](#)

US National Institutes of Health (NIH): [ToxTown: Formaldehyde](#)

Chemical Reviews (Journal): [Formaldehyde in the Indoor Environment](#)

Household Products Database: [Formaldehyde](#)

These results are authorized by the Laboratory Director or approved representative.

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-11

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Front Level: Show Room  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AD996  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

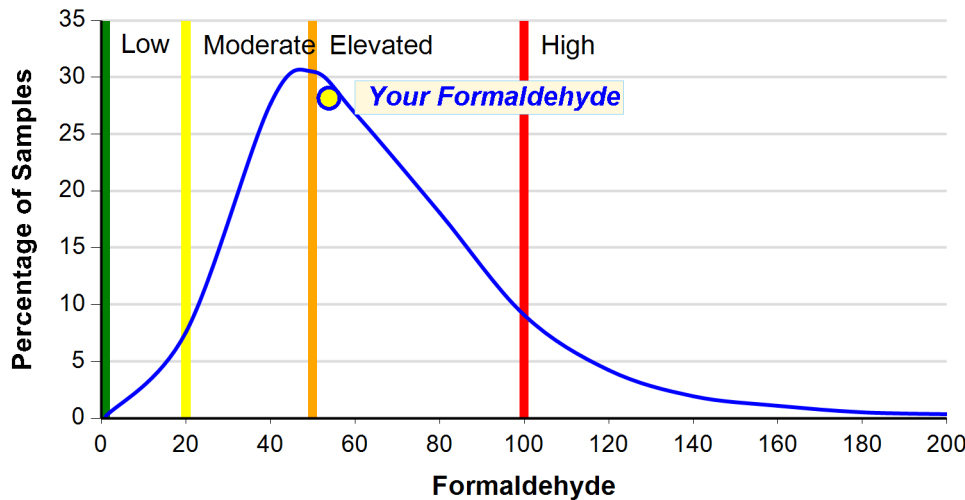
**Formaldehyde Concentration:** 54 ng/L (43 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Consider locating and removing formaldehyde sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the Formaldehyde distribution of over 27,000 samples.

Approximately half the samples have concentrations in the 30-70 ng/L range.

The chart above shows the formaldehyde concentrations for all locations tested using IAQ 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 locations (indicated on the vertical y-axis) and the formaldehyde concentration (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Low, Moderate, Elevated, and High formaldehyde concentrations.

Formaldehyde concentrations can vary depending on environmental conditions such as temperature, humidity, and ventilation rate. As temperature and humidity increase, the formaldehyde concentration will increase and as the ventilation rate increases, the formaldehyde concentration will decrease.

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## Formaldehyde Exposure Guidelines

The US Occupational Safety and Health Administration (OSHA) has set a workplace **permissible exposure limit** (PEL) of 940 ng/L (750 parts per billion). The National Institute for Occupational Safety and Health (NIOSH) has set a **recommended exposure limit** (REL) of 20 ng/L (16 ppb) with a 120 ng/L (100 ppb) 15 minute ceiling limit.

Although these formaldehyde concentration limits are applicable to all types of workplace environments, most office or retail locations without additional occupational exposure (e.g., industrial or manufacturing processes generating formaldehyde) typically have formaldehyde concentrations less than 100 ng/L (80 ppb). Most indoor environments measured by Prism's air test have concentrations in the range of 30 to 70 ng/L.

The table below provides some of the limits applicable to workplace environments. In general, formaldehyde concentrations should be kept as low as reasonably achievable.

Organization	Concentration		Type
	ng/L	ppb	
OSHA	630	500	Action Level (8 hour)
	940	750	PEL (8 hour)
	2,500	2,000	STEL (15 min)
NIOSH	20	16	REL (8 hour)
	120	100	Ceiling (15 min)
ACGIH	370	300	TLV (8 hour)
LEED	32	27	Green Building (4 hour)
WHO	100	80	Short-Term (0.5 hour)

OSHA: Occupational Health and Safety Administration

NIOSH: National Institute for Occupational Safety and Health

ACGIH: American Conference of Governmental Industrial Hygienists

LEED: Leadership in Energy & Environmental Design (Green Building Council)

WHO: World Health Organization

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

STEL: Short Term Exposure Limit

Note: Concentration can be expressed in several ways and various organizations may use different units.

1 ng/L = 1 µg/m³ = 0.001 mg/m³

1 ppb = 0.001 ppm

To convert between the two sets of units listed above the molecular weight of formaldehyde must be used, which produces the conversion factors below:

ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

## Major Health Effects of Formaldehyde Exposure

Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

Formaldehyde is also produced naturally in living systems, e.g., trees and other plant life, and during decay and combustion processes. Formaldehyde is also involved in atmospheric processes. Outdoor concentrations of formaldehyde from both natural and man-made sources can range from less than 1 ng/L in remote areas to 10-20 ng/L in urban environments.

## Additional Resources

US OSHA [Toxic and Hazardous Substances-Formaldehyde](#)

US OSHA [Fact Sheet-Formaldehyde](#)

US NIOSH [Formaldehyde](#)

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**Air Analysis For:** - 24257  
**Location Tested:** 141 Danbury Road  
Wilton, CT

**Report Number:** 82690  
**Laboratory ID:** 82690-10

**Sampling Professional:** David Roberts  
RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

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

**Client Sample ID:** Front Level: Main Cafeteria  
**Sample Volume (L):** 4.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT ZZ156  
**Sample Condition:** Acceptable

**Order Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

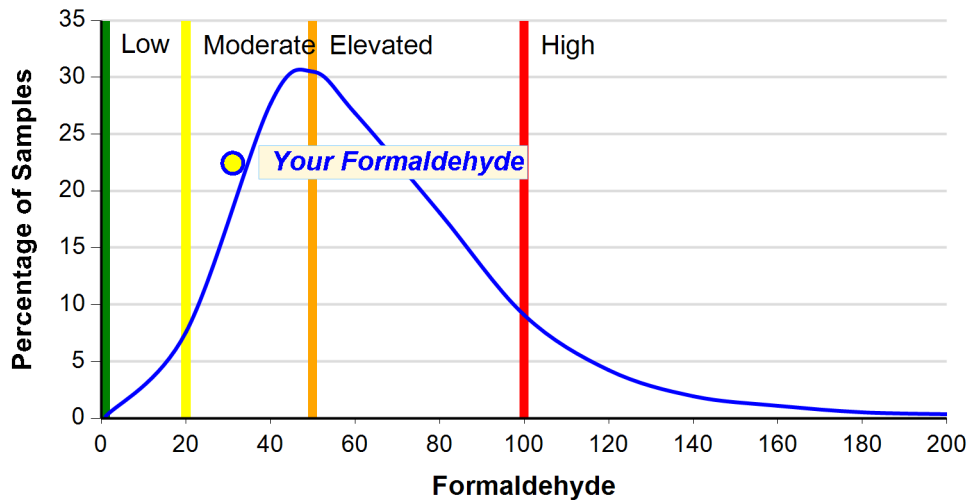
**Formaldehyde Concentration:** 32 ng/L (25 ppb)

**Your Formaldehyde Level (Highlighted)**

Low	Moderate	Elevated	High
< 20 ng/L < 16 ppb	20-50 ng/L 16-40 ppb	50-100 ng/L 40-80 ppb	> 100 ng/L > 80 ppb

**Recommendation:** Moderate formaldehyde level but improvements can be achieved by locating and removing sources. See formaldehyde sources section for more information.

**All IAQ Survey Formaldehyde Results**



This chart represents the  
Formaldehyde  
distribution of over  
27,000 samples.

Approximately half the  
samples have  
concentrations in the  
30-70 ng/L range.

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Organization	Concentration		Type
	ng/L	ppb	
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Note: Concentration can be expressed in several ways and various organizations may use different units.

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ppb concentration = ng/L concentration \* 0.8 or ng/L concentration = ppb concentration \* 1.25

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Health effects vary depending on the individual. Common symptoms of acute exposure include irritation of the throat, nose, eyes, and skin; this irritation can potentially exacerbate asthma symptoms and other respiratory illnesses. Long term, or chronic, exposure may also cause chronic runny nose, chronic bronchitis, and obstructive lung disease. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from "probably carcinogenic to humans" to "carcinogenic to humans" related to nasopharyngeal cancer. Since many factors are involved in the development of cancer, no definitive "safe level" of exposure has been established. The best way to reduce the risk of cancer is to limit exposure.

## Formaldehyde Sources

There are many possible sources for formaldehyde in the indoor environment, although building products typically make up a large proportion of the concentration. Any recent renovation or new material brought into the building is likely to increase the formaldehyde levels. The concentration will decrease over time as the materials off gas, so increasing the ventilation as much as possible is typically the best way to quickly decrease formaldehyde after recent renovation or installation of new materials.

- Products that contain urea-formaldehyde (UF) resins
  - particleboard, hardwood plywood paneling, medium density fiberboard
- Products that contain phenol-formaldehyde (PF) resins (lower concentrations of formaldehyde than UF resins)
  - softwood plywood, flake or oriented strand board
- Pre-finished engineered flooring
- Insulation
- Glues and adhesives
- Paints and coatings
- Textiles
- Disinfectant cleaning products and soaps
- Preservatives
- Personal care products, especially certain hair products
- Cosmetics
- Pet care products
- Bactericides and fungicides
- Combustion byproduct (burning)
  - Tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces)

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## Additional Resources

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US Environmental Protection Agency: [Formaldehyde](#)

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US National Institutes of Health (NIH): [ToxTown: Formaldehyde](#)

Chemical Reviews (Journal): [Formaldehyde in the Indoor Environment](#)

Household Products Database: [Formaldehyde](#)

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**Client Sample ID:** 2nd Fl. Rear Left Bullpen  
**Laboratory ID:** 82690-9

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

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

---

**Client Sample ID:** 2nd Fl. Rear Left Bullpen  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT WW666  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

IAQ Commercial Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources. Many indoor air quality (IAQ) issues identified by IAQ Commercial Survey can be easily remediated or eliminated. This test is an invaluable tool for improving air quality because it provides important information on potential contamination issues 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, creating a healthier environment.

## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
- 2. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in the sampled location. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions for where these products and materials might be found. The CI is divided into two main sections: Building Sources and Occupant Sources. Building Sources are those that are typically part of the structure of the building and may be more difficult to reduce in the short term. Occupant Sources are those that the occupants bring into the building and can usually be more readily identified and remediated. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require investigation to determine the source of certain chemicals that are not accurately represented by the CI. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants should take note of this fact, and view IAQ as a continuous improvement process.
- 3. Significant VOCs:** listing of up to ten chemical compounds measured with the IAQ Commercial Survey test that are large contributors to the TVOC level or are indicative of specific types of products or problems. Reduction of these specific chemical compounds will substantially reduce the TVOC level and greatly improve the IAQ of the sampled location.
- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

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## Total Volatile Organic Compound (TVOC) Summary

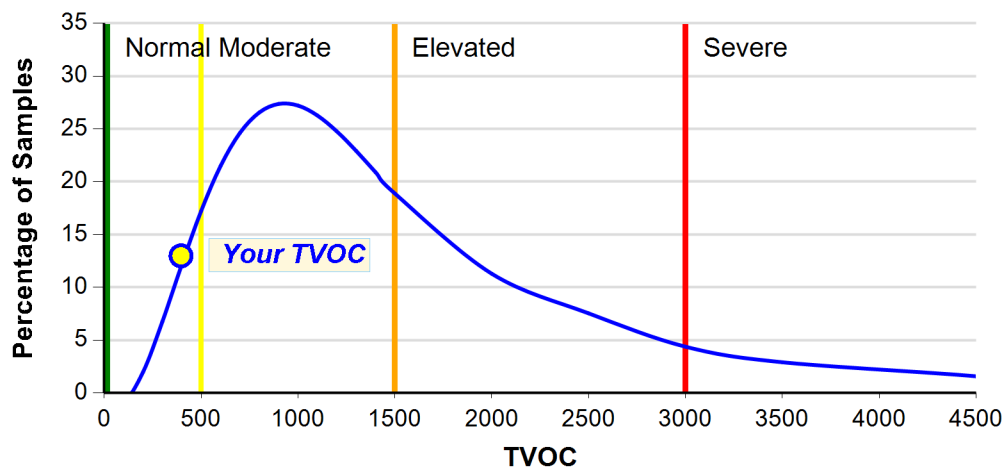
**Your TVOC Level is: 410 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

1 L. Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Vol. 5, International Indoor Air Quality Conference, Toronto, Canada, 1990, p. 22 ff.  
2 European Collaborative Action: Indoor Air Quality and its Impact on Man (ECA-IAQ), Report No 19 Total Volatile Organic Compounds (TVOC) in Indoor Air Quality Investigations, 1997. (from L. Molhave et al., Total Volatile Organic Compound (TVOC) in Indoor Air Quality Investigation, Indoor Air 1997; 225-240.)  
3 T. Salthammer, Critical evaluation of approaches in setting indoor air quality guidelines and reference values, Chemosphere 82, 2011, 1507-1517.

## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

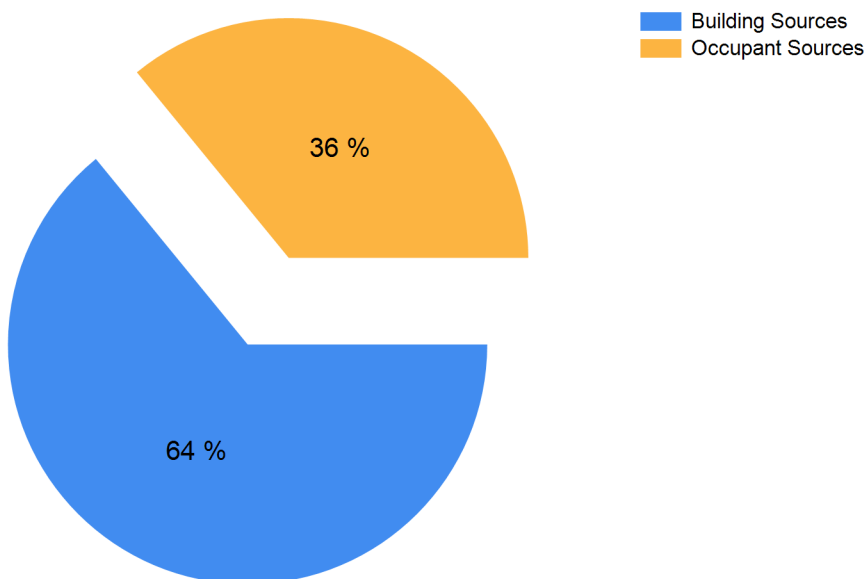
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	120	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	47	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	7	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	30	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	5	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.
	Personal Care and Cleaning Products	97	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	9	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.



## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	91	48	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals
Pentane (C 5)	109-66-0	23	8	Aerosol propellant; blowing agent; gasoline fuel component

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	2	0.5	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.5	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	1	0.3	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	8	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	3	0.6	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	1	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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**Client Sample ID:** 2nd Fl. Front Right Bullpen  
**Laboratory ID:** 82690-8

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

---

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

---

**Client Sample ID:** 2nd Fl. Front Right Bullpen  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT YY428  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

IAQ Commercial Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources. Many indoor air quality (IAQ) issues identified by IAQ Commercial Survey can be easily remediated or eliminated. This test is an invaluable tool for improving air quality because it provides important information on potential contamination issues 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, creating a healthier environment.

## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
- 2. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in the sampled location. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions for where these products and materials might be found. The CI is divided into two main sections: Building Sources and Occupant Sources. Building Sources are those that are typically part of the structure of the building and may be more difficult to reduce in the short term. Occupant Sources are those that the occupants bring into the building and can usually be more readily identified and remediated. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require investigation to determine the source of certain chemicals that are not accurately represented by the CI. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants should take note of this fact, and view IAQ as a continuous improvement process.
- 3. Significant VOCs:** listing of up to ten chemical compounds measured with the IAQ Commercial Survey test that are large contributors to the TVOC level or are indicative of specific types of products or problems. Reduction of these specific chemical compounds will substantially reduce the TVOC level and greatly improve the IAQ of the sampled location.
- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

Prism Analytical Technologies, Inc., the creator of IAQ Commercial Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies, Inc. (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 Compound (TVOC) Summary

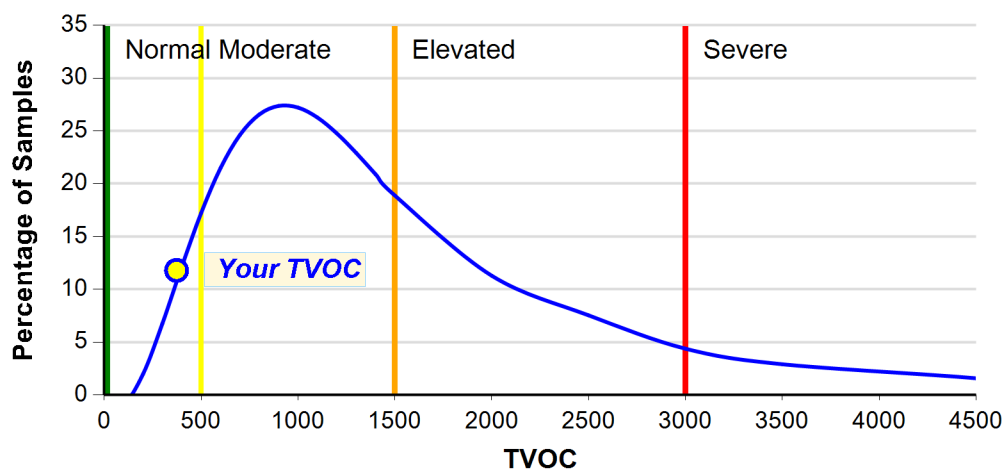
**Your TVOC Level is: 390 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

1 L. Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Vol. 5, International Indoor Air Quality Conference, Toronto, Canada, 1990, p. 22 ff.  
2 European Collaborative Action: Indoor Air Quality and its Impact on Man (ECA-IAQ), Report No 19 Total Volatile Organic Compounds (TVOC) in Indoor Air Quality Investigations, 1997. (from L. Molhave et al., Total Volatile Organic Compound (TVOC) in Indoor Air Quality Investigation, Indoor Air 1997; 225-240.)  
3 T. Salthammer, Critical evaluation of approaches in setting indoor air quality guidelines and reference values, Chemosphere 82, 2011, 1507-1517.

## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

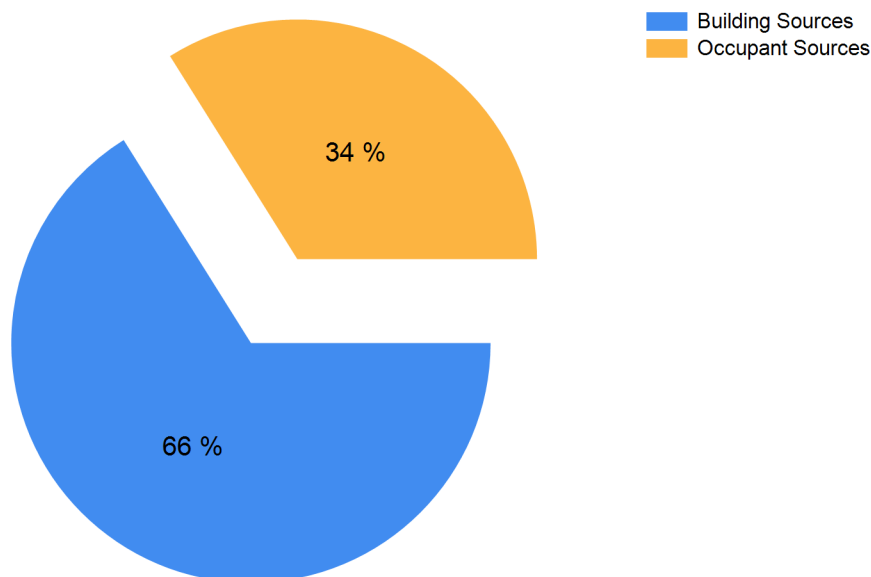
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	98	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	38	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	7	Normal	Building materials; aerosol cans; liquefied petroleum gas (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, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	85	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	9	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.



## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	84	44	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	1	0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	1	0.4	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	1	0.3	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	6	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	2	0.5	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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Client Sample ID: Lower Level: Kitchen  
Laboratory ID: 82690-7

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

---

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

---

**Client Sample ID:** Lower Level: Kitchen  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT SS697  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

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## Total Volatile Organic Compound (TVOC) Summary

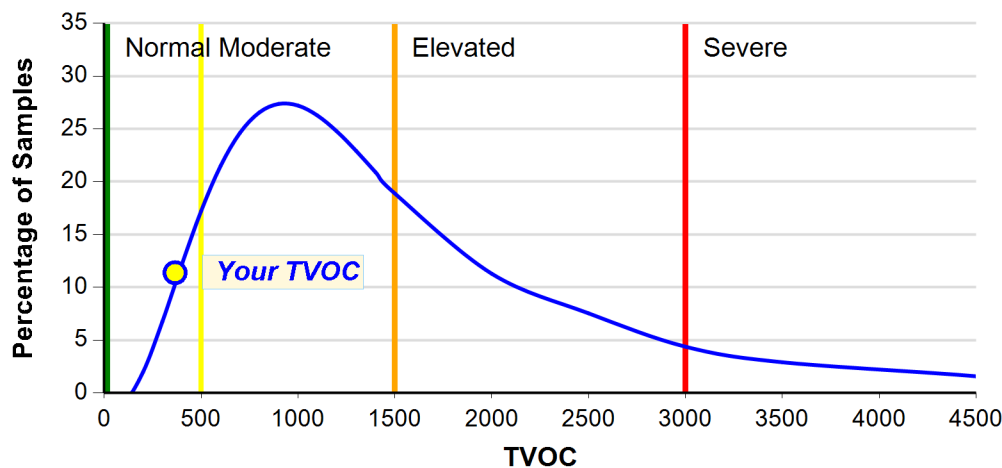
**Your TVOC Level is: 380 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
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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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

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## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

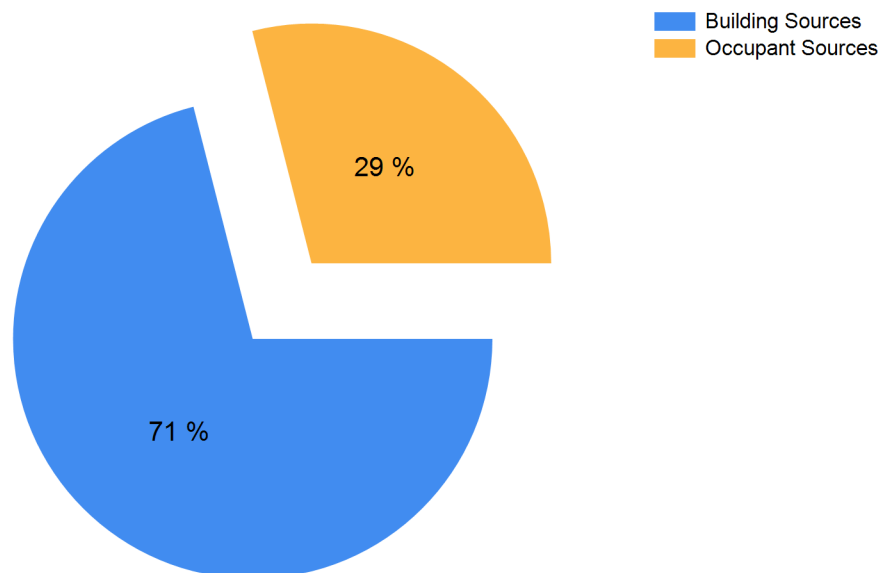
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	110	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	61	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	8	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	26	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	70	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	9	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	63	33	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals
Pentane (C 5)	109-66-0	26	9	Aerosol propellant; blowing agent; gasoline fuel component

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	1	0.4	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.6	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	1	0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	2	0.5	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	9	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	1	0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	4	0.8	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	1	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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Client Sample ID: Lower Level: Rear  
Laboratory ID: 82690-6

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

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

---

**Client Sample ID:** Lower Level: Rear  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT UU572  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
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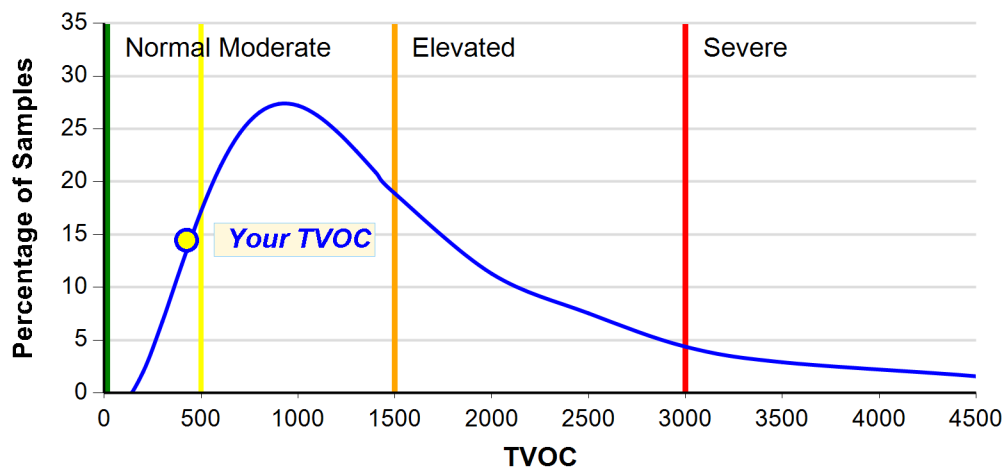
**Your TVOC Level is: 440 ng/L**

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Normal	Moderate	Elevated	Severe
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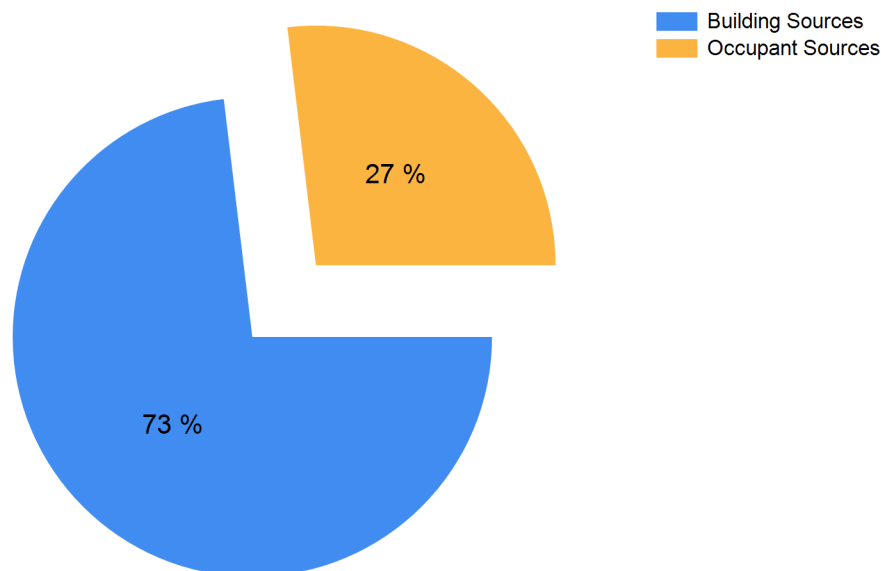
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**Contamination Index Source Groups**



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Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	150	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	56	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	8	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	26	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	77	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	8	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	68	35	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals
Pentane (C 5)	109-66-0	27	9	Aerosol propellant; blowing agent; gasoline fuel component

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	1	0.4	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.7	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	1	0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	2	0.5	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	9	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	1	0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	4	0.8	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	1	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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Client Sample ID: Lower Level: Front  
Laboratory ID: 82690-5

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

---

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

---

**Client Sample ID:** Lower Level: Front  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AE239  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

IAQ Commercial Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources. Many indoor air quality (IAQ) issues identified by IAQ Commercial Survey can be easily remediated or eliminated. This test is an invaluable tool for improving air quality because it provides important information on potential contamination issues 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, creating a healthier environment.

## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
- 2. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in the sampled location. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions for where these products and materials might be found. The CI is divided into two main sections: Building Sources and Occupant Sources. Building Sources are those that are typically part of the structure of the building and may be more difficult to reduce in the short term. Occupant Sources are those that the occupants bring into the building and can usually be more readily identified and remediated. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require investigation to determine the source of certain chemicals that are not accurately represented by the CI. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants should take note of this fact, and view IAQ as a continuous improvement process.
- 3. Significant VOCs:** listing of up to ten chemical compounds measured with the IAQ Commercial Survey test that are large contributors to the TVOC level or are indicative of specific types of products or problems. Reduction of these specific chemical compounds will substantially reduce the TVOC level and greatly improve the IAQ of the sampled location.
- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

Prism Analytical Technologies, Inc., the creator of IAQ Commercial Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies, Inc. (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 Compound (TVOC) Summary

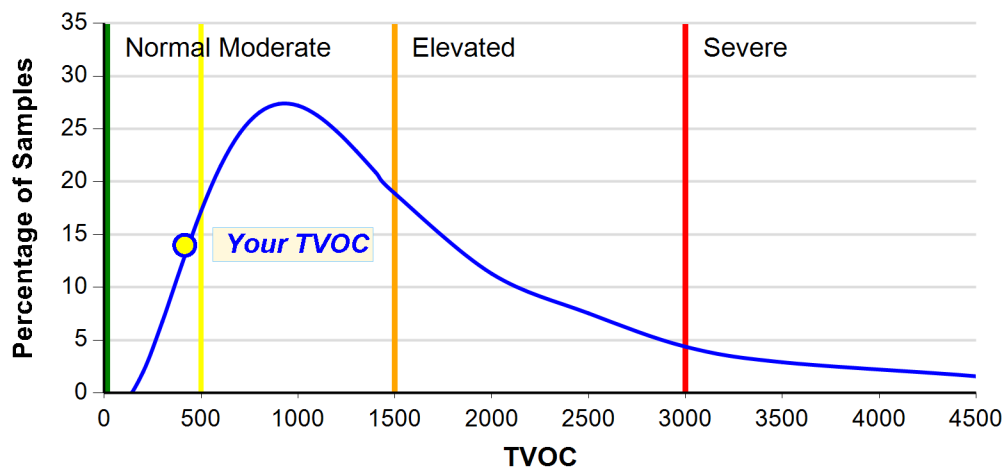
**Your TVOC Level is: 430 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

1 L. Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Vol. 5, International Indoor Air Quality Conference, Toronto, Canada, 1990, p. 22 ff.  
2 European Collaborative Action: Indoor Air Quality and its Impact on Man (ECA-IAQ), Report No 19 Total Volatile Organic Compounds (TVOC) in Indoor Air Quality Investigations, 1997. (from L. Molhave et al., Total Volatile Organic Compound (TVOC) in Indoor Air Quality Investigation, Indoor Air 1997; 225-240.)  
3 T. Salthammer, Critical evaluation of approaches in setting indoor air quality guidelines and reference values, Chemosphere 82, 2011, 1507-1517.

## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

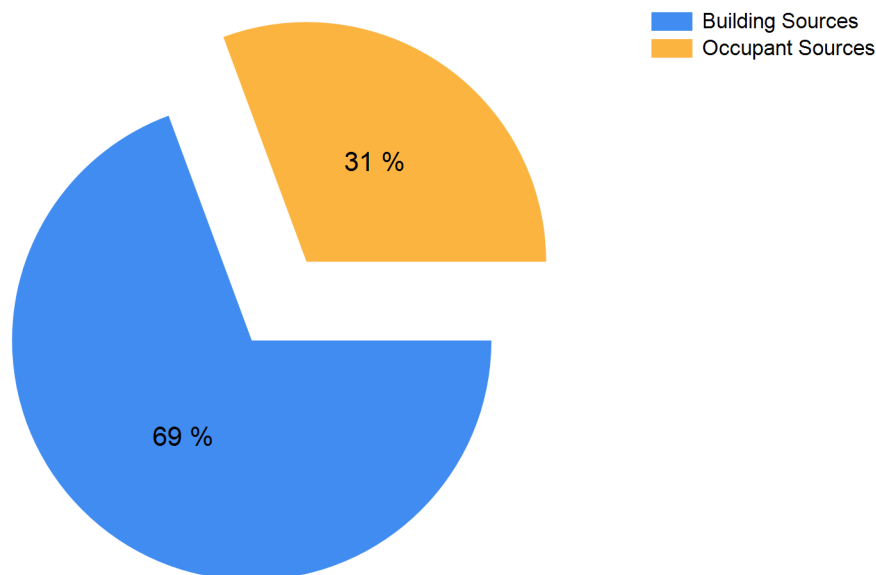
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	120	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	58	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	8	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	38	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	85	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	9	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	74	39	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals
Pentane (C 5)	109-66-0	27	9	Aerosol propellant; blowing agent; gasoline fuel component

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	2	0.4	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.7	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	1	0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	2	0.4	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	9	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	1	0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	4	0.8	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	1	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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**Client Sample ID:** Front Level: Photography Studio  
**Laboratory ID:** 82690-4

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

---

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

---

**Client Sample ID:** Front Level: Photography Studio  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT YY422  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

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## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
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- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

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## Total Volatile Organic Compound (TVOC) Summary

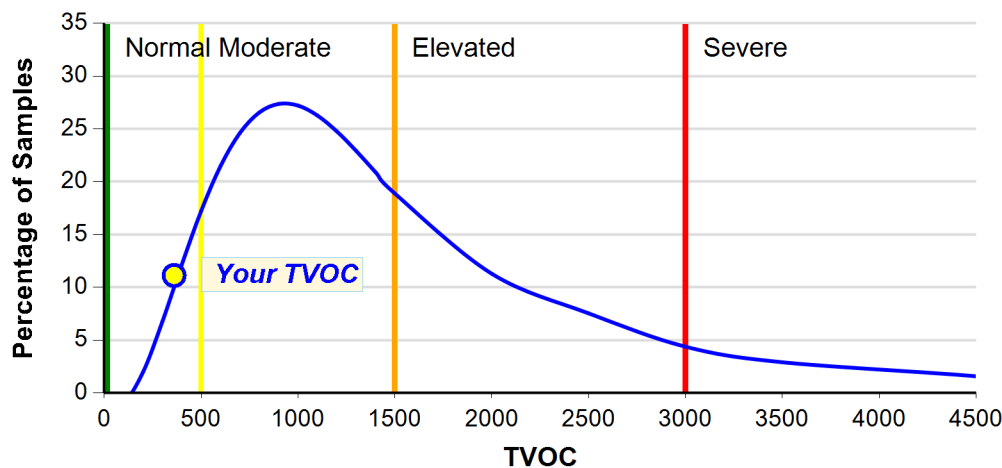
**Your TVOC Level is: 380 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

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## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

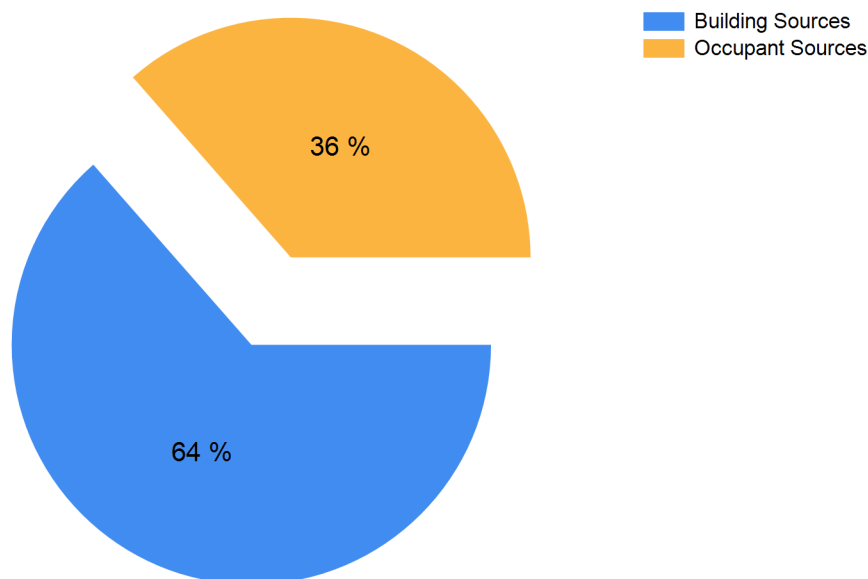
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	100	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	47	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	6	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	25	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	85	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	13	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	86	45	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.5	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	1	0.3	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	6	2	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	3	0.7	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	1	0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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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Client Sample ID: Front Level: Finances  
Laboratory ID: 82690-3

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

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

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**Client Sample ID:** Front Level: Finances  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT YY266  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
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## Total Volatile Organic Compound (TVOC) Summary

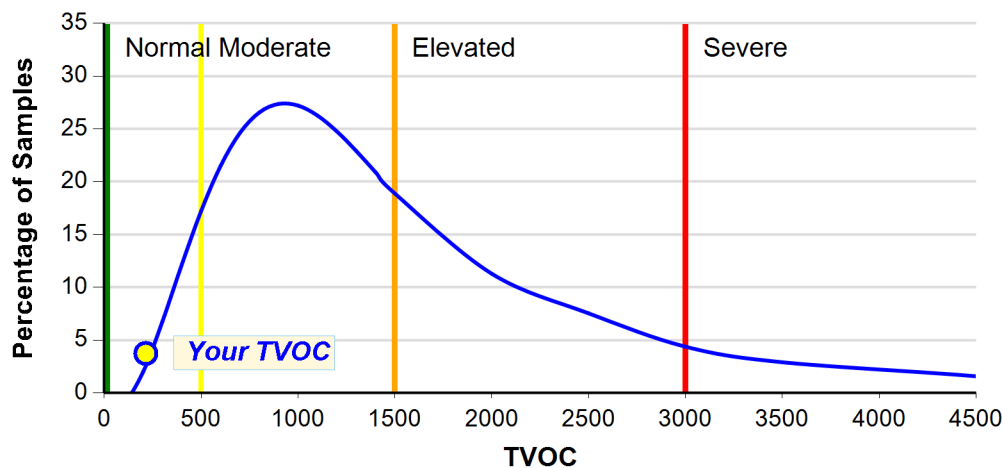
**Your TVOC Level is: 230 ng/L**

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### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
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### All IAQ Survey TVOC Air Quality Indicator



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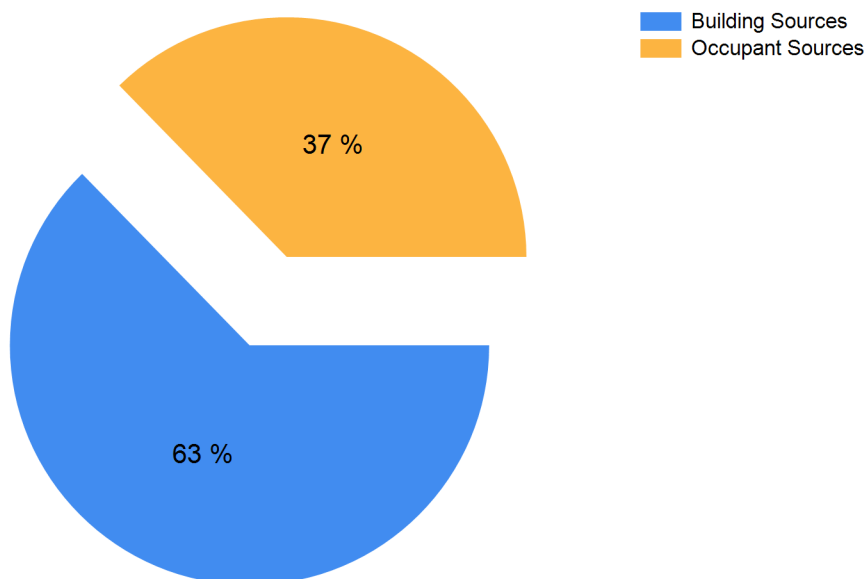
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**Contamination Index Source Groups**





## Contamination Index™ Building Sources

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Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	71	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	18	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	3	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	25	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.

## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	62	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	5	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	62	32	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	1	0.4	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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.

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

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

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**Client Sample ID:** Front Level: Show Room  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT AE954  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

IAQ Commercial Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources. Many indoor air quality (IAQ) issues identified by IAQ Commercial Survey can be easily remediated or eliminated. This test is an invaluable tool for improving air quality because it provides important information on potential contamination issues 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, creating a healthier environment.

## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
- 2. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in the sampled location. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions for where these products and materials might be found. The CI is divided into two main sections: Building Sources and Occupant Sources. Building Sources are those that are typically part of the structure of the building and may be more difficult to reduce in the short term. Occupant Sources are those that the occupants bring into the building and can usually be more readily identified and remediated. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require investigation to determine the source of certain chemicals that are not accurately represented by the CI. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants should take note of this fact, and view IAQ as a continuous improvement process.
- 3. Significant VOCs:** listing of up to ten chemical compounds measured with the IAQ Commercial Survey test that are large contributors to the TVOC level or are indicative of specific types of products or problems. Reduction of these specific chemical compounds will substantially reduce the TVOC level and greatly improve the IAQ of the sampled location.
- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

Prism Analytical Technologies, Inc., the creator of IAQ Commercial Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies, Inc. (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 Compound (TVOC) Summary

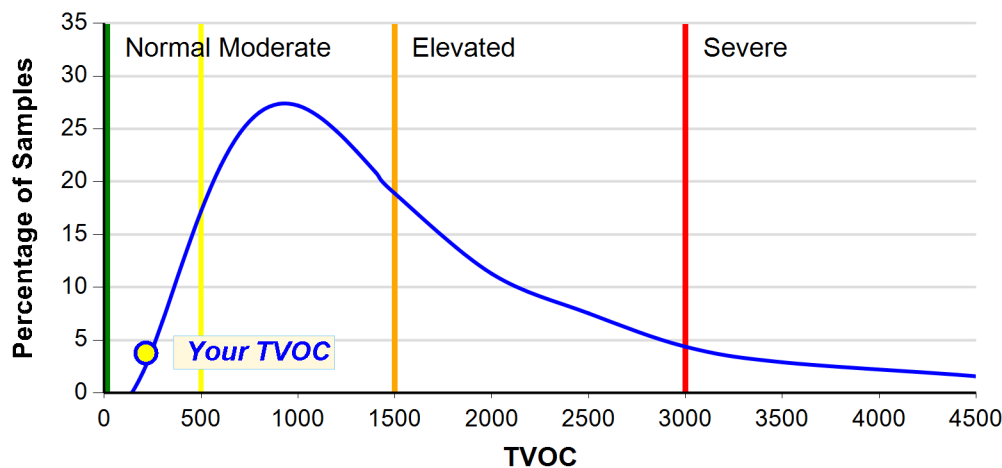
**Your TVOC Level is: 230 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

1 L. Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Vol. 5, International Indoor Air Quality Conference, Toronto, Canada, 1990, p. 22 ff.  
2 European Collaborative Action: Indoor Air Quality and its Impact on Man (ECA-IAQ), Report No 19 Total Volatile Organic Compounds (TVOC) in Indoor Air Quality Investigations, 1997. (from L. Molhave et al., Total Volatile Organic Compound (TVOC) in Indoor Air Quality Investigation, Indoor Air 1997; 225-240.)  
3 T. Salthammer, Critical evaluation of approaches in setting indoor air quality guidelines and reference values, Chemosphere 82, 2011, 1507-1517.

## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

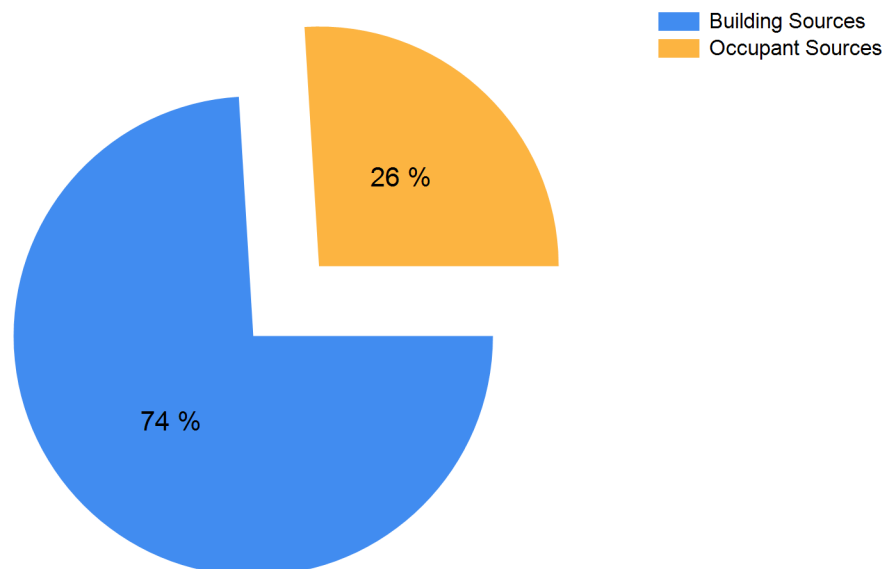
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	80	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	25	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	4	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	23	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.



## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	4	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.
	Personal Care and Cleaning Products	36	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	7	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.

## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	32	17	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	3	0.7	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	1	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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.

**Client Sample ID:** Front Level: Main Cafeteria  
**Laboratory ID:** 82690-1

**Client:** RTK Environmental Group  
29 Bank Street Suite 3  
Stamford, CT 06901

**Report Number:** 82690

**Sampled By:** David Roberts  
**Project:** - 24257  
**Location:** 141 Danbury Road  
Wilton, CT

---

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

---

**Client Sample ID:** Front Level: Main Cafeteria  
**Sample Volume (L):** 12.2  
**Date Sampled:** 11/24/2019  
**Sample Type:** TDT XX985  
**Sample Condition:** Acceptable

**Receive Date:** 11/26/2019  
**Approve Date:** 11/26/2019  
**Scan Date:** 11/26/2019  
**Report Date:** 12/02/2019

IAQ Commercial Survey™ is one of the most advanced, trusted air testing products on the market today for identifying chemical sources. Many indoor air quality (IAQ) issues identified by IAQ Commercial Survey can be easily remediated or eliminated. This test is an invaluable tool for improving air quality because it provides important information on potential contamination issues 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, creating a healthier environment.

## What's in your Indoor Air Quality Report?

Your Indoor Air Quality Report has several sections describing different aspects of your air quality.

- 1. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ. Typically, a lower TVOC means better IAQ in the sampled location.
- 2. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in the sampled location. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions for where these products and materials might be found. The CI is divided into two main sections: Building Sources and Occupant Sources. Building Sources are those that are typically part of the structure of the building and may be more difficult to reduce in the short term. Occupant Sources are those that the occupants bring into the building and can usually be more readily identified and remediated. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require investigation to determine the source of certain chemicals that are not accurately represented by the CI. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants should take note of this fact, and view IAQ as a continuous improvement process.
- 3. Significant VOCs:** listing of up to ten chemical compounds measured with the IAQ Commercial Survey test that are large contributors to the TVOC level or are indicative of specific types of products or problems. Reduction of these specific chemical compounds will substantially reduce the TVOC level and greatly improve the IAQ of the sampled location.
- 4. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Commercial Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics). Note that this list does not include all HAPs, only those that are included in the IAQ Commercial Survey analysis.

Prism Analytical Technologies, Inc., the creator of IAQ Commercial Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies, Inc. (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 Compound (TVOC) Summary

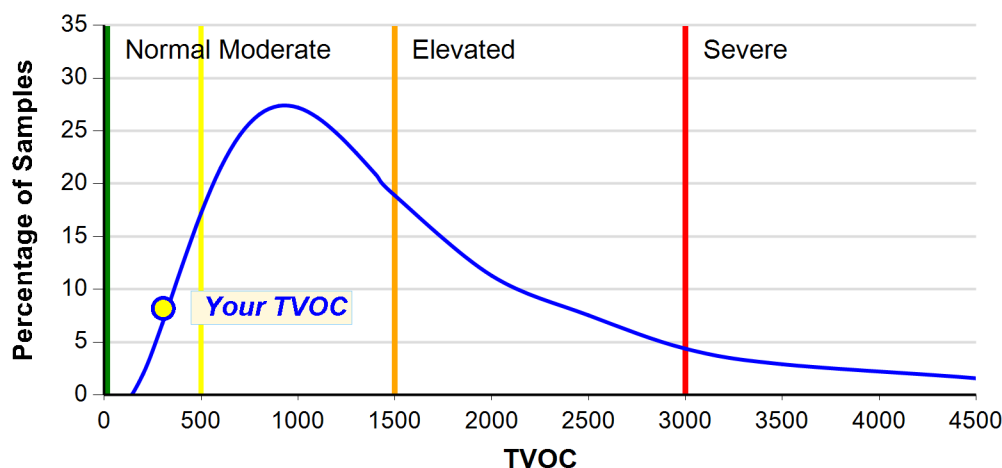
**Your TVOC Level is: 320 ng/L**

IAQ is acceptable for most individuals; chemically sensitive persons may require lower levels.

### Your Indoor Air Quality Level (Highlighted)

Normal	Moderate	Elevated	Severe
< 500 ng/L	500 - 1500 ng/L	1500 - 3000 ng/L	> 3000 ng/L

### 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 locations tested using IAQ 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 locations (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.

The U.S. federal government has not specified a TVOC limit for indoor air. However, the U.S. Green Building Council (USGBC) has recommended 500 ng/L as the upper TVOC limit. As the TVOC increases, the probability of adverse effects increases. The levels are based on observed health effects and have been determined from a combination of published journal articles (1, 2, 3) and the statistical distribution of TVOC concentrations from the IAQ Survey methodology.

The presence of chemicals in your sampled location can cause a wide range of problems, ranging from an unpleasant odor to physical symptoms (burning and irritation in the eyes, nose, and throat; headaches; nausea; nervous system effects; severe illness; etc.). In some cases, these conditions may make the location uninhabitable. Anyone with respiratory issues like asthma and allergies, as well as children, the elderly, and pregnant women are more susceptible to poor indoor air quality than healthy individuals. However, at higher TVOC levels even healthy individuals are likely to experience ill effects. The following websites can offer more information:

US EPA [Indoor Air Quality \(IAQ\)](#)  
American Lung Association [Healthy Air at Work](#)  
World Health Organization (WHO) [Guidelines for Indoor Air Quality](#)  
Lawrence Berkeley National Laboratory [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)

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 sampled location could be problematic for your IAQ and will provide some recommendations to help reduce or eliminate them.

1 L. Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Vol. 5, International Indoor Air Quality Conference, Toronto, Canada, 1990, p. 22 ff.  
2 European Collaborative Action: Indoor Air Quality and its Impact on Man (ECA-IAQ), Report No 19 Total Volatile Organic Compounds (TVOC) in Indoor Air Quality Investigations, 1997. (from L. Molhave et al., Total Volatile Organic Compound (TVOC) in Indoor Air Quality Investigation, Indoor Air 1997; 225-240.)  
3 T. Salthammer, Critical evaluation of approaches in setting indoor air quality guidelines and reference values, Chemosphere 82, 2011, 1507-1517.

## Contamination Index™

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in the sampled area. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your location compares to thousands of other locations, and provides some suggestions about which products and materials might be the source for the VOCs. The CI is divided into two main source groups: Building Sources and Occupant Sources.

1. Building Sources are those that are typically part of the structure of the building 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 or 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. Occupant Sources are those that the occupants of the building bring into the building and can usually be more readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building Sources.

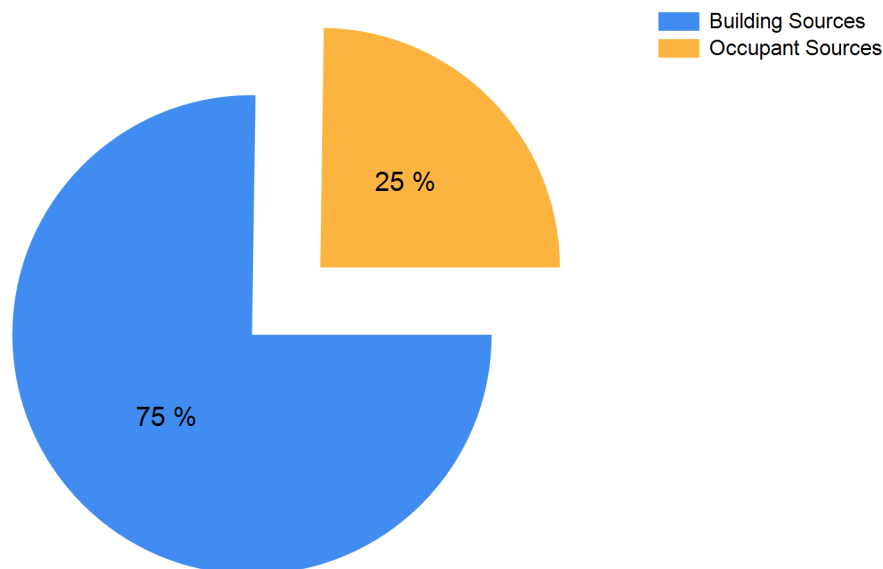
It is possible for a category listed in one source group to belong to another source group. For example, the 'Coatings' category is in the Building Sources group because the largest contribution is typically the paint on the walls, but cans of paint stored in a basement or storage area could be considered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

The CI categories comprise the most common sources but other products or activities may be present that are not included in the CI. The values assigned to each category are approximations based on typical office and commercial spaces. Locations with additional or atypical sources may require additional investigation to determine the source of certain chemicals that are not accurately represented by the CI.

Since there are potentially many sources of VOCs, buildings can often be re-contaminated even after sources have been removed because new products are constantly being brought into the building. Occupants 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 and materials in the sampled area 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 building and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Increased ventilation will help to reduce VOCs from construction or renovation sources. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Building Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	100	Normal	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 after application, sometimes longer. Ventilate as much as possible during and after application of any of these products. Dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. Additional sources include fuel oil or diesel fuel.
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	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	39	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers, small spills, and gas-powered equipment used in facilities maintenance in nearby garage or storage areas. Most vehicles in good operating condition do not emit gasoline vapors due to the tightly sealed gas tank. This category does not include exhaust emissions. Gasoline VOCs can linger on clothing after refueling at a gas station. Gasoline includes chemical compounds that are also included in the Light Solvents category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Typically found in garages and facilities maintenance areas. These fuels are not very volatile so they will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. This category does not include exhaust emissions. Additional sources include coatings such as paints, varnishes, sealants, waxes, etc.
	Light Hydrocarbons	6	Normal	Building materials; aerosol cans; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	20	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels, etc.); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.



## Contamination Index™ Occupant Sources

Use the Contamination Index (CI) below to help you find products and materials in the sampled area 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 building by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

Occupant Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Source Prediction & Suggestions for VOC Reduction
	HFCs and CFCs (Freons™)	3	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.
	Personal Care and Cleaning Products	46	Normal	Personal care products such as soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. Cleaning agents such as surface, window, and flooring products, also restroom and antibacterial products. These products contain many VOCs that will dissipate if use is discontinued or reduced.
	Odorants and Fragrances	7	Normal	Air fresheners, scented cleaning products, and scented personal care products.
	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.



## Significant VOCs

Based upon your specific air analysis, the chemical compounds listed below are significant contributors to the TVOC level reported on page 2 of your IAQ Commercial 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. Many of these chemical compounds are commonly found in office and commercial locations. However, locating and removing the source of the chemical compound is the most effective way to reduce the contribution of that chemical compound to the TVOC, which ultimately leads to improved IAQ. 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, the ventilation system in some locations may not be optimized so evaluate the ventilation system and make adjustments to increase the amount of fresh air. Filter or purify re-circulated inside air to help reduce the TVOC. Since VOCs may continue to off-gas even when the sources are stored, ventilation and air-purification methods will 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, in some cases exposure limits or other information may be described using one or both of these concentration units.

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	Description
Ethanol	64-17-5	38	20	Cleaners, especially antiseptic wipes; personal care; consumable alcohol; some solvents; renewable gasoline component; pharmaceuticals

The notes below indicate any additional significant compounds present in this air sample or other noteworthy 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 are included with the IAQ Commercial Survey VOC test. This list does not include all HAPs. The '<' (less than) symbol in the 'Estimated VOC Level' columns indicates the compound is below the reporting limit for this air sample and therefore can be considered absent from the 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	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon Disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	2	0.5	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	5	1	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	2	0.5	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

These results are authorized by the Laboratory Director or approved representative.

This analysis was performed by Prism Analytical Technologies, Inc. (Prism). The results contained in this report are dependent upon a number of factors over which Prism 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, and the compounds which make up the TVOC. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither Prism, 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.

## Lower Level (PD)

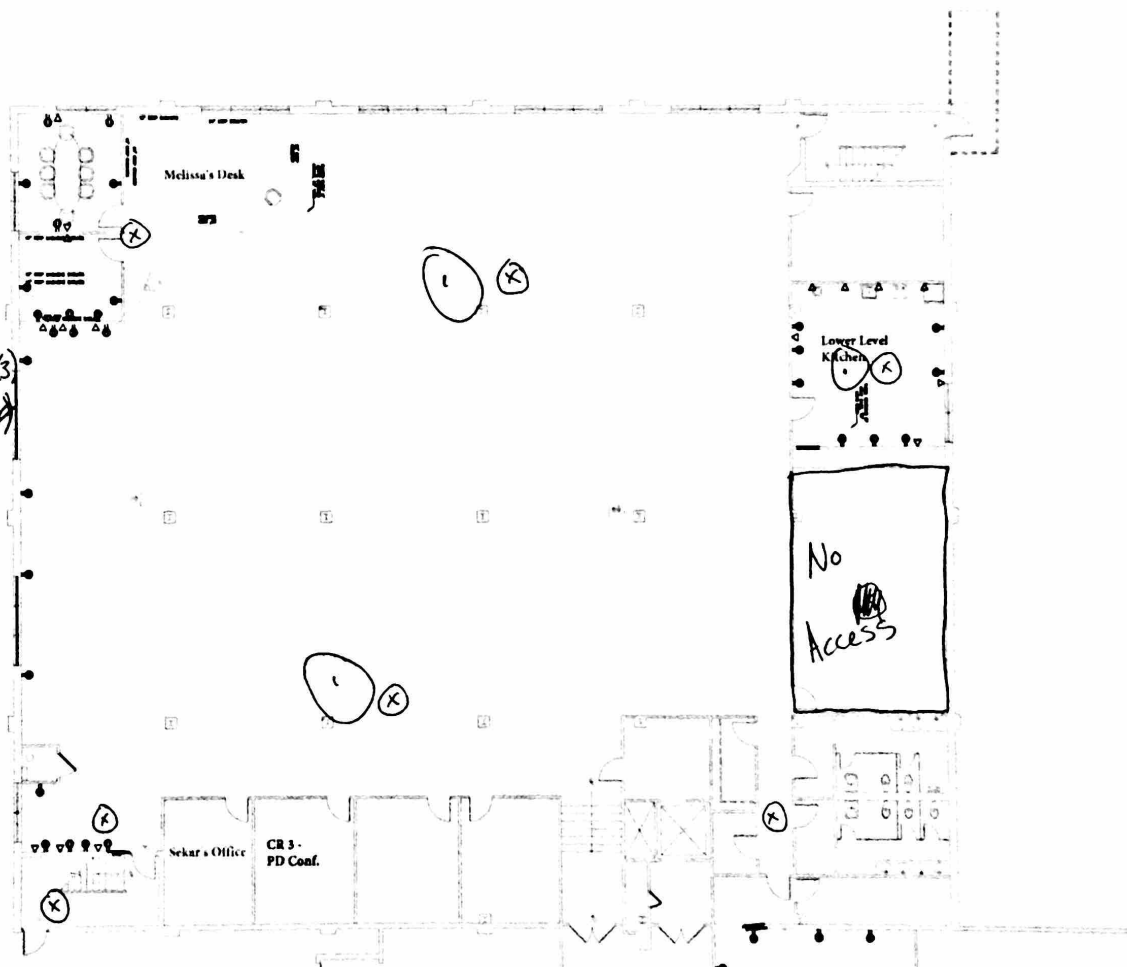
### Legend:

Office – Cannot be booked

General Resource

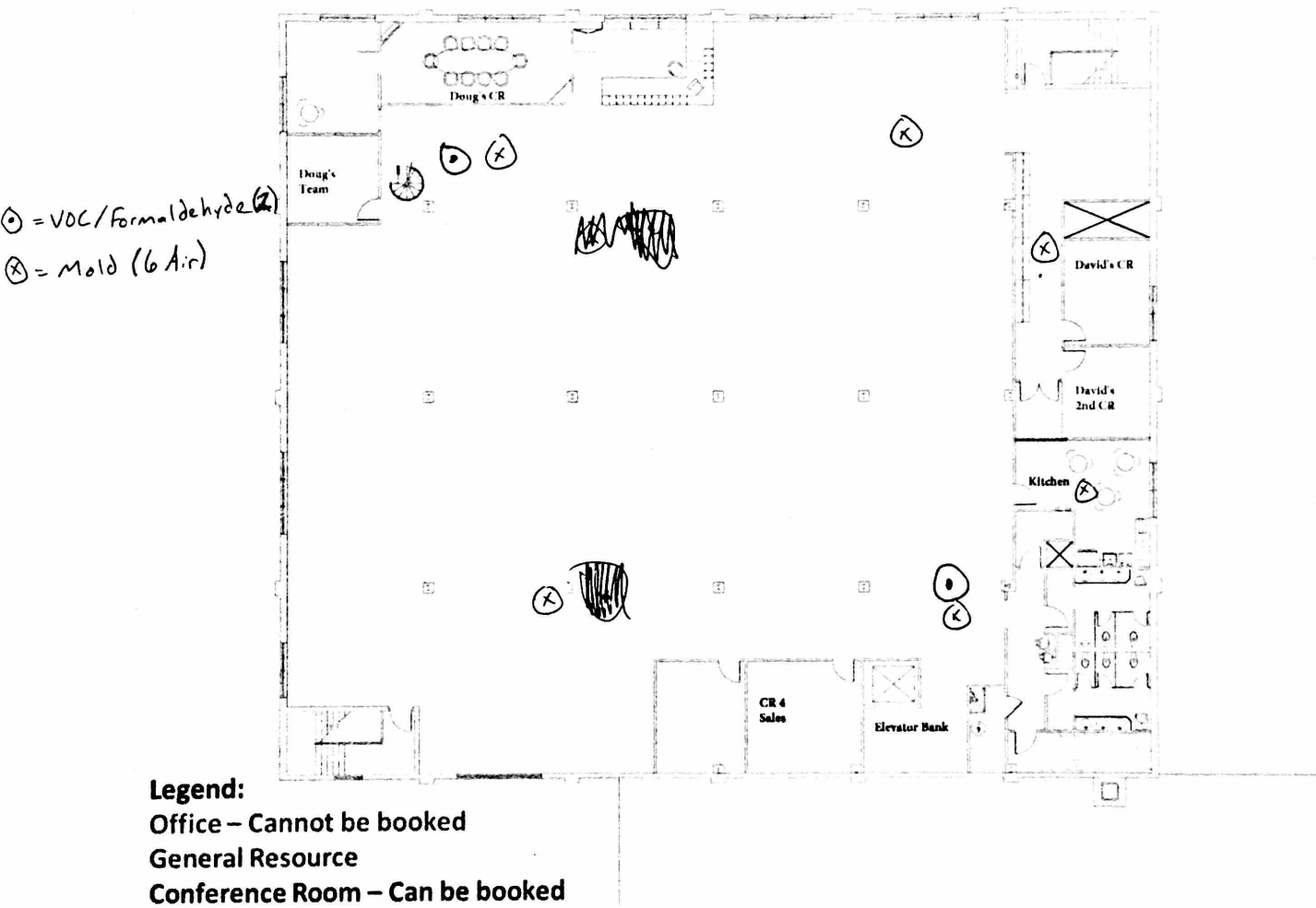
Conference Room – Can be booked

⊙ = VOC / Formaldehyde (3)  
 ⊗ = Mold ~~7.1~~ (7 A-r)



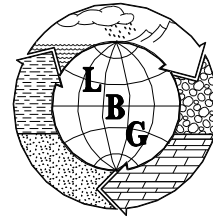


## 2nd Floor (Sales)



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## MEMORANDUM

Mr. Rocco D'Andraia

FR M Bill Beckman

A E September 13, 2012

EC Status of Soil and Action Options

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When we had last assessed the soil conditions, three areas were being examined: 1) the soil around the transformer pad; 2) the shallow interior soil; and 3) the soil in the location of the former UST.

### **ransformer ad**

Sampling completed in 2011 provided evidence that PCBs did not exceed applicable soil quality criteria around the transformer pad. As such, no further effort is needed in that area.

### **hallow Interior oil**

The plan had been to collect soil samples at locations around the location where several contaminants had been detected in a shallow soil sample in 2006. Due to limited accessibility which prevented use of equipment for drilling through the concrete floor, only one of the four samples could be collected. The one sample did not exceed applicable soil quality criteria. We reached an impasse when we could not identify a method to drill through the concrete at the desired, out-of-the-way locations. As such, the options for this area then include:

1. **Ma e Case for Closure sing E isting ata** – No more data would be collected. The case for closure would be argued using the existing data. The case will not be as strong as if information from all four of the locations had been obtained. As such, there is a higher potential of the CTDEEP requiring follow-up work after they have reviewed the results.
2. **Collect amples in E posed Areas** – The locations of the soil samples had been selected to minimize impact to the building and operations. Soil samples could be collected at alternative nearby locations, which would require lifting small sections of carpet to get to the concrete floor, and then repairing/replacing the carpet after the samples had been collected and the concrete floor restored. As these locations are in active work areas, the sampling would likely need to be done at night or on a weekend so as not to disturb operations. The information

from this work would result in a lower potential of the CTDEEP requiring follow-up work.

#### **Former      Location**

The 2006 investigation identified one location (TB-1) on the north end of the former UST which exceeded applicable soil quality criteria. The supplemental investigation in 2011 determined that soil to the west, north and east of the TB-1 location was also impacted to the point where applicable soil quality criteria were not met. Because the Pollutant Mobility Criteria is exceeded, it becomes necessary to reduce the concentrations of the contaminants to levels that are below the applicable quality criteria. As such, options that do not reduce the contaminant levels are not considered. Based on the results, the options for bringing this area into compliance include:

1. Excavation After Defining Extent of Impacts – In this option, soil samples would be collected to define the extent of the impacted soil prior to initiating excavation so that the excavation work can be completed in a short time and efficient manner.
2. Excavation and Check Soil Quality During Work – In this option, excavation would commence based on the current understanding of the extent of impacted soil. When the defined limits of the excavation are reached, excavation would cease, soil samples would be collected and analyzed in a laboratory, and based on the results, no further excavation would be done or additional excavation would be done in the locations where the soil samples did not meet applicable quality criteria. More excavation would be done in the direction of the samples which did not meet criteria. This cycle would be repeated until the soil at the edges of the excavation met the soil quality criteria.
3. Natural Attenuation - In this option, no actions are taken to reduce or eliminate the contaminants from the soil; letting natural processes degrade the contaminants over time. Because the results for the sample from TB-1C 7.5-8 are relatively high, a relatively long time is likely to be needed to achieve compliance. During that time, monitoring would be needed to track the progress of remediation by the natural processes. The monitoring would likely include annual collection of soil samples to document the effectiveness of the natural processes, along with the collection of one or two groundwater samples from nearby monitor wells to document that the impacted soil is not causing an impact on the groundwater. While this option has little up-front cost, over time, the monitoring costs have the potential to accumulate into a sizeable amount. For general planning purposes, the duration of this option could be 10 to 15 years.
4. Enhanced Natural Attenuation – This option is similar to that of Natural Attenuation, the difference being that biological nutrients are applied to the surface or shallow soil in order to improve the rate at which the target contaminants are degraded by the bioorganisms in the soil. This approach would reduce the total time and, therefore, the accumulated soil and groundwater monitoring cost. However, that cost reduction would need to be compared to the cost of purchasing and introducing the biological nutrients, along with the



increased cost associated with permits and additional monitoring when the nutrient chemicals are used. For general planning purposes, the duration of this option could be half that of the natural attenuation option without enhancement, or 5 to 7 years.

These options constitute the basic range of remedial options for bringing the soil into compliance. There are certainly a number of minor variations to the themes, but those are better considered if one of the basic options is of most interest. The total costs are expected to be somewhat similar – the excavation options having a high one time cost in a relatively short period, whereas the natural attenuation options have lower costs that accumulate over time. As working up detailed cost estimates is a more involved effort, we would be interested in knowing if there are options you are more interested in, or options you are not interested in, in order to focus such effort.

We would be pleased to discuss the information provided above or address any questions or comments you may have.