

Home Air Analysis For: Smith
Home Tested: 123 W. Maple Ave.
Boston, MA 25478

Sampling Professional: Alex Carter
Air Quality Inspections
1245 Main St. Suite B
Pleasantville, MA 84847
U.S.A.

Report Number: 6010

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

Order Date: 10/21/2020

Report Date: 11/04/2020

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

What's in your Indoor Air Quality Report?

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

- 1. Formaldehyde:** lists the concentration, severity, and some potential sources (separate submitted sample).
- 2. The Total Volatile Organic Compound (TVOC) level:** a general indicator of the IAQ in your home. Typically, a lower TVOC means better IAQ in your home.
- 3. The Total Mold Volatile Organic Compound (TMVOC) level:** an assessment of the actively growing mold in your home. Levels above 8 ng/L indicate that there is a source of actively growing mold in your home.
- 4. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in your home. Each CI category shows the approximate contribution of that category to the TVOC level, indicates how your home compares to thousands of other homes, and provides some suggestions for where these products and materials might be found. The CI is divided into 3 main sections: Building-Related Sources, Mixed Building and Lifestyle Sources, and Lifestyle Sources. Building-Related Sources are those that are typically part of the structure of the home and may be more difficult to reduce in the short term. Mixed Building and Lifestyle Sources are those that could belong to either category and investigation on your part may be necessary to determine which source is more likely. Lifestyle Sources are those that the occupants of the home bring into the home and can usually be readily identified and remediated. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time. Since there are potentially many sources of VOCs, homes can often be re-contaminated even after sources have been removed because new products are constantly being brought into the home. Home occupants and homebuyers should take note of this fact, and view IAQ as a continuous improvement process.
- 5. EPA Hazardous Air Pollutants (HAPs):** listing of the chemical compounds measured with the IAQ Home Survey test that are known or suspected to have serious health or environmental effects (also known as air toxics).
- 6. TDT Air Scan®:** comprehensive record of all compounds detected in the air sample above the listed reporting limit, including, but not limited to, those compounds contained in the Air Survey Analysis List (TB503, Rev. 15, Quantitative and Semiquantitative List).

Prism Analytical Technologies, the creator of IAQ Home Survey, has been performing air quality assessments to industry and environmental consultants since 1995. Prism Analytical Technologies (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. Reference VOCs methods NIOSH 2549 and Prism IAQHS.

Formaldehyde Sample

Client Sample ID: Basement
Sample Volume (L): 5.0
Date Sampled: 10/19/2020
Sample Type: TDT 112X

Laboratory ID: 6010-2

Scan Date: 10/23/2020

Formaldehyde Concentration: 35 ng/Lng/L (28 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.

Formaldehyde Exposure Limits

The National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 parts per billion). The Occupational Health and Safety Administration (OSHA) has set a **workplace permissible exposure limit (PEL)** of 936 ng/L (750 parts per billion). For more information on exposure limits, see this report about [Environmental Health](#).

Because of the number and range (from a few ppb to almost one ppm) of published exposure limits, the levels displayed above are based on the statistical distribution of concentrations Prism has gathered from homes rather than exposure limits.

Formaldehyde Sources

The main sources of formaldehyde are composite or engineered wood products that contain urea-formaldehyde (UF) resins (e.g., particleboard, hardwood plywood paneling, medium density fiberboard). Products that contain phenol-formaldehyde (PF) resin also emit formaldehyde but at lower concentrations (e.g., softwood plywood, flake or oriented strand board). Formaldehyde is also present in other building products such as pre-finished engineered flooring, insulation, glues and adhesives, and paints and coatings, as well as textiles, disinfectant cleaning products and soaps, preservatives, cosmetics, some air fresheners, pet care products, bactericides and fungicides. Formaldehyde is also a byproduct of many combustion processes, such as tobacco smoke and fuel-burning appliances (gas stoves, kerosene space heaters and fireplaces).

The resources listed below provide additional information about formaldehyde.

US Environmental Protection Agency

<http://www.epa.gov/iaq/formaldehyde.html>

<http://www.epa.gov/ttn/atw/hlthef/formalde.html>

Agency for Toxic Substances and Disease Registry (ATSDR)

<http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=219&tid=39>

National Institutes of Health (NIH)

http://www.niehs.nih.gov/health/materials/fact_sheet_formaldehyde.pdf

http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=14

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2855181/>

Note: This analysis was performed using the Hantzsch 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.

VOC Sample

Client Sample ID: Basement
Sample Volume (L): 24.0
Date Sampled: Sample 10/19/2020
Type: TDT 112J

Client Sample ID: Basement
Laboratory ID: 6010-1
Scan Date: 10/23/2020

Total Volatile Organic Compound (TVOC) Summary

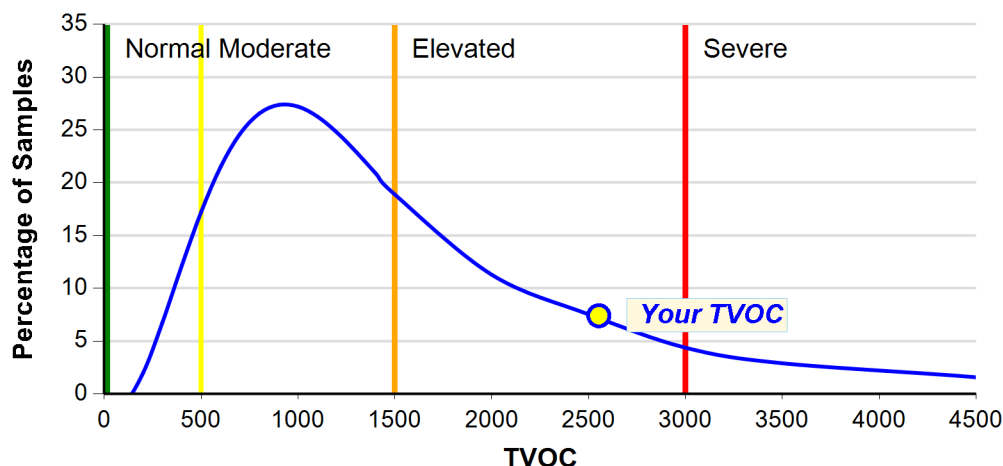
Your TVOC Level is: 2500 ng/L

IAQ needs improvement; effect on occupants is possible; reduce potential sources and increase ventilation.

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 homes tested using IAQ Home Survey, results for this air sample are not displayed on the chart. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TVOC level (indicated on the horizontal x-axis). The green, yellow, orange, and red vertical bars represent divisions between Normal, Moderate, Elevated, and Severe TVOC levels. As the TVOC value increases, individuals may experience aggravated health problems, and therefore, the need to address VOC issues becomes more critical. However, reductions in VOCs can be made at any level.

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 home 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 home unlivable. 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: <http://www.epa.gov/iaq/>

American Lung Association: <http://www.lung.org/healthy-air/home/>

World Health Organization: <http://www.euro.who.int/en/what-we-do/health-topics/environment-and-health/air-quality/policy/indoor-air-quality>

Lawrence Berkeley National Laboratory: <http://www.iaqscience.lbl.gov/voc-introduction.html>

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.

Total Mold Volatile Organic Compound (TMVOC) Summary

Client Sample ID: Basement
Laboratory ID: 6010-1

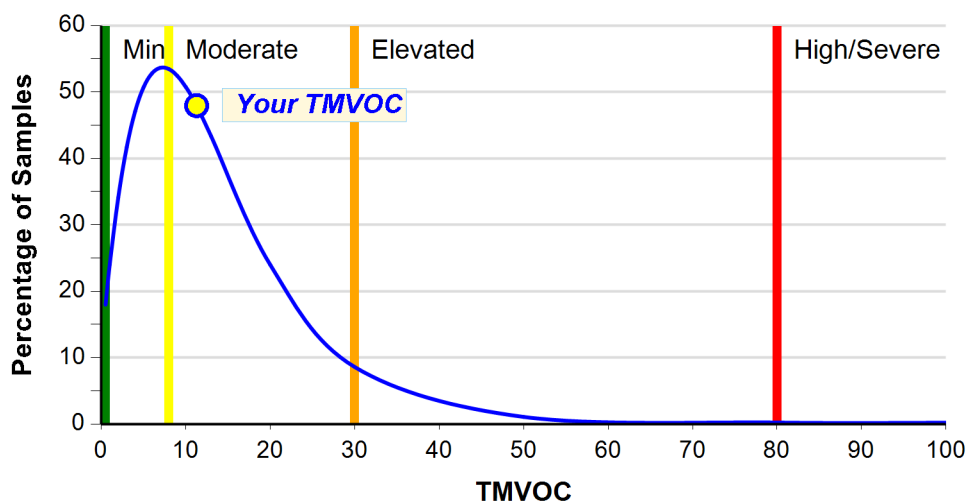
Your TMVOC Level is: 11 ng/L

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

Your Active Mold Level (Highlighted)

Minimal	Active-Moderate	Active-Elevated	Active-High	Active-Severe
< 8 ng/L	8 - 30 ng/L	30 - 80 ng/L	80 - 150 ng/L	150 + ng/L

**All IAQ Survey TMVOC
Active Mold Growth Indicator**



**The average TMVOC is
10 ng/L**

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

The chart above shows the TMVOC level for all homes tested using IAQ Home Survey, results for this air sample are not displayed on the chart. The blue curved line represents the relationship between the percentage of homes (indicated on the vertical y-axis) and the TMVOC level (indicated on the horizontal x-axis). For example, a TMVOC of 20 ng/L is reported in ~20% of the samples. The green, yellow, orange, and red vertical bars represent divisions between Minimal, Moderate, Elevated, and High/Severe TMVOC levels.

Molds are fungi that grow in the form of multicellular filaments called hyphae that spread to form a network or colony called mycelium. There are thousands of known species of molds, although a much smaller number of mold species are commonly found in indoor environments.

Molds can affect humans and animals in their vicinity in several ways. The most commonly known aspect of molds is the spores they produce as their primary means of reproduction. Spores are released from the mature mold body and spread by air currents and on people, animals, or materials that travel from place to place. These spores can remain viable for a long time until they find a suitable environment and grow to form new colonies. In addition to spores, mycotoxins can also be released under certain situations. Mycotoxins are chemicals that are produced during certain parts of the mold life cycle and can evoke a toxic response (e.g., severe allergic reactions and respiratory irritation and exacerbation of asthma symptoms or other respiratory ailments) in humans and animals. Mycotoxins have low volatility, meaning they have relatively low concentrations in air, so contact or ingestion rather than inhalation is often the main route of exposure for these chemicals.

Finally, mold VOCs (MVOCs) are produced during the metabolic or digestive processes of molds and therefore can be used as an indicator of actively growing mold. When mold is in an inactive or dormant state it does not produce many MVOCs and so cannot be used as an indicator of inactive mold. There are a number of factors that can affect the production and movement of MVOCs, including but not limited to the genus/ species, ventilation rates, temperature, humidity, growth surfaces, and competition from other molds. These factors make determination of the genus/species of mold very difficult so the presence of MVOCs indicates active mold growth but not the genus/species of the mold.

Total Mold Volatile Organic Compound (TMVOC) Summary

Mold can grow anywhere that satisfies four primary conditions.

1. Presence of mold spores – spores are everywhere and it is very difficult if not impossible to remove them completely.
2. Appropriate growth surface or nutrient source – molds are adaptable and can grow on almost any surface; many molds especially like cellulose-based materials (e.g., wood, drywall, insulation, cardboard, paper, carpet, etc.).
3. Appropriate temperature – although many molds grow best in warmer temperatures, given enough time mold can grow at almost any temperature condition.
4. Water – this is the most significant and most important criteria since the other conditions are too commonly available to be controlled. The consensus of most organizations with a perspective on air quality (e.g., WHO, EPA, AIHA, ASHRAE, etc.)^a is that controlling moisture and dampness is the only way to consistently control or limit mold growth.

Mold Sources

Since there are so many possible locations that mold can grow, it can be difficult to locate without visual indicators. However, there are some potential locations where molds are often found, as listed here.

- Air conditioning units or drain lines
- Near plumbing leaks
- Near roof or wall leaks
- Basement water intrusion from surrounding soil
- Any consistently humid area
- Near condensation around windows or any other condensation locations like exterior walls (typically where there is a temperature gradient that allows water to condense)
- Freezer/refrigerator door seals, especially in summer
- Freezer/refrigerator drain line and drip pan (if present)
- Indoor plants
- Empty beverage containers and glasses, especially if left for trash or recycling without being rinsed out
- Wastebaskets and trash cans containing discarded food or wet items
- Sump pumps, especially when the pump does not cycle often
- Stand pipes and traps
- Books, magazines, and newspapers if they have gotten wet or sit for a long time
- Outside mold, especially if the air intake is near the ground and landscaping near the home uses wood chips or mulch

Typically, if there is no plumbing leak, condensation, or water intrusion into the home, there will not be a mold problem. If active mold growth is indicated, the first step in fixing the problem is to find and repair the water intrusion or moisture build up.

Some new or extensively renovated homes can have high MVOC results. Additional dampness is often introduced into a new home during the construction process (e.g., newly installed cement) and can lead to optimal mold growth conditions. Also, some building materials may have mold growth on them when they are installed due to exposure to water before installation. It is strongly recommended that new homes or those with extensive renovation undergo a drying process to eliminate or reduce the potential for mold growth.

Total Mold Volatile Organic Compound (TMVOC) Summary

MVOC Interpretation

As described above, the TMVOC value is an assessment of the quantity of actively growing mold in your home. Like TVOC, no government unit or organization has specified limits for TMVOC. The levels below describe the effects individuals exposed to these TMVOC values may experience. These levels are qualitative estimates of possible effects experienced by healthy individuals. Sensitive individuals or those with chronic or respiratory issues may experience effects at much lower levels. Mold may be visible on a surface but in an inactive state resulting in little or no production of MVOCs. Regardless of the TMVOC result if mold is visible it should be removed since molds may still produce spores or mycotoxins in an inactive state and new exposure to water or moisture can initiate new mold growth. Since MVOCs are VOCs, they can be affected by the same environmental conditions that affect other VOCs. Primarily lower temperature and higher air flow or ventilation will reduce MVOC concentrations. Any water or moisture issues should be addressed quickly to limit the potential for mold growth.

These levels were determined empirically through interaction with air quality professionals regarding the reported health effects experienced by individuals exposed to actively growing mold.

TMVOC (ng/L)	Level	Description
< 8	Minimal or Ambient	Actively growing molds may be present, but are at or below levels found in most homes (i.e., these levels could be considered ambient or background).
8 - 30	Active - Moderate	Actively growing molds are present, but are at levels which typically only affect people sensitive to molds. Investigate possible water or moisture sources. See Mold Sources
30 - 80	Active - Elevated	Significant levels of actively growing molds are present; reactions or symptoms are probable. See Mold Sources
80-150	Active - High	High levels of actively growing molds are present; high probability that all occupants will be affected; take immediate action to locate and remove mold. See Mold Sources
> 150	Active - Severe	Excessive levels of actively growing molds are present; all occupants will be affected; take immediate action to locate and remove mold. See Mold Sources

Additional Information about Mold

^{3a} World Health Organization (WHO):
[WHO Guidelines for Indoor Air Quality – Dampness and Mold](#)

US Environmental Protection Agency (EPA):
[Molds and Moisture](#)
[A Brief Guide to Mold, Moisture, and your Home](#)

American Industrial Hygiene Association (AIHA)
[Position Statement on Mold and Dampness](#)

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE):
[Limiting Indoor Mold and Dampness in Buildings](#)
(Position Documents; click on Limiting Indoor Mold and Dampness in Buildings)

Client Sample ID: Basement
Laboratory ID: 6010-1

Contamination Index™

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

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

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

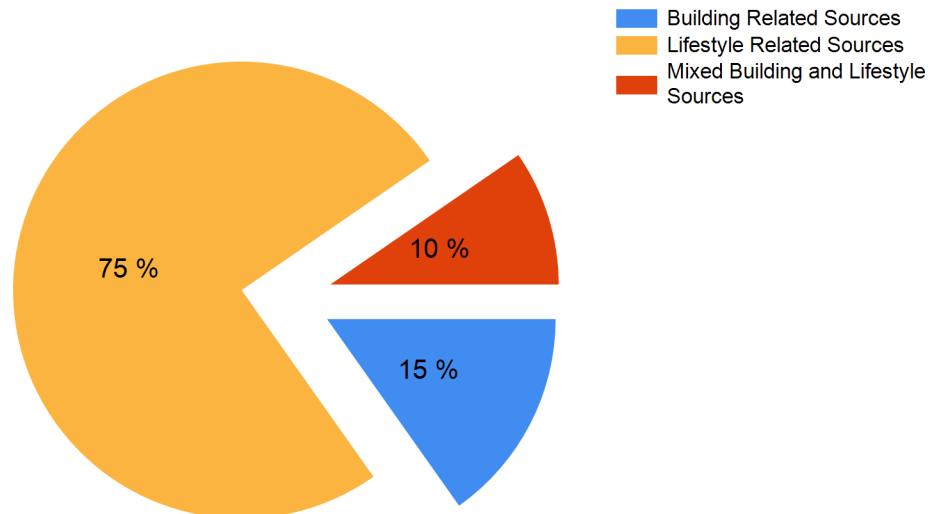
3. Lifestyle Sources are those that the occupants of the home bring into the home and can usually be readily identified and remediated. Recent construction or renovation can often contribute to other source categories in addition to Building-Related Sources.

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

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

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

Contamination Index Source Groups



Client Sample ID: Basement
Laboratory ID: 6010-1

Contamination Index™ Building Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically part of the structure of the home and may be more difficult to reduce in the short term. Recent construction or renovation will often cause these categories to be elevated. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Building Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Coatings (Paints, Varnishes, etc.)	350	Moderate	Includes interior and exterior paints (including low- or no-VOC paints), varnishes, lacquers, some sealants, and other products that can be classified as a coating over a surface. Typically, VOCs from these products are in the 10 to 14 carbon size range and can linger for several months, sometimes longer. Ventilate as much as possible during and after application of these products and dispose of opened but unused products and related supplies if possible or store in areas that will minimize off gassing. There is some overlap between chemical compounds associated with 'Coatings (Paints, Varnishes, etc.)' and those found in 'Fuel Oil, Diesel Fuel, Kerosene.'
	PVC Cement	0	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	HFCs and CFCs (Freons™)	2	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.

Client Sample ID: Basement
Laboratory ID: 6010-1

Contamination Index™ Mixed Building and Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories could belong to either the Building or Lifestyle groups so additional investigation may be necessary to determine which source is more likely. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Mixed Building and Lifestyle Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Building Materials-Toluene Based	0	Normal	Adhesives and glues used in construction and maintenance, arts and crafts; adhesive removers; contact cement; sealants; coatings (paint, polyurethane, lacquer, thinner); automotive products, including parts cleaners. Additional sources include gasoline and other fuels.
	Gasoline	61	Normal	VOCs from gasoline are typically a result of off-gassing from gas containers and gas-powered equipment such as lawnmowers, snow blowers, mini-bikes, etc. that are stored in attached garages or basements. Does not include exhaust emissions. These items should be stored externally to the home. Additionally, gasoline VOCs can linger on clothing after refueling an automobile at a gas station. Gasoline includes chemical compounds that are also included in the 'Light Solvents' category.
	Fuel Oil, Diesel Fuel, Kerosene	0	Normal	Often found in garages and basements. These fuels are not very volatile so will not readily get into the air, but they can linger for a long time and produce a strong, unpleasant odor. Does not include exhaust emissions. There is some overlap between chemical compounds associated with 'Fuel Oil, Diesel Fuel, Kerosene' and those found in 'Coatings (Paints, Varnishes, etc.).'
	Moth Balls (Naphthalene Based)	0	Normal	Naphthalene based moth balls. May be present with p-Dichlorobenzene-based moth crystals.
	Moth Crystals (p-Dichlorobenzene Based)	1	Normal	p-Dichlorobenzene based moth crystals. May be present with Naphthalene-based moth balls.
	Light Hydrocarbons	130	Normal	Building materials; aerosol cans; fuel for cooking/camping/lighters; LPG; refrigerant; natural gas; propellant; blowing agent. Includes chemical compounds such as propane, butane, and isobutane.
	Light Solvents	30	Normal	Stoddard solvent; mineral spirits; some coatings (paints, varnish, enamels); wax remover; adhesives; automotive products; light oils. Typically, VOCs from these products are in the 6 to 9 carbon size range.
	Methylene Chloride	1	Normal	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide.

Client Sample ID: Basement
Laboratory ID: 6010-1

Contamination Index™ Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. Removing or reducing these products will improve your air quality. The concentrations reported here are approximate and may not add up to the TVOC value on page 2 of this report. These categories are typically brought into the home by the occupants and can often be readily identified and removed or contained. Levels indicated as Elevated, High, or Severe should be immediately addressed, and those listed as Moderate are areas that can be improved over time.

Lifestyle Related Sources	Contamination Index Category	Estimated VOC Level (ng/L)	Severity	Description and Suggestions for VOC Reduction
	Personal Care Products	450	Moderate	Soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. These products contain many VOCs that will dissipate if use is discontinued or reduced. Consider storing these products in a closed container when not in use, and dispose of unused products. Also, run an exhaust fan or open a window when using these products.
	Alcohol Products	1100	High	Household cleaning products, antiseptic wipes, hand sanitizers, some solvents, reed diffusers, consumable alcohol, and some pharmaceuticals. These concentrations will be reduced by removing unnecessary products or proper storage of those materials in closed airtight containers. Promptly rinse empty alcoholic beverage containers and place outside if possible. Consolidate cleaning products to the essentials. Consider switching to alternative methods of cleaning and sanitizing, e.g., baking soda, vinegar, borax, steam, etc., and ventilate the area during and after cleaning. Alcohol can also be found in some building materials, consider recent renovations/construction as a possible source.
	Odorants and Fragrances	180	Moderate	VOCs in this category can be found in scented candles, potpourri, air fresheners, scented cleaning products, and scented personal care products. Reduce use of scented products and store unused products in a tight fitting container.
	Dry Cleaning Solvents	0	Normal	Typical dry-cleaning methods employ the use of carcinogenic chemicals. Dry-cleaning should be allowed to vent outside, without plastics bags, before being placed inside.
	Medicinals	0	Normal	Ointments and creams, topical first aid/pain relievers.

TDT Air Scan®

Client Sample ID: Basement
Laboratory ID: 6010-1

The TDT Air Scan analysis is a comprehensive listing of all compounds detected in the air sample above the listed reporting limit, including, but not limited to, those compounds contained in the Air Survey Analysis List (TB503 Quantitative and Semiquantitative List).

Compound	CAS	Sample Concentration		Reporting Limit	Additional Information
		ng/L	ppb	ng/L	
Total VOCs as Isobutylene		2500	1100	0	Total volatile organic compounds calculated as isobutylene using internal standard ratio; does not include C1, C2, or methanol.
Quantitative Results					
Compound	CAS	Sample Concentration		Reporting Limit	Additional Information
		ng/L	ppb	ng/L	
Ethanol	64-17-5	1100	570	2.1	J*
Acetone	67-64-1	37	15	2.1	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.5	0.07	0.2	
Isopropanol	67-63-0	200	79	2.1	J*
Carbon Disulfide	75-15-0	0.6	0.2	0.2	
Acetonitrile	75-05-8	0.7	0.4	0.2	
Methylene Chloride	75-09-2	0.6	0.2	0.2	
Hexane (C 6)	110-54-3	0.3	0.1	0.2	
Ethylacetate	141-78-6	12	3.4	0.2	
Chloroform	67-66-3	0.9	0.2	0.2	
Cyclohexane	110-82-7	0.3	0.08	0.2	
Carbon Tetrachloride	56-23-5	0.5	0.07	0.2	
Benzene	71-43-2	0.7	0.2	0.2	
1,2-Dichloroethane	107-06-2	0.8	0.2	0.2	
Isooctane	540-84-1	0.6	0.1	0.2	2,2,4-Trimethylpentane
4-Methyl-2-pentanone	108-10-1	1.1	0.3	0.2	Methyl isobutyl ketone (MIBK)
Toluene	108-88-3	3.7	1	0.2	
Ethylbenzene	100-41-4	1.3	0.3	0.2	
m,p-Xylene	108-38-3; 106-42-3	3.3	0.7	0.4	
o-Xylene	95-47-6	1.6	0.4	0.2	
Styrene	100-42-5	14	3.2	0.2	

Quantitative Results

Compound	CAS	Sample Concentration		Reporting Limit	Additional Information
		ng/L	ppb	ng/L	
n-Propylbenzene	103-65-1	0.3	0.07	0.2	
4-Ethyltoluene	622-96-8	0.4	0.07	0.2	
1,3,5-Trimethylbenzene	108-67-8	0.5	0.1	0.2	
1,2,4-Trimethylbenzene	95-63-6	2.1	0.4	0.2	
Pentachloroethane	76-01-7	0.3	0.04	0.2	
p-Isopropyltoluene	99-87-6	3.7	0.7	0.2	
1,4-Dichlorobenzene	106-46-7	0.7	0.1	0.2	

Semiquantitative Results

Compound	CAS	Sample Concentration		Reporting Limit	RI	Additional Information
		ng/L	ppb	ng/L		
Propylene	115-07-1	5	3	4	332	
Dimethyl ether	115-10-6	150	79	4	356	
Isobutane	75-28-5	24	10	4	359	
Butane (C 4)	106-97-8	110	44	4	384	
Acetaldehyde	75-07-0	62	34	4	399	
2-Methylbutane	78-78-4	5	2	4	447	
Methylacetate	79-20-9	13	4	4	525	
Cyclopentane	287-92-3	10	3	4	537	
Acetic Acid	64-19-7	19	8	4	624	L*
Pentanal	110-62-3	5	1	4	669	
Hexanal	66-25-1	23	6	4	753	
2-Butoxyethanol	111-76-2	10	2	4	840	
a-Pinene	80-56-8	70	12	4	847	
Decane (C 10)	124-18-5	5	0.8	4	881	
C9-C11 Hydrocarbon	N/A	29	N/A	4	883	Appears to be 2,2,4,6,6-pentamethylheptane (CAS 13475-82-6)
B-Pinene	127-91-3	15	3	4	886	
C9-C11 Hydrocarbon	N/A	16	N/A	4	905	A terpene
C9-C11 Hydrocarbon	N/A	4	N/A	4	913	
Limonene	138-86-3 or 5989-27-5	43	8	4	921	Limonene (CAS 138-86-3) or d-Limonene (CAS 5989-27-5)

Semiquantitative Results

Compound	CAS	Sample Concentration		Reporting Limit		Additional Information
		ng/L	ppb	ng/L	RI	
C10-C12 Hydrocarbon	N/A	5	N/A	4	928	A terpene
2-Ethyl-1-hexanol	104-76-7	10	2	4	934	
Undecane (C 11)	1120-21-4	5	0.7	4	954	
C10-C12 Hydrocarbon	N/A	5	N/A	4	961	Contains oxygen; appears to be 2,6-dimethyl-7-octen-2-ol (18479-58-8)
Linalool	78-70-6	5	0.8	4	977	
Nonanal	124-19-6	6	1	4	978	
Menthol	89-78-1 or 1490-04-6	7	1	4	1027	
C12-C14 Hydrocarbon	N/A	5	N/A	4	1045	Contains oxygen; appears to be linalyl acetate (CAS 115-95-7)
C14-C16 Hydrocarbon	N/A	12	N/A	4	1077	Appears to be 2,2,4,4,6,8,8-heptamethylnonane (CAS 4390-04-9)
Texanol-B	74367-34-3	5	0.5	4	1125	

Compound Notes

J* The accuracy of this determination may be degraded because the reported value exceeded the calibrated range by more than a factor of 10.

EPA Hazardous Air Pollutants (HAPs)

Client Sample ID: Basement
Laboratory ID: 6010-1

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 reported in this air sample, this list does not include all HAPs. 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](#).

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Methylene Chloride	75-09-2	0.6	0.2	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Benzene	71-43-2	0.7	0.2	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	0.8	0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Toluene	108-88-3	3.7	1	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Ethylbenzene	100-41-4	1.3	0.3	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	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	1.6	0.4	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	14	3.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	0.7	0.1	Carcinogen	Moth balls/crystals; room deodorant

These results pertain only to this sample as it was collected and to the items reported.

These results have been reviewed and approved by the Laboratory Director or authorized representative.



Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

This analysis was performed by Prism Analytical Technologies (Prism). 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. 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, the compounds which make up the TVOC, and/or the type of mold(s) present. Therefore, the opinions contained in this report may be invalid and cannot be considered or construed as definitive and neither 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.

© Copyright 2020, Prism Analytical Technologies, All rights reserved.