

OF INFORMATION ACT (FOIA), 5 U.S.C.552(B)(6)

From: [REDACTED]
To: [EVOO \(NHTSA\)](#)
Subject: Re: Follow up to ODI Complaint -----11360263 -----
Date: Sunday, February 28, 2021 4:31:00 AM
Attachments: [REDACTED]

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

NHTSA - Hi my complaint below is accurate to that point in time. Since then... Winnebago said they would commission a chemical safety test due to my complain and the results of the chemical safety test I performed and then they said they would not be conducting a test even though my test showed off the chart levels of VOC separate from a the independent formaldehyde test I had run.

I have attached here copies of the tests I had ran and screenshots from Winnebago saying they would run a test then saying they would not. They have since ignored my attempts to communicate.

I have also had an extensive amount of repetitive service issues on this coach in less than a year and am willing to provide all the service records at your request.

2:30

LTE



26

Attn:

19 Messages



Found in Personal Inbox



Winnebago Motorhome Custod... 9/14/20

To:



Good Morning

What is the availability if we were to have the coach inspected by an Industrial Hygienist? Is the coach currently with you in Orem, UT? We are working on lining something up, thanks!

Kind Regards,

Chris

WINNEBAGO
MOTORHOMES

CUSTOMER CARE SPECIALIST

(800) 537-1885 | customercare@wgo.net

2:29

LTE



26

Attn: [REDACTED]



Found in Personal Inbox



Winnebago Motorhome Custo... 9/30/20

To: [REDACTED]



Good Morning [REDACTED]

After reviewing your case further it has been determined we will not be performing the air quality test on your coach. Let us know of any further questions you may have. Thank you.

Kind Regards,

Chris

WINNEBAGO
MOTORHOMES™

CUSTOMER CARE SPECIALIST

(800) 537-1885 | customer care@wgo.net

On Oct 22, 2020, at 8:39 AM, EVOQ (NHTSA) <EVOQ@dot.gov> wrote:

Please see the attached copy of your recent complaint and instructions. Please make any necessary edits and return via email to dataquality@dot.gov or fax to (202) 366-1767. Due to the volume of complaints we receive and our

limited resources, we cannot respond to every complaint.

NHTSA/Office of Defects Investigation

[REDACTED] >



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Home Air Analysis For: [REDACTED]
Home Tested: [REDACTED]
Wyoming, MN [REDACTED]
US

Report Number: [REDACTED]

Order Date: 07/21/2020
Scan Date: 07/21/2020
Report Date: 07/23/2020

Client Sample ID: Bedroom and Kitchen
Sample Volume (L): 36
Date Sampled: 07/17/2020
Sample Type: [REDACTED]
Sample Condition: Acceptable

Location/Notes:

Chemical smells coming through the wall of our new RV that is making us sick. Smells like spray paint and causing breathing issues; dizziness; nausea and other issues.

Thank you for using Home Air Check!

If you have questions about your report,
please contact customerservice@homeaircheck.com

Home Air Check™ is the most advanced, trusted air testing product on the market today for identifying chemical and mold contamination in a home. Many indoor air quality (IAQ) issues identified by Home Air Check can be easily remediated or eliminated. This test is an invaluable tool for homeowners and renters because it provides important information on potential contamination issues in the home that cannot be detected by sight 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. 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.
- 2. The Total Mold Volatile Organic Compound (TMVOC) level:** an assessment of the quantity of actively growing mold in your home. Levels above 8 ng/L indicate that there is a source of actively growing mold in your home.
- 3. The Contamination Index™ (CI):** shows the types of air-contaminating products and materials that are present in your home. Each CI category 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: Lifestyle Sources, Building Sources, and Mixed Building and Lifestyle Sources. Lifestyle sources are those that the occupants of the home bring into the home and can usually be easily remediated and eliminated. 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. Levels indicated as Elevated 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 should take note of this fact, and view IAQ as a continuous improvement process and plan to re-test the home every 6-12 months (more often if health issues exist).
- 4. Additional Resources:** listing of various government, health, and consumer organization websites where home occupants can go to find more information on VOC and mold contamination, the sources of contamination, and the possible chemical compounds contained therein. In addition, one may be able to find further suggestions for dealing with the contamination and the next steps for improving air quality.

Prism Analytical Technologies, Inc., the creator of Home Air Check, 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.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Total Volatile Organic Compound (TVOC) Summary

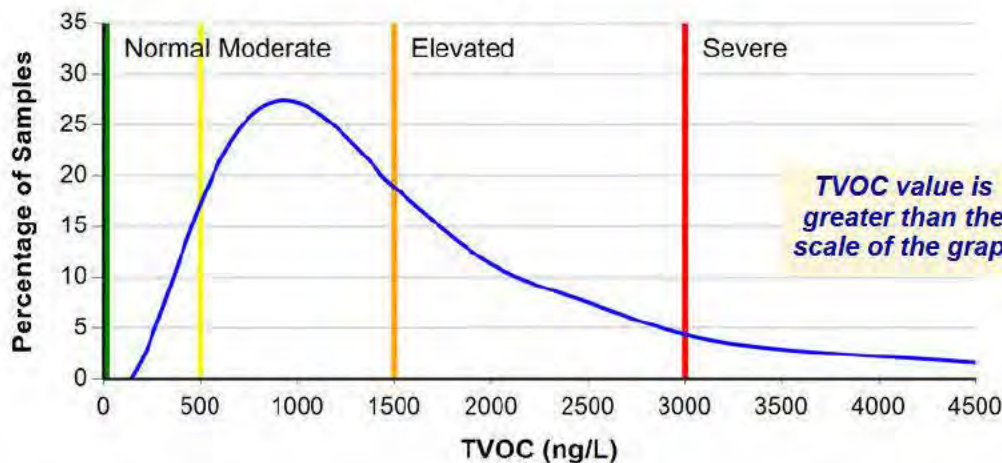
Your TVOC Level is: 6200 ng/L

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

Your Indoor Air Quality Level (Highlighted)

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

**All Home Air Check 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 Home Air Check. Results for this air sample are displayed on the chart as a yellow circle. The blue 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. At the Normal level, non-chemically sensitive individuals should not experience issues because of VOCs. As the TVOC value increases into the Moderate, Elevated, or Severe levels, 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. TVOC levels below 500 ng/L indicate that the IAQ is acceptable for most individuals; however, chemically sensitive persons may require lower levels. TVOC levels between 500 and 1,500 ng/L indicate that the air quality is marginal and some effect on the occupants is possible. Levels above 1,500 ng/L indicate that your IAQ should definitely be improved.

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 elevated 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 Home](#)
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 home could be problematic for your IAQ, and will provide some recommendations to help reduce or eliminate them.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Total Mold Volatile Organic Compound (TMVOC) Summary

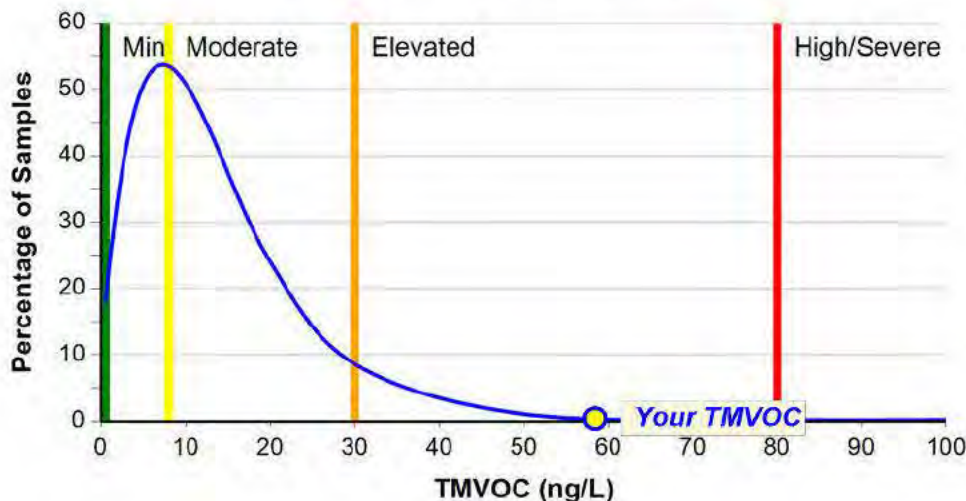
Your TMVOC Level is: 58 ng/L

Significant levels of actively growing molds are present; reactions or symptoms are probable.

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 Home Air Check 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 Home Air Check. Results for this air sample are displayed on the chart as a yellow circle. The 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, High and Severe TMVOC levels.

Molds are fungi that grow and spread to form a network or colony. 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 mold 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.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Total Mold Volatile Organic Compound (TMVOC) Summary

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 building uses wood chips or mulch

Typically, if there is no plumbing leak, condensation, or water intrusion into the building, 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 buildings can have high MVOC results. Additional dampness is often introduced into a new building 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 buildings or those with extensive renovation undergo a drying process to eliminate or reduce the potential for mold growth.

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](#)

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)



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Contamination Index™ Overview

The Contamination Index™ (CI) shows the types of air-contaminating products and materials that are present in your home and provides some suggestions for where these products and materials might be found, as well as actions you can take to reduce VOC levels in your home. Typically, removing or reducing these products is the best way to improve your air quality. Additional ventilation or use of appropriate air purifiers will decrease VOC levels in your home but will not eliminate VOC problems. The CI is divided into three main source groups: Lifestyle Sources, Building Sources, and Mixed Building and Lifestyle Sources.

The CI classifications begin at Normal and progresses through Moderate, Elevated, and Severe. These severity classifications are determined using a combination of statistical data gathered from thousands of samples and health information specific to each CI category. Levels indicated as Elevated, or Severe should be addressed immediately, and those listed as Moderate are areas that can be improved over time.

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. The Lifestyle Sources categories are typically brought into the home by the occupants and can often be readily identified and removed or contained. Removing or reducing these products will improve your air quality. Levels indicated as Elevated 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	Severity	Description and Suggestions for VOC Reduction
	Personal Care Products	Elevated	Personal care products include soap, deodorant, lotions, perfumes, hair coloring supplies, nail care supplies, oral hygiene products, etc. They contain many VOCs that will dissipate if use is discontinued or reduced. Consider storing these products in a tight fitting container when not in use, and dispose of unused products. Also, run an exhaust fan or open a window when dispensing these products. An elevated level could mean an excessive amount of nail care products or astringents.
	Alcohol Products	Moderate	VOCs from alcohol can come from 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 a tight fitting container. 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.
	Odorants and Fragrances	Moderate	VOCs in this category can come from 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	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. Consider switching to a dry-cleaner that uses environmentally friendly methods.
	Medicinals	Normal	Ointments and creams, topical first aid/pain relievers.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

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. The Building Sources 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. Removing or reducing these products will improve your air quality. Levels indicated as Elevated 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	Severity	Description and Suggestions for VOC Reduction
	Paints, Varnishes, and Coatings	Elevated	Typically, VOCs from paints and coatings can linger for several months, sometimes longer. Begin ventilating the home immediately, and locate and dispose of paint cans and related supplies. Consider using low-VOC paints/coatings in the future.
	PVC Cement	Normal	PVC cement is used to join pieces of PVC pipe together, usually for plumbing.
	HFCs and CFCs (Freons™)	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.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Contamination Index™ Mixed Building & Lifestyle Sources

Use the Contamination Index (CI) below to help you find products in your home that may be affecting your indoor air quality. These categories could belong to either the Building or Lifestyle groups so additional investigation may be necessary to determine which source is more likely. Removing or reducing these products will improve your air quality. Levels indicated as Elevated 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	Severity	Description and Suggestions for VOC Reduction
	Adhesives-Toluene Based	Normal	Adhesives are used in many locations in the construction and maintenance of the home, and normally these VOCs will dissipate over time. Additionally, toluene-based adhesives can be found in arts and crafts supplies and automotive products and should be located and removed or properly stored in a tight fitting container.
	Gasoline	Moderate	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. These items should be stored externally to the home. Additionally, gasoline VOCs can linger on clothing after refueling an automobile at a gas station. A prior spill in a garage or basement can also soak into the flooring and add to the VOC level. Benzene is found in gasoline and is a known carcinogen. Therefore, it is strongly recommended that the above removal/storage actions be followed immediately.
	Fuel Oil, Diesel Fuel, Kerosene	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.
	Moth Balls (Naphthalene Based)	Normal	Insecticide/pesticide; use only in a tightly closed container. May also be present with p-Dichlorobenzene-based moth crystals.
	Moth Crystals (p-Dichlorobenzene Based)	Normal	Insecticide/pesticide; use only in a tightly closed container. May also be present with Naphthalene-based moth balls.
	Light Hydrocarbons	Normal	Building materials; aerosol cans; fuel for cooking/camping/lighters; liquefied petroleum gas (LPG); refrigerant; natural gas; propellant; blowing agent.
	Light Solvents	Normal	Stoddard solvent; mineral spirits; some paints, varnish, enamels; wax remover; adhesives; automotive products; penetrating oils.
	Methylene Chloride	Normal	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide.

Notes

The sorbent tube contained very heavy sample loading; this may have affected the accuracy of the analysis.



Home Air Check™ Indoor Air Quality Report

Client Sample ID: Bedroom and Kitchen
Laboratory ID: [REDACTED]

Additional Resources

There are many online sources of information on indoor air quality and the sources that contribute to poor IAQ. For your benefit, we have listed some of the best places to find more in-depth information on these topics, and to gain further insight into how to improve your overall IAQ.

Indoor Air

- U.S. Environmental Protection Agency, [Indoor Air Quality](#)
- U.S. Environmental Protection Agency, [An Introduction to Indoor Air Quality \(IAQ\)](#)
- World Health Organization, [Indoor Air Pollution](#)
- California Environmental Protection Agency, Air Resources Board [Indoor Air Program](#)
- American Lung Association, [Healthy Air at Home](#)
- U.S. National Library of Medicine & National Institutes of Health, Medline Plus, [Indoor Air Pollution](#)
- National Safety AG Database, [Questions about Indoor Air Quality](#)

Mold & Moisture Control

- Centers for Disease Control and Prevention, [Environmental Hazards & Health Effects, Mold](#)
- U.S. Environmental Protection Agency, [Mold](#)
- U.S. National Library of Medicine & National Institutes of Health, Medline Plus, [Molds](#)

Respiratory Health

- Breathe California of the Bay Area [Resources](#)
- Centers for Disease Control and Prevention, Environmental Hazards & Health Effects, [Air Pollution & Respiratory Health](#)
- American Lung Association, [Health House](#)

Toxic Air Pollutants

- U.S. Environmental Protection Agency, [Air Toxics](#)
- Hazardous Substance [Data Bank](#)

Volatile Organic Compounds (VOCs)

- Lawrence Berkeley National Laboratory, [Indoor Volatile Organic Compounds \(VOCs\) and Health](#)
- U.S. Environmental Protection Agency, Indoor Air Quality, [Organic Gases \(Volatile Organic Compounds - VOCs\)](#)
- U.S. National Library of Medicine & National Institutes of Health, [Tox Town](#)
- Minnesota Department of Health, [Volatile Organic Compounds \(VOCs\) in Your Home](#)
- Household Products [Database](#)

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

This analysis was performed by Prism Analytical Technologies, Inc. (Prism), the developer of Home Air Check. 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 2019, Prism Analytical Technologies, All rights reserved.



Home Air Check™ Formaldehyde Report

Home Air Analysis For: [REDACTED]
Home Tested: [REDACTED]
Wyoming, MN [REDACTED]
US
Client Sample ID: Bedroom and Kitchen
Sample Volume (L): 5
Date Sampled: 07/17/2020
Sample Type: [REDACTED]
Sample Condition: Acceptable

Report Number: [REDACTED]
Laboratory ID: [REDACTED]
Order Date: 07/21/2020
Scan Date: 07/21/2020
Report Date: 07/23/2020

Location/Notes:

Chemical smells coming through the wall of our new RV that is making us sick. Smells like spray paint and causing breathing issues; dizziness; nausea and other issues.

Thank you for using Home Air Check!

If you have questions about your report please contact
customerservice@homeaircheck.com

Formaldehyde Concentration: 58 ng/L or 46 ppb

Locate and remove formaldehyde sources. Investigate the resources listed in this report for more information on formaldehyde sources and their removal.

Your Formaldehyde Level (Highlighted)

Low	Moderate	Elevated	High
0-20 ng/L	20-50 ng/L	50-100 ng/L	100 + ng/L

Formaldehyde Exposure Guidelines for Homes

Although there are no requirements set for formaldehyde concentration limits in homes, there are a number of recommendations. Many organizations or government authorities suggest formaldehyde concentrations not exceed **100-120 ng/L (80-100 parts per billion or ppb)** and **50-60 ng/L (40-50 ppb)** for short term and longer term exposures, respectively. Some organizations or government authorities recommend more stringent levels for longer term exposures. Most homes measured by Prism's air test have concentrations between 30 and 70 ng/L.

For comparison with workplace exposure, the National Institute for Occupational Safety and Health (NIOSH) has set a recommended exposure limit (REL) of 20 ng/L (16 ppb). The Occupational Safety and Health Administration (OSHA) has set a workplace permissible exposure limit (PEL) of 940 ng/L (750 parts per billion). The levels in this report are set based on these recommendations, as well as measured concentrations from over 7,000 homes.

Level	Conc Range (ng/L)	Conc Range (ppb)
Low	< 20	< 16
Moderate	20-50	16-40
Elevated	50-100	40-80
High	> 100	> 80

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.



Home Air Check™ Formaldehyde Report

Prism Analytical Technologies, Inc., the creator of Home Air Check, 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, LLC (AIHA-LAP, LLC) in the Unique Scope accreditation program for Formaldehyde as documented by the Scope of Accreditation Certificate and associated Scope. Reference internal SOP 523.



Formaldehyde Sources

There are many possible sources for formaldehyde in a home, although building products typically make up a large proportion of the concentration. Any recent renovation or new materials brought into the home 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 the formaldehyde in your home after recent renovation or installation of new materials.

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.

- 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)

Additional Resources

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 \(1990\)](#)

Health Canada: [Residential Indoor Air Quality Guideline-Formaldehyde](#)

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

Environmental Health (US) - [Formaldehyde Exposure in Homes: A Reference Guide for State Officials to use in Decision Making](#)

US Environmental Protection Agency: [Formaldehyde](#)

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

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

Household Products Database: [Formaldehyde](#)

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

This analysis was performed by Prism Analytical Technologies, Inc. (Prism), the developer of Home Air Check. 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.
