



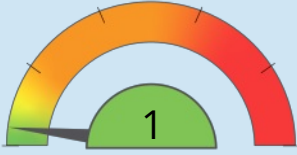
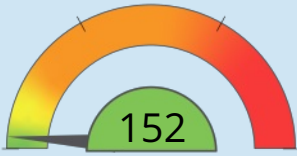
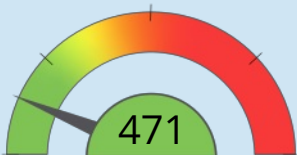
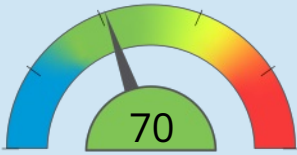
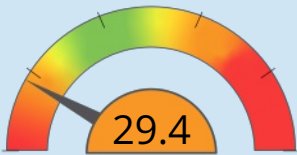

# FlashReport™ Test Results

**Conducted by:**  
Marc Kleefstra  
mdk@kles.com  
360.281.1105

**Monitor ID:** 35073  
**Report ID:** 748810  
**Test Period:** 02/13/24  
05:00 AM

**Outdoor Environment**  
  
37.9°F  
92% RH  


**This report identifies air pollutants commonly found in buildings and offers recommendations so you can make informed decisions about health, comfort, and safety indicators in your building.**

<b>HEALTH</b>	Particulate Matter ( $\mu\text{g}/\text{m}^3$ )		No Action Necessary
	Chemicals ( $\mu\text{g}/\text{m}^3$ )		No Action Necessary
	Carbon Dioxide (ppm)		No Action Necessary
<b>COMFORT</b>	Temperature (°Fahrenheit)		No Action Necessary
	Relative Humidity (RH%)		Action Recommended
<b>SAFETY</b>	Carbon Monoxide (ppm)		No Action Necessary

**No Action Necessary:**

**Action Recommended for Sensitive Individuals:**

**Action Recommended:**

**Action Required:**

Within acceptable levels for most people.

Pollutant levels may affect some individuals like children, elderly, people with health conditions.

Pollutant levels above health guidelines for the general public.

Pollutants at levels deemed unhealthy by authorities; steps should be taken urgently.

**If you are interested in a more in-depth analysis, ask your contractor about a multi-day test.**



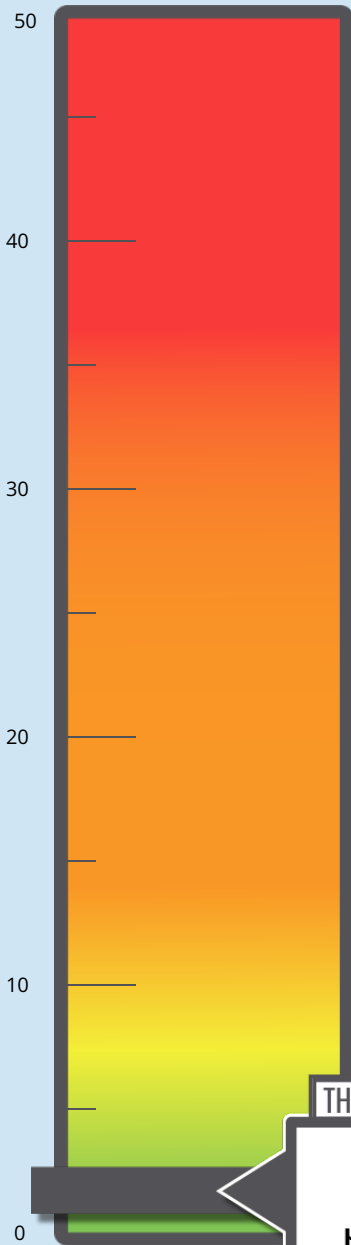
# WHAT WE FOUND IN YOUR BUILDING:

Particle levels were below

$5 \mu\text{g}/\text{m}^3$

No Action Necessary

PM 2.5:  $1 \mu\text{g}/\text{m}^3$



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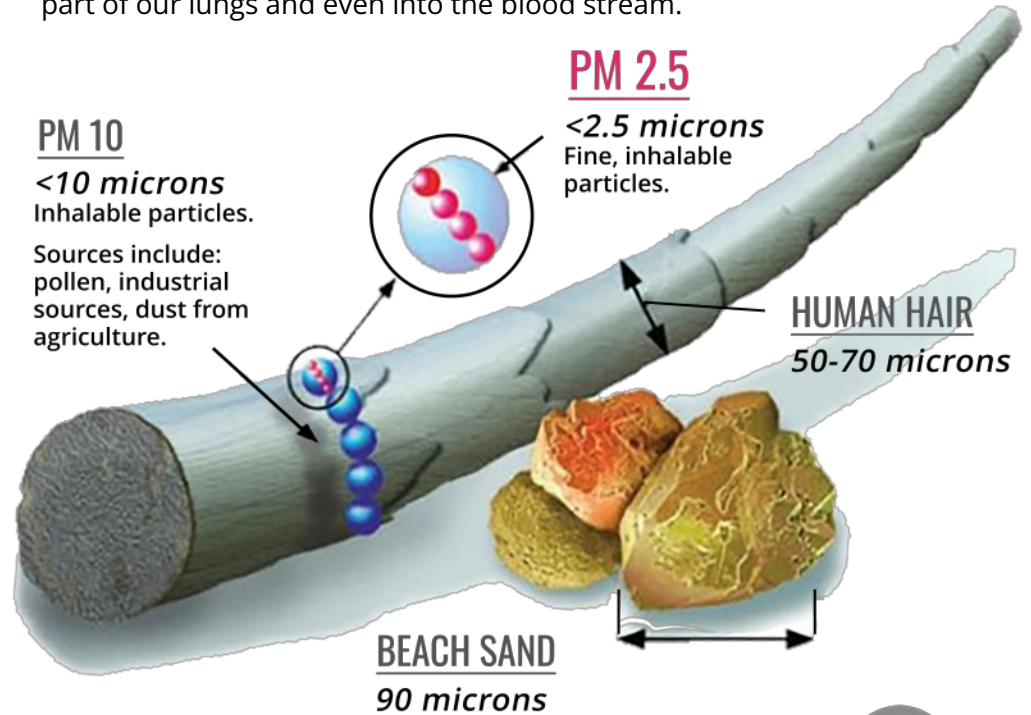
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# HEALTH: PARTICLES (PM 2.5)

## WHAT ARE PARTICLES?

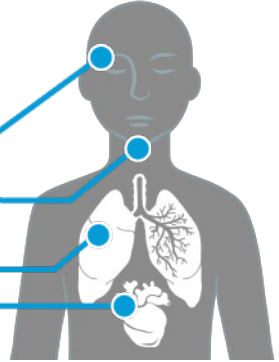
Particulate matter (PM) is a microscopic mixture of solid dust particles and liquid droplets found in the air, invisible to the eye. The smallest particles pose the greatest health risk. **PM 2.5** is small enough to get in the deepest part of our lungs and even into the blood stream.



## HEALTH CONCERNS

Exposure to **PM 2.5** is associated with:

- Eye irritation
- Asthma attacks
- Lung and throat irritation
- Trouble breathing
- Lung cancer
- Increased hospitalizations for heart and lung disease



## POTENTIAL CAUSES

- Combustion: cooking, candles, improperly vented combustion appliances
- Activities such as cleaning and housework
- Heating and cooling system issues
- Pollution that originates from outside sources (pollen, wildfire smoke)

## RECOMMENDED ACTIONS

- Inspect ductwork; seal and clean as necessary
- Replace filters or upgrade filtration to highest MERV-rated filter possible
- Upgrade thermostat to operate HVAC system fan on a schedule
- Consider portable HEPA filtration in frequently occupied zones

SCAN THE QR CODE FOR MORE INFORMATION:

Sources: Environmental Protection Agency (EPA), California Air Resources Board (CARB), International WELL Building Institute

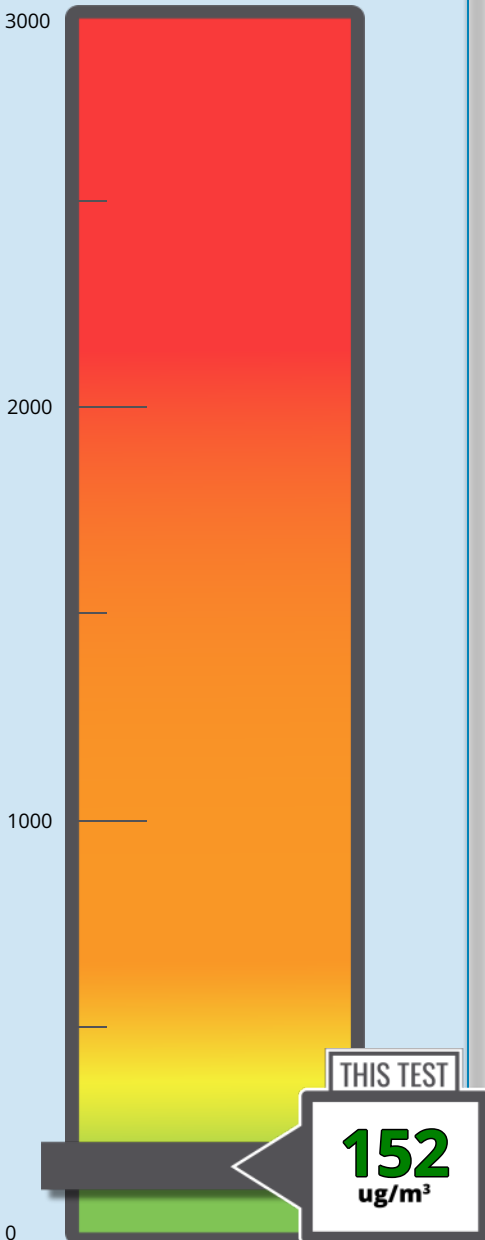


## WHAT WE FOUND IN YOUR BUILDING:

VOC levels were below  
**300  $\mu\text{g}/\text{m}^3$**

**No Action Necessary**

VOC: **152  $\mu\text{g}/\text{m}^3$**



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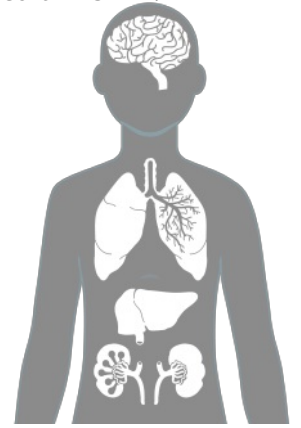
## HEALTH: CHEMICALS (VOCs)

### WHAT ARE VOCs?

Volatile Organic Compounds (VOCs) represent a broad category of chemicals that are present in numerous products we use to build and maintain our buildings. Once these chemicals are in our buildings, they are discharged or “off-gas” into the indoor air we breathe. They may or may not emit odors, so smelling is not a good indicator of health risk<sup>1,3</sup>.

### HEALTH CONCERNS

- Eye, nose, and throat irritation, difficulty breathing, asthma<sup>1,2,5</sup>
- Central nervous system damage, headaches, and dizziness<sup>1,2,5</sup>
- Skin problems<sup>1,2</sup>
- Damage to the liver and/or kidneys<sup>1,2</sup>
- Linked to fertility issues, cancers, neurological and learning disabilities<sup>4,5</sup>



### POTENTIAL CAUSES

- **Building materials and furnishings:** furniture, flooring, wood products, rugs, carpets, paints, sealants, glues, adhesives and insulation<sup>1,2,5</sup>
- **Other Products:** cleaning supplies, cosmetics, scented products, air fresheners, and toys<sup>1,2,4,5</sup>. Stored fuels in attached garages<sup>2</sup>.

### RECOMMENDED ACTIONS

- Reduce VOC sources: scented products, cleaning fluids, candles<sup>5</sup>
- Dilute VOCs with fresh air ventilation: HVAC system or Energy Recovery Ventilator (ERV)
- Capture VOCs with Carbon filtration to capture VOC
- Breakdown VOCs with PCO Technology

### COMPLETE AIR QUALITY SOLUTIONS

#### WHOLE BUILDING IAQ

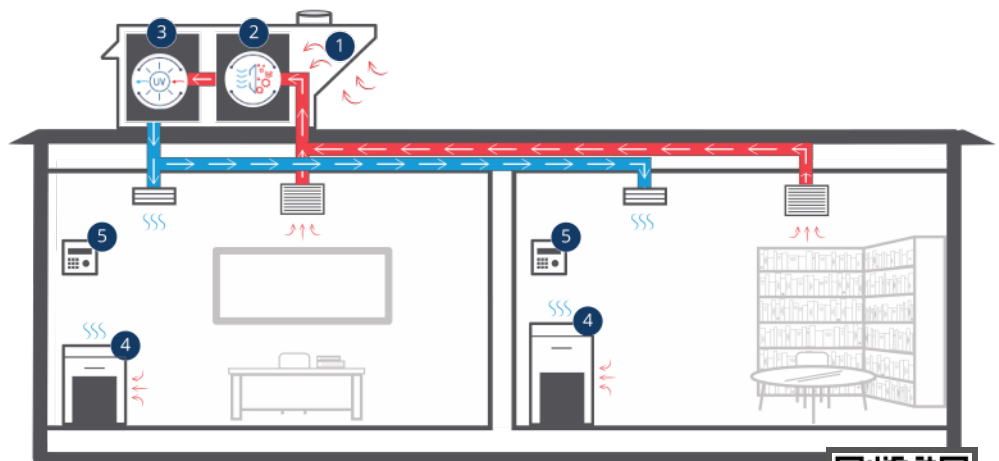
- 1 Ventilate with outside air
- 2 Utilize HVAC Filtration
- 3 HVAC UVC: Coil Irradiation and Air Disinfection

#### POINT OF SOURCE PURIFICATION

- 4 Portable TRIO Air Cleaner

#### IAQ MONITORING AND CONTROL

- 5 Real-time Monitoring and Ventilation Control



**SCAN THE QR CODE FOR MORE INFORMATION:**

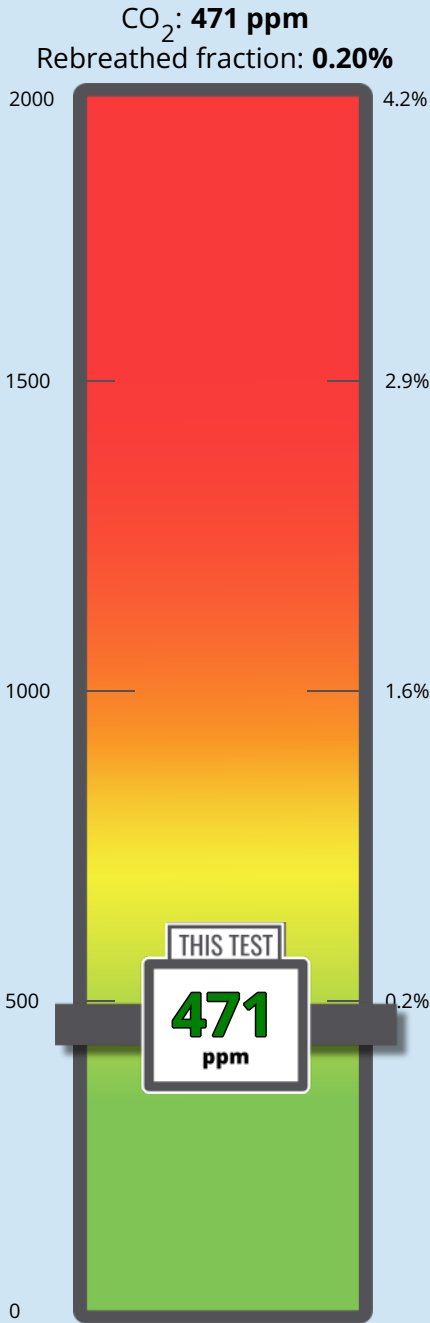
Sources: (1) Environmental Protection Agency (EPA), (2) HealthLinkBC, (3) Minnesota Department of Health, (4) Endocrine.org, (5) American Lung Association



# WHAT WE FOUND IN YOUR BUILDING:

CO<sub>2</sub> levels were below **750 ppm**

**No Action Necessary**



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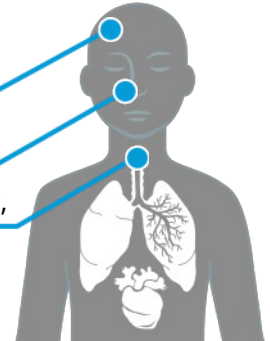
# HEALTH: CARBON DIOXIDE (CO<sub>2</sub>)

## WHAT IS CARBON DIOXIDE?

Carbon dioxide (CO<sub>2</sub>) is a gas we exhale. It builds up when there is no mechanical ventilation for fresh outdoor air. Ventilation has a great impact on health, comfort, and performance. Well ventilated buildings with adequate air exchange should have CO<sub>2</sub> levels of 600-1,000 ppm, with an average of 800 ppm or less<sup>1</sup>. The rebreathed fraction is the percent of the indoor air that has been previously exhaled<sup>2</sup>.

## HEALTH CONCERNS

- Lower cognitive function<sup>2</sup>
- CO<sub>2</sub> levels over 1,000 ppm - Higher risk of rhinitis (sneezing or a runny/blocked nose)<sup>3</sup>
- Eye irritation, sore/dry throat, coughing, sneezing, and stuffy, congested or runny nose
- Increased risk of airborne disease<sup>4</sup>



## POTENTIAL CAUSES

### Source causes:

'Tight' or energy-efficient construction without adequate ventilation, breathing, combustion activities

### Heating & cooling issues:

Lack of supplied fresh air/ventilation, malfunctioning or shut-off ventilation, HVAC equipment needs repair

## RECOMMENDED ACTIONS

- Dilute CO<sub>2</sub> with fresh air ventilation: Open windows and doors, draw in fresh air through HVAC system, or EnergyRecovery Ventilator (ERV)
- Inspect ventilation system to ensure performance and adjust as needed
- Monitor to identify when ventilation is required

## COMPLETE AIR QUALITY SOLUTIONS

### WHOLE BUILDING IAQ

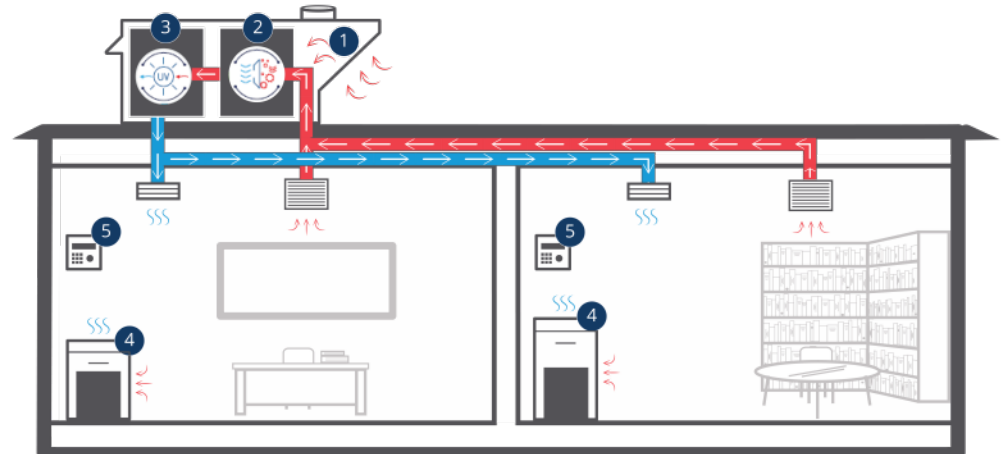
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### POINT OF SOURCE PURIFICATION

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### IAQ MONITORING AND CONTROL

- 5 Real-time Monitoring and Ventilation Control



## SCAN THE QR CODE FOR MORE INFORMATION:

Sources: Environmental Protection Agency (EPA), California Air Resources Board (CARB), International WELL Building Institute

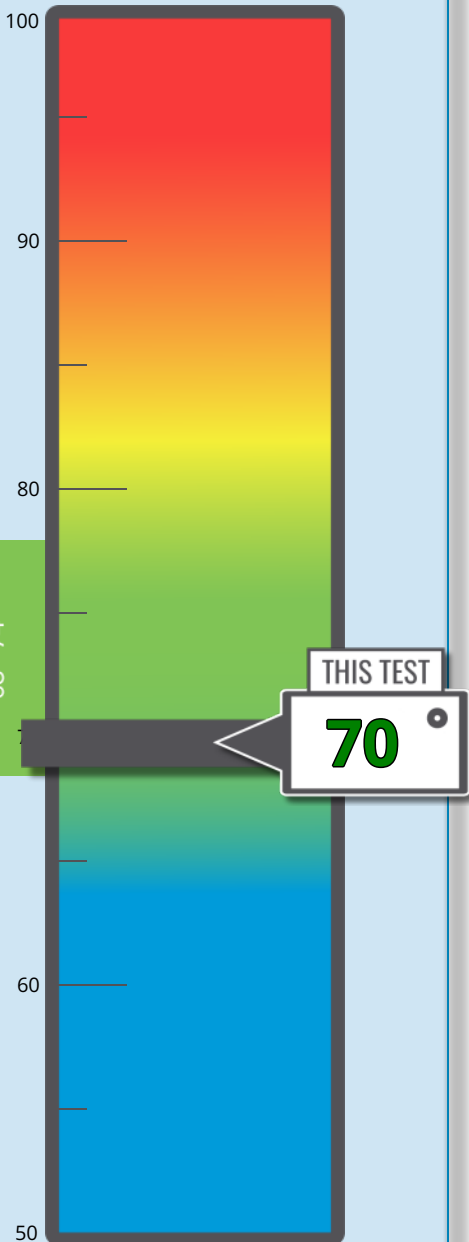


## WHAT WE FOUND IN YOUR BUILDING:

Temperature levels were within the optimum range

No Action Necessary

Temperature: 70°



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## COMFORT: TEMPERATURE (F°)

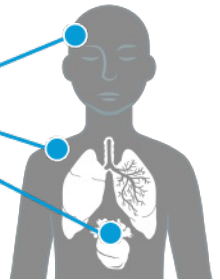
### WHAT IS THERMAL COMFORT?

The National Institutes of Health (NIH) states thermal comfort (temperature) is linked to our health, well-being, and productivity. The thermal environment is one of the main factors that influence thermal comfort and, consequently, the productivity of occupants inside buildings.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 55-2010, *Thermal Environmental Conditions for Human Occupancy* states that indoor temperatures in the winter should range from 68-74°F and 73-79° F in the summer.

### COMFORT & HEALTH CONCERNS

- Decreased productivity
- Discomfort
- Thermal stress (excessive heat)



### POTENTIAL CAUSES

- Inadequately sized ductwork, heat or AC equipment
- Leaky and/or imbalanced ductwork
- Poor thermostat location
- Inadequate/poor insulation
- Building air leakage from doors, windows, walls, etc.

### RECOMMENDED ACTIONS

- Verify heat, AC and ductwork are correctly sized for the building
- Seal leaky ductwork located outside of the conditioned area
- Upgrade thermostat for improved accuracy and energy savings
- Install zoning
- Seal building air leakage and add insulation

SCAN THE QR CODE FOR MORE INFORMATION:

Sources: Sources: ASHRAE Standard 55-2010, National Institutes of Health (NIH), National Academies Press, Energystar.gov, International WELL Building Standard Institute (IWBI)

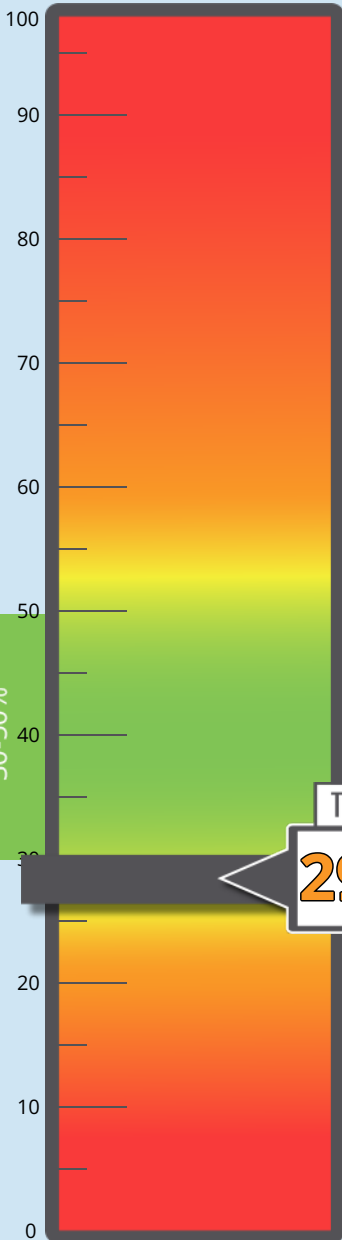


# WHAT WE FOUND IN YOUR BUILDING:

Humidity levels below **30%**

**Action Recommended**

Humidity: **29.4%**  
Dew Point: **36.6°**



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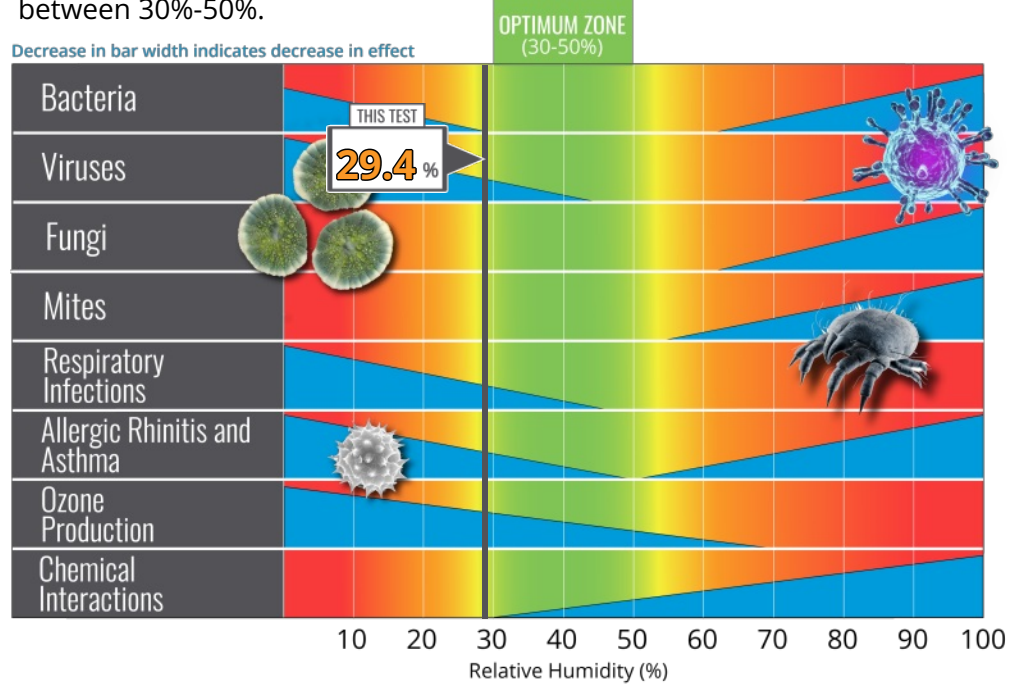
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# COMFORT: RELATIVE HUMIDITY (RH%)

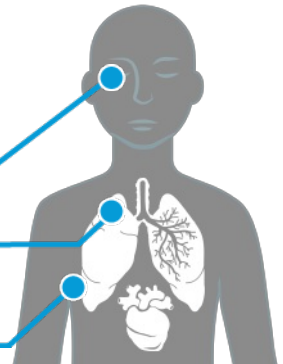
## WHAT IS RELATIVE HUMIDITY?

Relative humidity (RH) is a measure of how much water vapor is in the air. It can affect the incidence of respiratory infections and allergies, and contribute to comfort issues. According to the CDC, high moisture (>60%) can foster biological growth. Indoor RH should be kept below 60%, ideally between 30%-50%.



## COMFORT & HEALTH CONCERNS

- Ignoring RH aids in the spread of viruses and bacteria, and can adversely affect the eyes, skin, and respiratory tract
- **Low RH:** feeling too cold, irritated respiratory passages, and being prone to infection
- **High RH:** increased allergen loads (pollen, mites, and mold), and ineffective perspiration, the body's natural cooling mechanism



## POTENTIAL CAUSES

### Structural issues:

Exterior grading and rainwater management/standing water, leaky building envelope, plumbing leaks

### Heating & cooling system issues:

Poor humidification or ventilation, improperly sized cooling system, HVAC equipment needs repair

## RECOMMENDED ACTIONS

- Install humidifier or dehumidifier
- Inspect ductwork; seal and clean as necessary
- Operate exhaust fans during cooking and bathing
- Install UVC lamp (non-ozone) over the AC coil to prevent biological growth

## SCAN THE QR CODE FOR MORE INFORMATION:

Sources: Environmental Protection Agency (EPA) & U.S. Center for Disease Control and Prevention (CDC), Indirect Health Effects of Relative Humidity in Indoor Environments, Environmental Health Perspectives, Health Canada

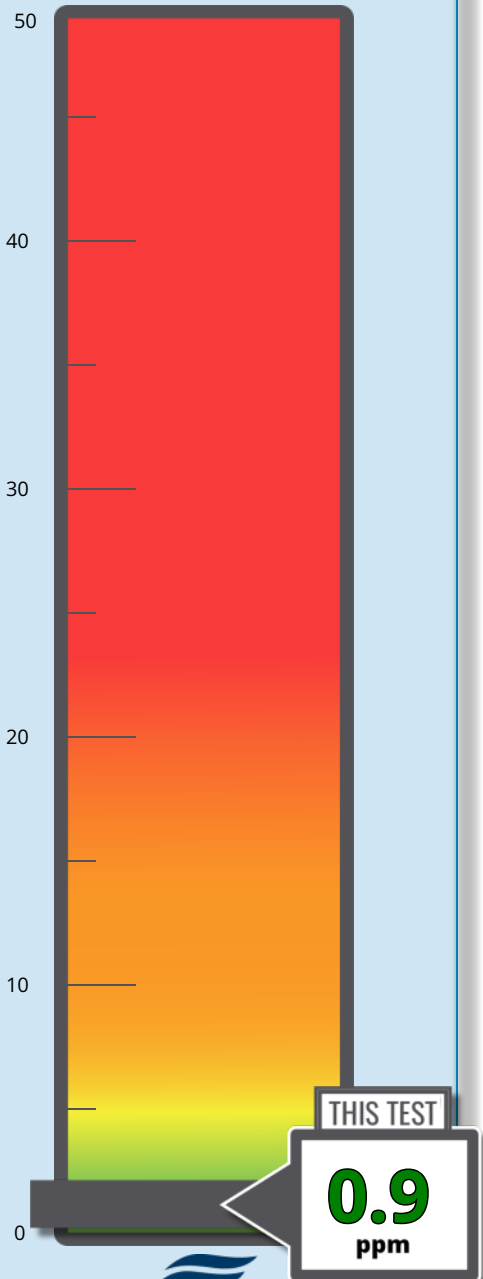


## WHAT WE FOUND IN YOUR BUILDING:

CO levels were below  
**6 ppm**

**No Action Necessary**

CO: **0.9 ppm**



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# SAFETY: CARBON MONOXIDE (CO)

## WHAT IS CARBON MONOXIDE?

Carbon monoxide is a gas that has no odor, taste or color. Burning fuels, including gas, wood, propane or charcoal, make carbon monoxide. Appliances and engines that aren't well vented can cause the gas to build up to dangerous levels. A tightly enclosed space makes the buildup worse.

—Mayo Clinic

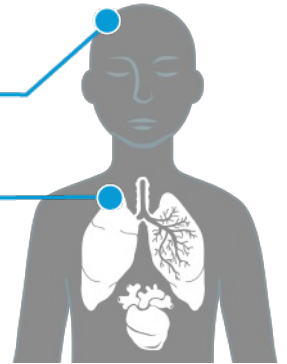
## SAFETY & HEALTH CONCERNS

### Low level exposure:

- Headaches, nausea
- Flu symptoms, fatigue, drowsiness

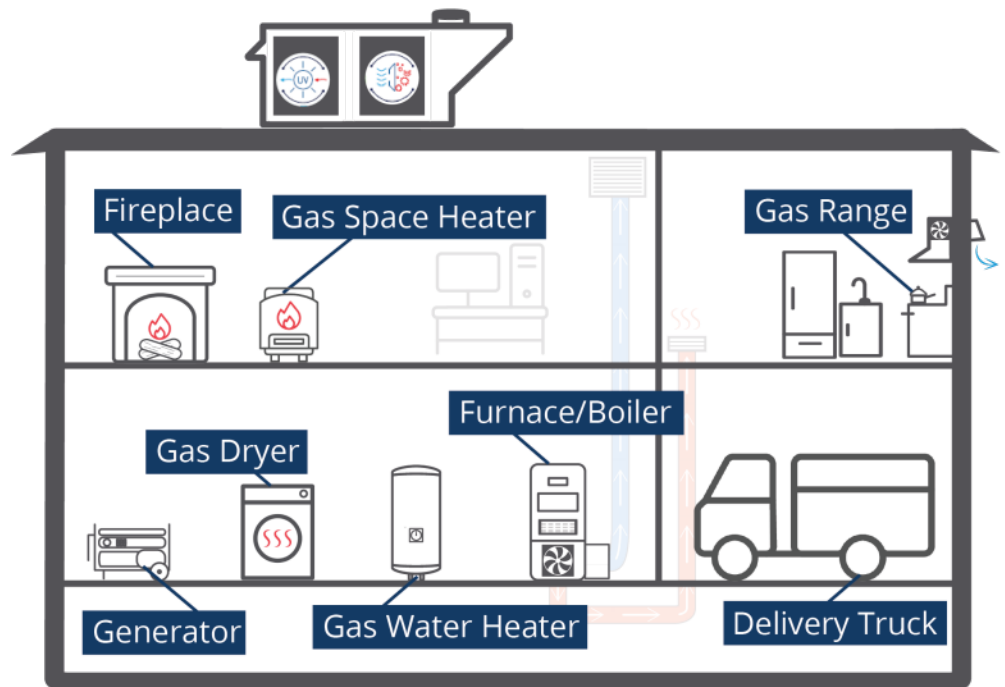
### High level exposure (CO poisoning):

- Confusion, chest tightness
- Loss of consciousness
- Suffocation



## POTENTIAL CAUSES

### Carbon Monoxide Sources in the Building



## RECOMMENDED ACTIONS

- Investigate to identify source when CO level is over 6 ppm
- Install or check CO alarm(s) per local building code
- Have your heating system, water heater, and any other gas, oil, or coal burning appliances serviced by a qualified technician every year. —CDC

## SCAN THE QR CODE FOR MORE INFORMATION:

Sources: Mayo Clinic, Environmental Protection Agency (EPA), World Health Organization (WHO), Centers for Disease Control and prevention (CDC), Health Canada



# SOLUTIONS TO CONTROL YOUR BUILDING'S IAQ

## PORTABLE AIR CLEANERS

### TRIO PLUS

*Small to Medium Spaces: Classrooms and Offices*



- **TECHNOLOGY:** UVC, PRO-Cell™, and H13 HEPA for superior air quality
- **CLEANS AIR QUICKLY:** Up to 3,300 sq. ft. in 1 hour, 305 ft.<sup>3</sup> per minute (CFM)
- **H13 HEPA:** Captures at least 99.97% of 0.3-micro particulates
- **UVC:** 2 high output UVC lamps
- **PRO-CELL TECHNOLOGY:** Patented VOC gas reduction
- **REDUCTION OF SARS-CoV-2 VIRUS:** 99.99% reduction in just 30 minutes
- **AIR QUALITY INDICATOR:** Tracks air and adjusts airflow
- **CERTIFIED PORTABLE AIR PURIFIER:** AHAM, Energy Star, CARB ozone safety

### SKYE

*Small to Medium Spaces: Classrooms and Offices*



- **5 STAGE PURIFICATION:** Pre-filter, Carbon, H13 HEPA, PRO-Cell, UVC
- **CLEANS AIR FAST:** Up to 1,600 sq. ft. in 30 minutes, 3,200 sq. ft. in 1 hour
- **QUIET:** Low noise from 22 dB to 59 dB
- **SMART AND Wi-Fi CAPABLE:** Fleet management, control over 100 units at once
- **UVC LAMP:** High-efficiency UVC lamp
- **PRO-CELL TECHNOLOGY:** Breaks down odors and VOCs
- **CERTIFIED PORTABLE AIR PURIFIER:** AHAM, CARB ozone safety

### TRIO PRO

*Medium to Large Spaces: Conference Rooms, Library, Cafeteria*



- **CLEANS AIR QUICKLY:** Up to 4,853 sq. ft. in 1 hour
- **TECHNOLOGY:** UVC, PRO-Cell™, and H13 HEPA for superior air quality
- **CLEAN AIR DELIVERY RATE:** 518 ft.<sup>3</sup> per minute (CFM)
- **H13 HEPA:** Captures at least 99.97% of 0.3-micro particulates
- **UVC:** 4 Powerful UVC lamps
- **PRO-CELL TECHNOLOGY:** Patented toxic gas reduction
- **CERTIFIED PORTABLE AIR PURIFIER:** AHAM, Energy Star, CARB ozone safety



# SOLUTIONS TO CONTROL YOUR BUILDING'S IAQ

## AIROW3 HYDROGEN PEROXIDE AIR CLEANER



- **HIGHLY EFFECTIVE AGAINST BIOLOGICAL PATHOGENS:** Eliminates biological pathogens, including bacteria, viruses, and mold to create a healthier indoor environment.
- **TESTED:** Rigorously tested for VOC and ozone emissions, ensuring no harmful compounds are released.
- **ZERO MAINTENANCE:** Hassle-free operation with zero maintenance requirements, reducing the need for ongoing upkeep and servicing.

## COMMERCIAL UV AIR PURIFIER



- **ULTIMATE IN COIL IRRADIATION:** Significantly reduces biofilms.
- **EASY INSTALLATION:** Magnetic mount for ease of installation.
- **POWERFUL UVC LAMPS:** Intensity ranges from 139-390  $\mu\text{W}/\text{cm}^2$  per lamp.
- **AUTO SENSING BALLAST:** Water resistant design.
- **REMOTE MONITORING OPTION:** Ideal for Facility Managers to maintain service logs.
- **WARRANTY:** 5-year limited warranty.

## CUBE COMMERCIAL AIR PURIFICATION SYSTEM



- **HIGH-EFFICIENCY FILTER:** MERV 13 filter traps particles as small as .3 micron including mold, bacteria, dust, dander, and pollen.
- **UVC LAMP:** Two high-efficiency 22-inch UVC lamp that reduces airborne microbes.
- **PRO-CELL TECHNOLOGY:** Transforms odors and VOCs into harmless, odorless water vapor and carbon dioxide.

## DEHUMIDIFIER



- **UNRIVALED EFFICIENCY:** Dynamic operation for effective humidity control
- **COMPACT DESIGN:** Ideal for whole house integration with HVAC systems
- **ALUMINUM COILS:** Ultimate in corrosion protection
- **EXTERNAL CONDENSATE PUMP CONNECTIVITY:** Provides fail safe protection
- **DIGITAL DISPLAY:** Allows precise set point while monitoring room conditions
- **WARRANTY:** 5-year limited warranty

