

austin
AIR SYSTEMS

MOLD

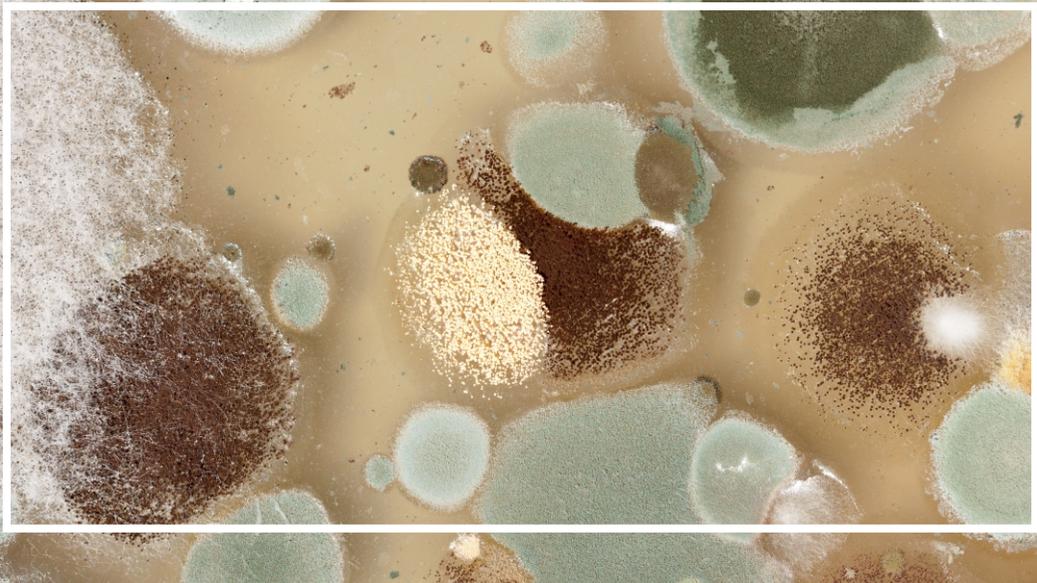
**TESTING, REMEDIATION,
AND DETOXIFICATION**



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Prevalence of Mold

There are over 100,000 different types of mold that grow indoors and outdoors. But not all types of mold are harmful.

WHERE IT GROWS

Mold is common in buildings and homes, especially in areas with moisture. For example, near leaks in roofs, pipes, windows, or flooded areas. Mold also grows well on cellulose products like paper, cardboard, ceiling tiles, and wood. It is also often found in dust, paints, wallpapers, insulation, drywall, carpet, fabric and upholstery.

THE MOST COMMON TYPES

The most common household toxic molds are *cladosporium*, *penicillium* and *aspergillus*.

THE PREVALENCE

- Many published studies estimate the average prevalence of dampness/mold in U.S. residential buildings to be 47%.
- There is a lack of recent national data on mold prevalence in U.S. schools and other non-residential buildings. The 1995 U.S. General Accounting Office survey indicated 40% of schools had a plumbing problem and 27% had roofing problems that could lead to interior or exterior flooding or leakage.
- At least 45 million buildings in the U.S. have unhealthy levels of mold.

References

- (1) <https://irp.cdn-website.com/c4e267ab/files/uploaded/NIOSH-Dampness-and-Mold-Assessment-Tool-DMAT-Documentation-and-Data-Analysis-of-Dampness-and-Mold-Related-Damage-in-Buildings-and-Its-Application-2022.pdf>
- (2) <https://www.cdc.gov/mold/faqs.htm>



Types of Mold

There are more than 100,000 types of mold that can be found indoors and outdoors. But not all are harmful. And not all are the classic green or black color. Mold comes in many colors, including black, white, green and orange. Below are the three most common toxic molds according to the CDC.

STACHYBOTRYS

- Stachybotrys is a greenish-black mold.
- It can grow on highly-cellulose material, like fiberboard, gypsum board and paper.
- It also occurs when there is moisture from water damage, water leaks, condensation, water infiltration, or flooding. It requires constant moisture to grow.
- It causes many health effects, including respiratory distress, especially with prolonged exposure.

ASPERGILLUS

- Aspergillus is usually black on the surface and yellow or white underneath.
- This is a fairly allergenic mold commonly found on food or home air conditioning units.
- Could cause chronic pulmonary infections in at-risk individuals
- Could cause diarrhea, upset stomach, and respiratory distress, including aspergillosis in the lungs and push toxins into the bloodstream. ⁽¹⁾

Continued



Types of Mold *(Continued)*

PENICILLIUM

- Penicillium is initially white but it can become blue-green, gray-green, olive-gray, yellow or pinkish
- Penicillium can cause convulsions, paralysis, cardiovascular damage, and respiratory arrest. ⁽²⁾

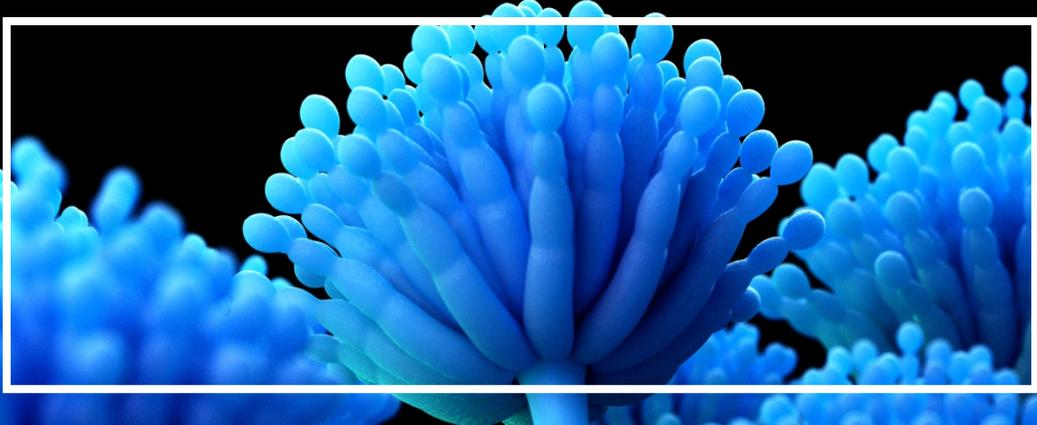
FUSARIUM

- Usually colonizes on very damp or wet material
- Color varies from whitish to yellow, brownish, pink or reddish.
- Fusarium mycotoxins can cause both acute and chronic toxic effects.
- Can cause infections of the eyes, skin, or nails
- Can also cause pneumonia

References

(1) <https://library.bustmold.com/aspergillus/aspergillus-versicolor/>

(2) <https://www.indoordoctor.com/blog/hidden-risks-penicillium-mold-indoor-environment/>



Mold Spores vs. Mycotoxins

Mycotoxins are naturally occurring toxins in volatile organic compound (VOC) form produced by mold.

- They can be as small as 0.1 microns.
- They typically replicate on and attach to floors or walls in humid or confined areas or on certain foods. However, they can be found on any material.
- They can cause adverse health effects, ranging from acute poisoning to cancer or immune deficiency.
- Not all types of molds produce mycotoxins. The most common and dangerous mycotoxin-producing molds are:
 - Alternaria
 - Aspergillus
 - Chaetomium
 - Cladosporium
 - Fusarium
 - Myrothecium
 - Penicillium
 - Stachybotrys
 - Trichoderma
 - Trichothecium

MOLD SPORES: To reproduce, molds release tiny reproductive cells known as spores. According to the EPA some molds have spores that are easily disturbed and settle repeatedly with each disturbance. Other molds have sticky spores that will cling to surfaces and are dislodged by brushing against them or by other direct contact.⁽¹⁾

- They can be found almost anywhere moisture and oxygen are present.
- Mold spores can be between one and 20 microns in size.
- Mold spores can cause adverse health effects, including but not limited to:
 - Watery eyes
 - Runny nose
 - Sneezing
 - Itching
 - Coughing
 - Wheezing
 - Difficulty breathing
 - Headache
 - Fatigue

References

(1) <https://www.epa.gov/mold/what-are-molds#:~:text=Molds%20spread%20by%20producing%20tiny,both%20indoor%20and%20outdoor%20air.>



Where Mold Grows

Mold is found both indoors and outdoors and can enter the home through open doorways, windows, vents and heating and air conditioning systems. It can also attach itself to clothing, shoes and pets, which can carry it indoors.

When mold spores drop on places with excessive moisture, like places with a leakage or flooding, they will grow.

Many building materials provide a suitable environment for mold growth. Cellulose materials are particularly conducive to mold growth. These include:

- Paper and paper products
- Cardboard
- Ceiling tiles
- Wood and wood products

Other materials that are commonly susceptible to mold growth include:

- Dust
- Wallpaper
- Drywall
- Fabric
- Paints
- Insulation
- Carpet
- Upholstery

Mold is unable to grow on inorganic, non porous or non cellulosic materials, like:

- Concrete
- Glass
- Metal



Mold Health Impacts: Body Pain

NERVES:

Mycotoxins can interfere with the body's sensory nerves, which could make extremities feel like they're "asleep." but with no evident cause. You may also experience muscle pain despite no corresponding increase in physical activity.

INFLAMMATION:

Mycotoxins can cause or worsen inflammation which can result in stiffness, aches, and pains. In fact it is not uncommon for fibromyalgia or chronic fatigue syndrome (1), both associated with symptoms of intense pain.

THE MOLD-PAIN CONNECTION:

In 2013, Dr. Joseph Brewer, an Infectious Disease specialist from Kansas City, published his research showing that of 112 patients with fibromyalgia and chronic fatigue syndrome who had not responded to his usual treatment program, 92% of them tested positive in a urine test for mycotoxins (mold toxins). Happily, he then demonstrated in two subsequent papers using 100 consecutive patients for each, that 89% and 94% of those patients were markedly improved or cured by treating their mold toxicity.

Mold exposure can cause other musculoskeletal symptoms such as:

- Muscle aches
- Joint pain
- Morning stiffness
- Sharp, shooting pain
- Tremors
- Numbness or tingling

References

- (1) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3705282/>



Mold Health Impacts: Hormones/Weight

There are many ways that mold and mycotoxins can impact a person's hormones and weight. The most common disruptions are seen in hormones such as cortisol, estrogen, leptin, and thyroid hormones.

- **CORTISOL:** Mold puts added stress on your adrenal glands, causing a spike in cortisol. High levels of cortisol cause increased fat stores. This excess circulating fat is often deposited deep in the abdomen (also known as visceral fat).
- **LEPTIN:** Leptin is a hormone that regulates appetite. Your body's inflammatory response to mycotoxins blocks leptin receptors. This can cause weight gain, even from normal calorie intake.
- **THYROID:** Mold toxins can block the activation of thyroid hormones and reduce overall thyroid function.
- **ESTROGEN:** Mold mimics estrogen which can cause hormone imbalances. Too much estrogen causes estrogen dominance and progesterone deficiency, which can lower testosterone.

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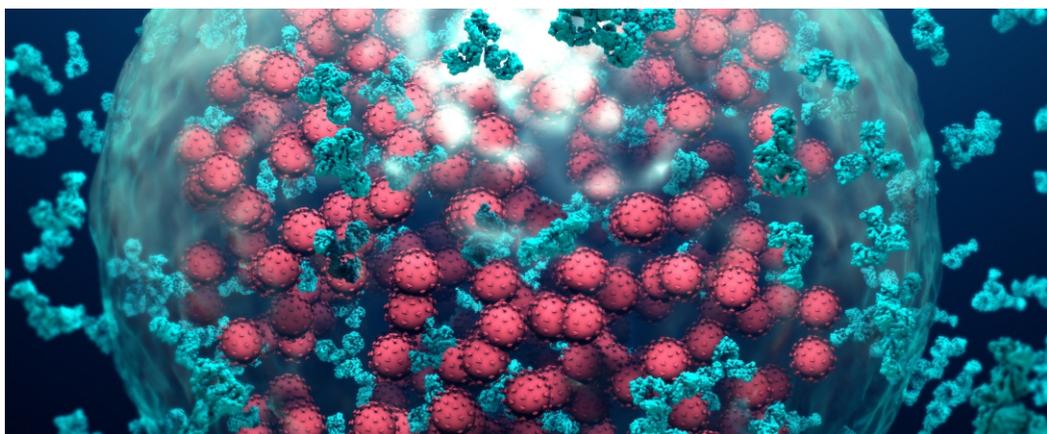
Mold Health Impacts: Hormones/Weight *Continued*

This hormone imbalance can lead to other health issues such as:

- Weight gain
- Brain fog
- Depression
- Fatigue
- Headaches

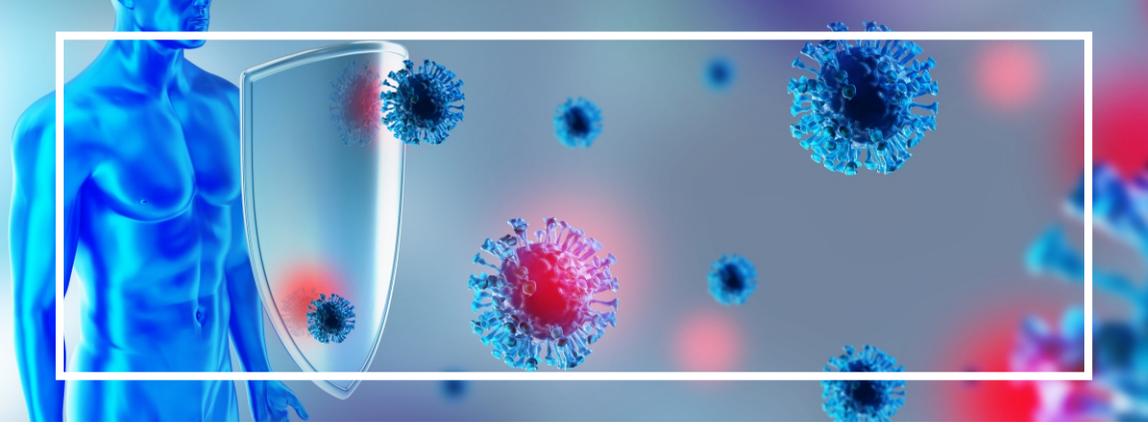
Hormone disruption from mold can also impact menstruation.

- It can cause extreme PMS, irregular periods and even early menopause.



• OTHER WAYS:

- Mold burdens your detoxification system. When your body cannot remove toxins, it can store them in fat cells.
- Mold can wreck the gut or cause food sensitivities, causing people to not be able to eat.



Mold Health Impacts: Immune System

Many types of mycotoxins are known also called immunotoxins. That means they are harmful to the immune system in a variety of ways.

Immunosuppressive: Mycotoxins can suppress the immune response, resulting in decreased resistance to infections. They can also enhance the immune response, leading to the production of autoimmune cells and autoantibodies that cause damage to tissues.⁽¹⁾ Mycotoxins can also disrupt one's gut flora where the majority of immune cells are located.⁽²⁾

Carcinogenic: Several mycotoxins are known carcinogens. In fact, according to the WHO, aflatoxins (mycotoxins produced by *Aspergillus* mold) have been shown to be genotoxic, meaning they can damage DNA and cause cancer.⁽³⁾

Allergic/Immune Symptoms

Mold exposure can cause allergy symptoms like:

- Coughing
- Sneezing
- Watery eyes
- Itchy eyes, nose and throat
- Runny nose
- Dry, scaly skin
- Post nasal drip

Those Most At-Risk

Lyme Disease: Mold can also weaken the immune system and make it difficult to remove toxins, causing you to be more susceptible to other health issues. For example, people with Lyme Disease may experience worse or recurring symptoms after mold exposure mold.

- Many unresolved cases of Lyme Disease are due to mold exposure.
- Someone with a weakened immune system from mold may be unable to recover from Lyme Disease, or vice versa.

For more on Lyme disease [visit our blog here.](#)

References

- (1) <https://www.sciencedirect.com/science/article/abs/pii/S027869152200093X#:~:text=Generally%2C%20the%20immunotoxicity%20of%20mycotoxins,result%20from%20exposure%20to%20mycotoxins.>
(2) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5834427/>
(3) <https://www.who.int/news-room/fact-sheets/detail/mycotoxins>



Mold Health Impacts: Mold Brain

According to Dr Suzanne Gazda, M.D., every neurodegenerative disease -- from autism and multiple sclerosis to Alzheimer's and ALS -- has studies that show evidence of fungi in the brain. That's because mold toxins can destroy myelin and axons, cause neurodegeneration, kill olfactory neurons, and damage cell membranes and mitochondria.⁽¹⁾

Mycotoxins are very tiny toxic substances produced by mold. They are so small that they can move through the nasal cavity and olfactory sensory neurons; and then can cross the blood-brain barrier (BBB) causing cognitive issues.

How Mold Affects the Brain:

Brain inflammation often occurs in the hippocampus, which governs functions such as:

- Memory
- Learning
- Sleep-wake cycle

Mold Brain can also lead to:

- Depression
- Anxiety
- Mood swings
- Behavioral changes
- Decreased neurogenesis (the formation of new brain cells)
- Increased sensitivity to pain
- Brain fog

References

(1) <https://www.suzannegazdamd.com/blog/mold-mycotoxin-and-what-it-means-for-your-brain-health>



Mold Remediation: Testing

There are three main types of mold testing.

- 1. Air sampling** – This is the most common and reliable form of testing. Sampling of indoor and outdoor air is conducted and levels of mold spores in both are compared. This is the best way to identify non visible mold.
- 2. Surface testing** – This involves taking mold samples from a surface. This can be done by:
 - Swab samples – A cotton swab-like object is rubbed against a surface suspected to have mold and sent to a testing lab. The swab may also be rubbed against a petri dish where a culture was grown.
 - Tape samples – A piece of clear tape is pressed against the surface suspected to have mold and removed. It is then tested.
 - Bulk samples – This involves removing the area suspected to have mold, like a piece of furniture or drywall, so it can be tested.
- 3. Dust sampling** – This collects settled dust via a dust cloth or vacuum canister. The dust cloth provides more freedom to test places like air ducts and ceiling fans. However, a vacuum canister is less likely to be subject to human error. The dust samples are tested.



Proper Mold Remediation

Oftentimes, a mold problem is outside the homeowner's ability to remediate alone. According to the EPA, if the mold issue covers more than ten square feet and meets certain conditions, a professional mold remediation company is necessary to fully eradicate the problem.

A professional mold company should be called if:

- The HVAC system is contaminated
- The problem is caused by sewage or contaminated water
- The problem is caused by water damage
- The problem is causing health issues

It's also worth noting that even if a homeowner chooses to remediate the problem themselves, dead mold can still cause health issues.

How do professionals remove mold?

- Mold companies start by conducting an in-home evaluation. The company will perform an in-depth inspection to gauge the types and levels of mold to decipher how to treat the problem. Mold testing, moisture meters and thermal imaging are typically used.
- Once treatment starts, the professionals will use a High Efficiency Particulate Air (HEPA) to filter the air, clean spores and remove other airborne pollutants in the affected area. They will also isolate the area to avoid cross-contamination and the spread of spores. The area will also be vacuumed with a HEPA vacuum to trap spores while releasing clean air.
- The professionals will wipe down the affected area with microfiber cleaning cloths to break down bonds between surface and contaminants while removing any other spores. The area will be treated with an antimicrobial.



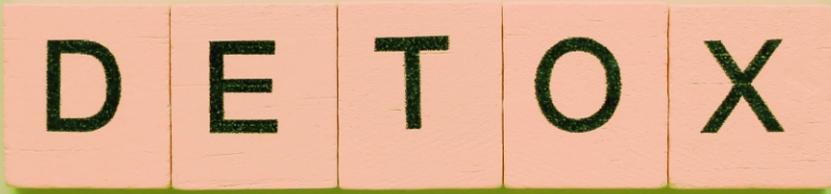
Mold Remediation: Companies and Accreditation

Mold is one of the most toxic, yet most common issues a household can face. Leaving mold untreated can cause it to spread, which can lead to health concerns and property damage. Using a reputable and trustworthy mold removal company will ensure your home is cleaned properly.

Finding one can be an overwhelming process. But it doesn't have to be.

When choosing a mold removal company, there are an array of factors to consider.

- The company should follow all state laws and regulations.
- The company should be accredited. State accreditation is important, as well as IICRC (Institute of Inspection Cleaning and Restoration Certification) and NORMI (The National Organization Of Remediators and Microbial Inspectors) accreditation.
- The company should have mold testing abilities. The industry standard is air sampling, but surface testing should also be used as a supplement.



Mold Detox Tips

NOTE: This material is for educational purposes only. Please consult your doctor if you feel you've been exposed to mycotoxins or before taking supplements, using new products, or starting any new diet or wellness program.

In order to detox, you first have to stop the exposure. Begin remediation immediately and make sure you have effective air purification, such as the Austin Air filters, to remove airborne mycotoxins and spores.

■ Sweat

- Sweating improves the body's anti-inflammatory response and detox toxins.
- Exercise and sauna can be effective ways to trigger sweating

■ Glutathione and other supplements

- It oxidizes toxins and free radicals and helps other antioxidants work better.
- Low levels of glutathione are associated with some medical conditions.
- Dietary sources include:
 - Spinach
 - Avocados
 - Asparagus
 - Okra
- You can also get it through supplement pills, inhalation or IV.

■ Binders

- Sometimes the veins and the nerves in the gut lining pick up toxins and recirculate them back into the body.
- Mold or mycotoxin binders attract and bind toxins and move them through the gastrointestinal tract.
- They can be prescribed or non-prescribed.
 - Non-prescribed binders often include activated charcoal or bentonite clay.

■ Diet

- A low-mold diet attempts to eliminate sugar and ultra-processed foods, as well as foods that contain mold and yeast.
 - Sugar fuels fungal growth, which could make your mold symptoms worse.
 - Ultra-processed foods also contribute to fungal growth.

Testimonials



“The Austin Air purifier I've had in my bedroom, I've had for almost 20 years now. I was blown away by how fresh the air smelled. There's so much carbon in there that it's actually scrubbing the air and ends up improving air quality for a much longer time period. I've done a deep dive on all of this, and Austin Air is by far my favorite air purifier. It's just the best combination of practicality and affordability”

— David

“When we found mold in our home we purchased numerous Austin Air purifiers for each room... our family's symptoms decreased and the filters enabled us to remain in our home safely during professional remediation. LIFE. SAVING. PRODUCTS.”

— Stacy

“We purchased the Allergy Machine because of mold and dust exposure in our house. I was having headaches and sinus congestion regularly but since I put the machine in my bedroom, I am feeling better! Very quiet at night, good looking, easy to set up- highly recommended!”

— Cassandra S.

“I've used my Austin air purifier for about a week now and I am extremely pleased with the results. The air smells fresh and clean which is allowing me some healing from mold illness. Worth every penny!”

— Lisa D.



Brand-New and Moldy

When David Barnard moved into his brand-new home, he began having health issues. The culprit: mold.

David Barnard moved into a brand new, custom-built home in 2011. This is the dream for so many people – But it was not as perfect as it seemed.

Shortly after he moved in, Barnard started having health issues. He dealt with allergies and other health issues for years. He went to numerous doctors and tried countless treatments, but to no avail.

In 2017, an ear, nose and throat doctor recommended Barnard get nasal surgery to reduce the tissue in his nose so he could breathe easier. To prepare for this, the doctor gave Barnard a handout, which stated that dust mites thrive in environments with over 55% humidity. This puzzled Barnard, and he started to wonder what the humidity in his house might be.

He bought a humidistat, and found out the humidity in his house was reaching 75-80%. So he decided to have a professional investigate his HVAC system.

To Barnard's shock, the air vents in his home were filled with layers of mold, which the HVAC professional informed him had been growing for years.

Continued



Brand-New and Moldy *(Continued)*

“Some people would say you need to immediately move out and find a new home,” Barnard said. “But that’s a massively life-altering decision. It puts you in a really tough place when you find that kind of thing.”

Barnard eventually moved out of the home, which improved his health. But he said his body’s stress threshold has significantly risen since he was first exposed.

“My body was having to deal with a toxin,” Barnard said. “The body has to deal with those stressors. It at least contributed to or perpetuated all these symptoms that I did have.”

Because of these issues, Barnard has tried a host of air purifiers. He’s found Austin Air purifiers to be the best.

“The Austin Air purifier I’ve had in my bedroom, I’ve had for almost 20 years now,” Barnard said. “I was blown away by how fresh the air smelled. There’s so much carbon in there that it’s actually scrubbing the air and ends up improving air quality for a much longer time period. I’ve done a deep dive on all of this, and Austin Air is by far my favorite air purifier. It’s just the best combination of practicality and affordability.”

All of this has raised Barnard’s awareness of the importance of indoor air quality.

“If you haven’t been aware, there’s so many things you’re probably missing,” Barnard said. “It’s just so unfortunate that as a species we give so little care to the environment we spend 18-22 hours a day in. There’s a whole rabbit hole you can go down to better understand what’s going on in your indoor environment. If you’re not at least doing a cursory look at your indoor air quality, you’re doing yourself and your long-term health a disservice.”



Brand-New and Moldy *(Continued)*

“It took me on a deep dive into indoor air quality,” Barnard said.

Barnard set out to get to the bottom of the issue. He had a building scientist investigate the home, and they found it was poorly ventilated.

“Moisture was just getting trapped and not having anywhere to get out,” Barnard said. “Our HVAC was not able to keep up with the dehumidification itself.”

Barnard started to do some research. He listened to podcasts, investigated

“My body was having to deal with a toxin. The body has to deal with those stressors. It at least contributed to or perpetuated all these symptoms that I did have.”

— David Barnard

online and talked to experts. Eventually, the house was properly ventilated and an air quality monitor and whole house dehumidifier was installed. The air quality in Barnard’s home significantly improved, but he still lives with health issues to this day.

“I likely developed a hypersensitivity to the mold that was in our house for years,” Barnard said. “The problem really is the concentrations and species of mold.”

This process can be confusing for renters and homeowners. It can be overwhelming, and it’s hard to figure out where to start.



The Impact of Austin

Austin Air remains the original maker of high-end filtration systems. Sold in more than 100 countries, we maintain the largest air cleaning manufacturing facility in the world at 480,000 square feet. The company is proud to say that all the units and replacement filters are handcrafted by our production team in Buffalo, New York.



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AIR SYSTEMS