



HEALTHY INDOOR BREATHING TOOLKIT

66

AS WE PUSH FOR POLICY SOLUTIONS LIKE ENERGY EFFICIENCY TO LOWER ELECTRIC BILLS, REDUCE AIR POLLUTION AND ADDRESS CLIMATE CHANGE WE ALSO MUST ENSURE PEOPLE ARE NOT BEING SEALED INTO ENVIRONMENTS WITH TOXIC INDOOR AIR. LEARN WHAT TO LOOK FOR IN YOUR HOME OR ON YOUR NEXT TRIP TO THE STORE.

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HEALTHY AIR IS HEALTHCARE!

Mothers & Others for Clean Air

Mothers & Others for Clean Air (MOCA) creates partnerships between scientists, healthcare providers, parents, teachers, youth, and organizations to facilitate collective learning and action in the Southeast, especially in Georgia. Our mission is to protect children's health by reducing the impacts of air pollution and climate change.

We believe that Healthy Air is Healthcare because when you can't breathe, nothing else matters. MOCA is striving to build the capacity of those working in Georgia to protect public health from air pollution and climate change by breaking down silos, sharing existing resources, building relationships, developing new science-based shareable digital resources with community input, and offering tailored online training.

We created this guide to help families make sure the air inside their homes is clean and safe. According to the EPA, people spend about 90% of their time indoors, and air pollution can be 2-5 times higher inside than outside. This toolkit was designed to help you make the healthiest choices possible for your home so that the air you and your family breathes stays clean and safe.

To learn more about our work or for additional resources, visit us at www.mothersandothersforcleanair.org.

ABOUT



Wellness Within Your Walls®

Mothers & Others for Clean Air worked in partnership with **Wellness Within Your Walls** to create this toolkit.

Wellness Within Your Walls is the solution to affordable, accountable, and achievable healthier interior environments. We serve as the bridge between consumers and the building and design communities with a primary goal of providing education on building and designing healthier interior environments.

Wellness Within Your Walls is an internationally-recognized, award-winning informational resource group created to provide education and guidance on chemicals commonly found in living environments. With a goal to empower and guide consumers and professionals toward healthier living spaces, WWYW certifies people, places, products and programs globally through education and health and wellness protocols. WWYW's 10-step holistic approach, the Healthy Living System™, results in a legacy of health, harmony and sustainability in living environments.



OUR PARTNER

Wellness Within Your Walls has a certification process for people, places, products, and programs which teaches a holistic approach to lowering toxins indoors.
wellnesswithinyourwalls.com



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Non-stick coating on pans is made using laboratory-created chemicals which are linked to chronic health and reproductive problems.



MOTHERS & OTHERS FOR CLEAN AIR

**HEALTHY INDOOR
BREATHING TOOLKIT**

AIR FRESHENERS



For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM



Air fresheners do not remove bad smells, they just mask them or cover them up. In the United States, there is no requirement for companies to share the ingredients they use in their air fresheners. You might see the word “fragrance” listed on air freshener packaging - this word is vague and can include many chemicals which have never been tested for safety. Fragrances can contribute to harmful indoor air pollutants, which can be 2-100x higher inside our homes than outside.

“

Spraying air fresheners in the home only contributes to pollution levels. On average, a U.S. air freshener releases 18 chemicals into the air. Commonly, more than 90% of chemicals in an air freshener are not listed on the product label.

”



WHY IS THIS IMPORTANT

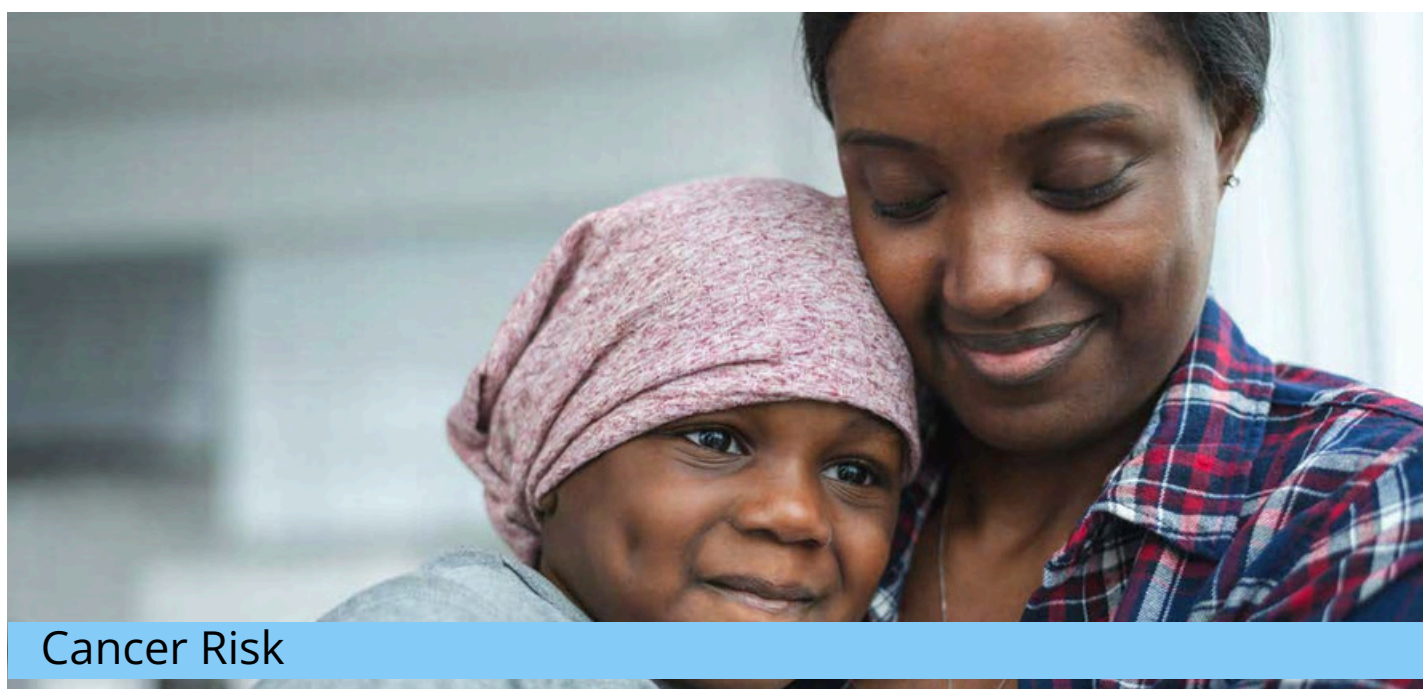
03

TO MY OR MY CHILD'S HEALTH?

Using air fresheners can contribute to...

- Birth Defects
- Damage to DNA
- Cancer Risk
- Male Reproductive System Damage

- Allergies
- Asthma
- Headaches
- Hormone System Disruption



It is best to avoid any air fresheners if possible. [No air fresheners are subject to environmental review](#), and they all release particles and chemicals into the air. Particularly avoid products which use formaldehyde; acetaldehyde; 1,4,dichlorobenzene; and mineral spirits (which can cause damage to DNA and cancer).

If you feel like you need an air freshener to cover up bad smells, it is far better to:



✓ Clean up or remove the bad smell than to add more smells to the air.

✓ Put exhaust fans in your bathrooms, or open the windows a crack if you don't have an exhaust fan.

✓ Use an exhaust fan in the kitchen, or open the window when you cook.

✓ Clean up any areas with mold or spills.

✓ Clean up and prevent mold according to our Mold Toolkit.



There are no air fresheners which are completely safe. All air fresheners release unnecessary chemicals into the air that you can breathe into your lungs.

However, if your home needs a fragrance boost, consider buying a diffuser to diffuse essential oils into your home. Only purchase essential oils that are pure and have no additives. Be sure to only add a few drops of an essential oil into the diffuser basin at a time.



Even after reading all of this, if you really want a spray bottle of air freshener, we recommend looking for product names from EWG's Guide to Healthy Cleaning. We encourage you to do your own research to find what is best for you and your family.

[Click Here for EWG's Guide to Healthy Cleaning](#)

All products listed below can be found at [Target and/or Walmart](#) and fall within a reasonable price range.

The products listed here received an "A" rating on the Environmental Working Group's Consumer Guides, except for those specifically marked otherwise (with B next to their name).



Aura Cacia Aromatherapy Mist

Eucalyptus Harvest,
Lavender Harvest,
Tangerine & Grapefruit,
Tea Tree Harvest, Purifying. **A**



Air Scense Citra Solv Natural Air "Refreshers"

Lavender, Lime, Orange,
Vanilla. **B**



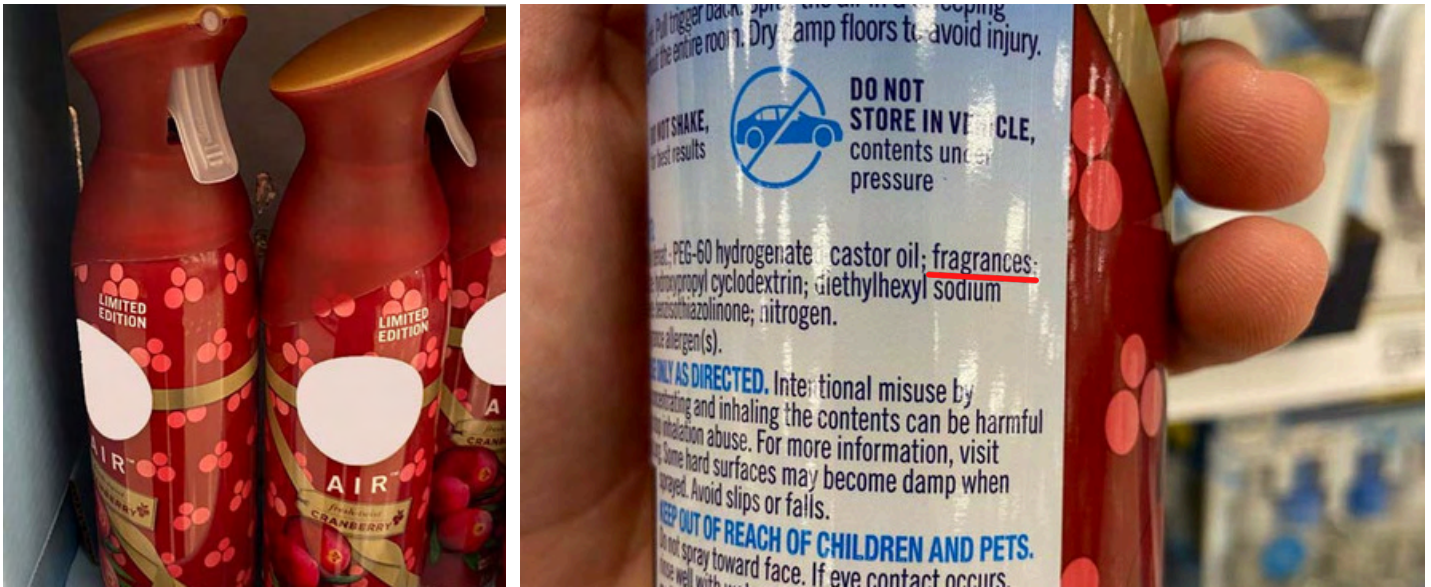
Citrus Magic Odor Eliminating Citrus Air Freshener

Tropical Citrus. **A**

One of Mothers & Others For Clean Air's Research Associates went to their local store and followed the Healthy Indoor Breathing Toolkit when looking for an air freshener.

WHAT TO LOOK FOR:

EXAMPLE NO. 1



Here, we have some air fresheners. If we look at the labeling on the back of the bottle, you'll see the word "*fragrances*" (underlined in red in the second picture). The toolkit tells us that "fragrance" is a vague, catch-all word and that over 90% of ingredients in air fresheners are not listed! Instead, the word "fragrances" is used. With this product, you have no idea what you're spraying into the air (and breathing into your body).

EXAMPLE NO. 2

The Toolkit tells us that essential oil diffusers are a safer alternative to air fresheners. But be careful, we can see here that not all essential oils are made well. This packaging also advertises "fragrance" instead of specific ingredients.

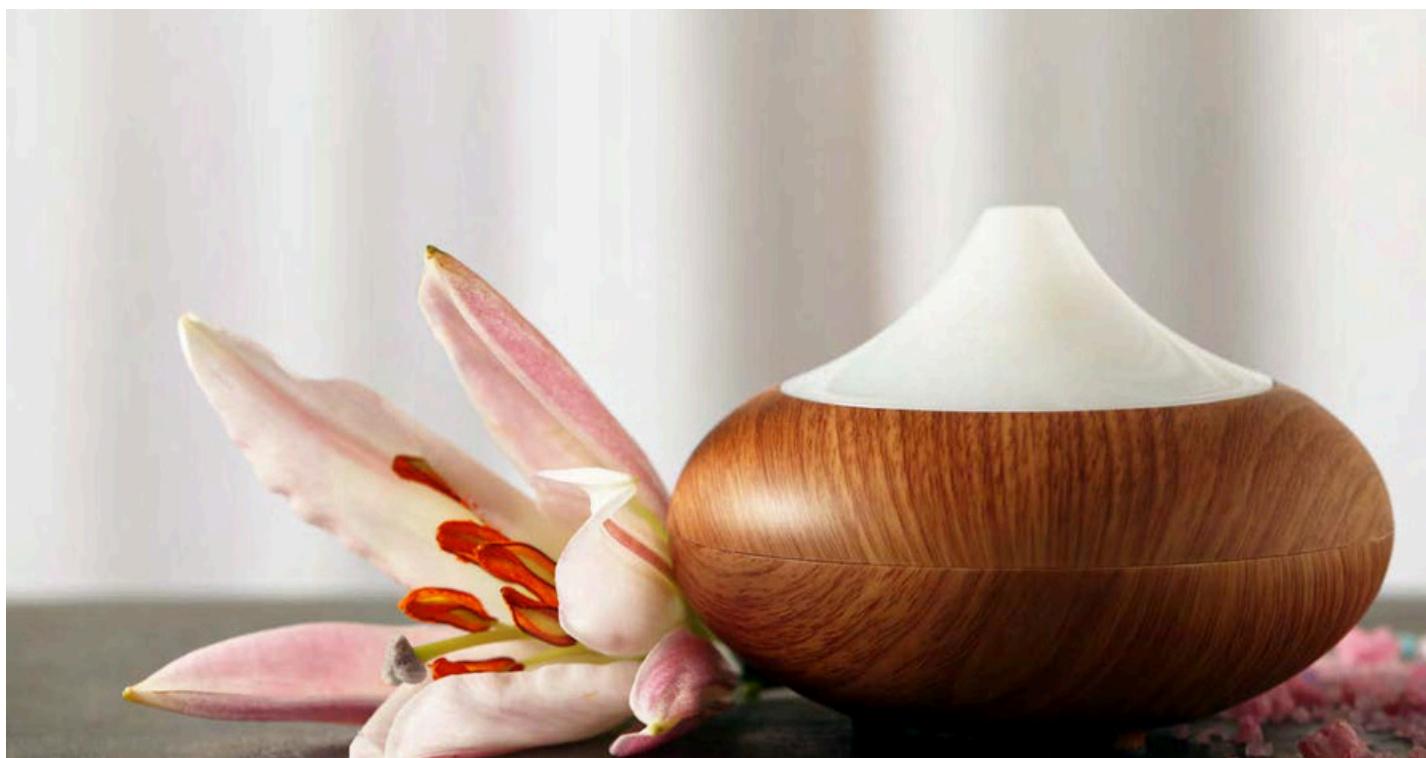
Avoid this just like we avoided the first example.





Finally, we've found the safest scent to put in our homes.

This product calls itself a "100% Pure Essential Oil Blend", and a quick look at the back packaging confirms this. In the ingredients section, you only see various plant oils (and no "fragrance").



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

BUILDING MATERIALS



For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Just as items you purchase to use inside your home could increase indoor air pollution levels, the products which were used to build your home can too. We worked with Wellness Within Your Walls to learn about these hazards and what you should look out for.



Wellness Within Your Walls®

Wellness Within Your Walls has a certification process for people, places, products, and programs which teaches a holistic approach to lowering toxins indoors.

wellnesswithinyourwalls.com

Insulation is often made with polyurethane foam. This material contains two types of harmful chemicals: MDI (which can cause asthma and lung damage in cases of severe exposure) and flame retardants.

Growing evidence shows that flame retardants affect hormones, lower sperm count, damage thyroids, cause cancer, and are developmental neurotoxins (toxic to developing fetuses). They are persistent, meaning that they build up in our blood over time.

Some old insulation, particularly vermiculite, may contain asbestos. Please go to page 12 to learn more.



Spray Foam

WHY IS THIS IMPORTANT

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TO MY OR MY CHILD'S HEALTH?

If your house is made of toxic building materials, the toxins can contribute to...

- Ear Nose and Throat Irritation
- Headaches
- Coughing
- Wheezing
- Asthma
- Eczema (Itchy/Bumpy Skin)
- Skin irritation



Eczema (Itchy/ Bumpy Skin)

- Calluses
- Asbestosis
- Memory loss
- Central nervous system effects
- Lung Disease
- Cancer
- Mesothelioma



Skin Cancer

- Fatigue
- Dizziness
- Drowsiness
- Nausea
- Abdominal pain
- Weakness
- Anemia



Fatigue

ASBESTOS



Asbestos on Wall Tiles

Asbestos can be found in building materials such as tiles, cement, paper products, and insulation.

Asbestos can be released into the air if the material is moved, disturbed, damaged or cut. Asbestos was widely used in homes until 1970. If your home was built before 1970, it is possible that there is asbestos present. However, even today asbestos is occasionally used in home building.

ASBESTOS USES BEFORE 1970:

- Insulation
- Boilers
- Furnaces
- Electrical Wires
- Pipe Coverings
- Roofing Materials
- Sealants and Coatings
- Textiles
- Ceiling and Floor Tiles
- Textured Paints
- Wall Boards
- Spackle



Vermiculite attic insulation containing Asbestos

PRESENT DAY ASBESTOS USES:

- Corrugated sheeting
- Imported cement pipes
- Roofing materials
- Some vinyl tiles
- Contaminated insulation



Asbestos in Roofing Materials

“

Health risks includes lung disease, and symptoms can take many years to present themselves.

”



Asbestos on Pipes

WHAT TO DO IF YOU THINK YOU HAVE ASBESTOS IN YOUR HOME



FIRSTLY, DO NOT PANIC! Asbestos is not harmful *if it is not damaged or disturbed*.



KEEP CHILDREN AWAY FROM AREAS WITH ASBESTOS. Avoid any activities, especially those with children, in the area where you think you have asbestos.



DO NOT DUST, SWEEP, OR VACUUM ANY ASBESTOS CONTAINING DEBRIS.



DO NOT SAND ASBESTOS FLOORING OR BACKING.



HIRE AN ASBESTOS PROFESSIONAL TO DEAL WITH ANY REPAIRS.

Asbestos inspectors can inspect your home, take material samples for testing, and advise on next steps.

Asbestos contractors can repair or remove asbestos materials.



Asbestos



[Click here for a list of asbestos professionals by state](#)

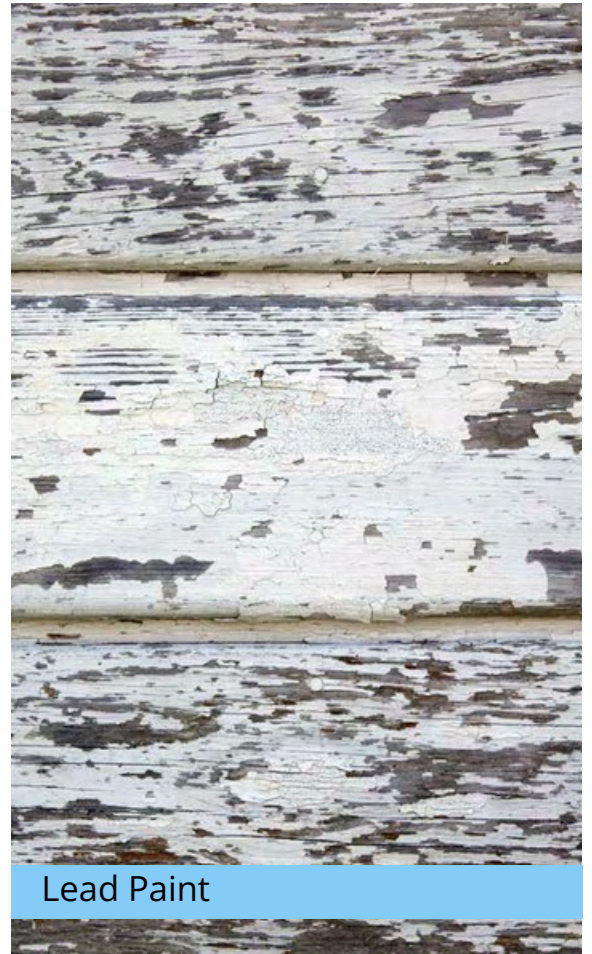
LEAD

Lead is a naturally occurring metal that has been added to paint, furniture, roofs, water tank linings, water pipe joints, and electrical wires. Lead use was banned in paints in 1978 and in pipes in 1986.

However, any home built before 1978 is likely to have lead in the paint or piping. The presence of lead paint in the home becomes an issue if the paint is likely to peel off. This peeling paint creates lead dust. Lead dust can then be inhaled and enter into our bloodstream.

Additionally, children who have a tendency to chew on surfaces covered in paint are at high risk for lead poisoning.

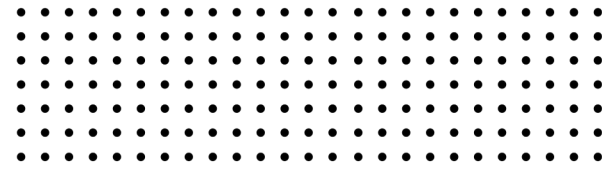
The presence of lead in piping causes the lead to leak into the water. Water contaminated with lead is harmful to humans when ingested.



Lead Paint



WHAT TO DO IF YOU THINK YOU HAVE LEAD IN YOUR HOME



If your home was built before 1978 and you suspect it contains lead-based paint or piping, have your home tested for lead and learn about potential lead hazards. You should always hire a certified lead professional to take any steps to reduce lead exposure in your home.

[Click here to locate trained professionals in your area](#)



GET A LEAD PAINT INSPECTION BEFORE BUYING A NEW HOUSE.

This inspection tells you whether your home has any lead.

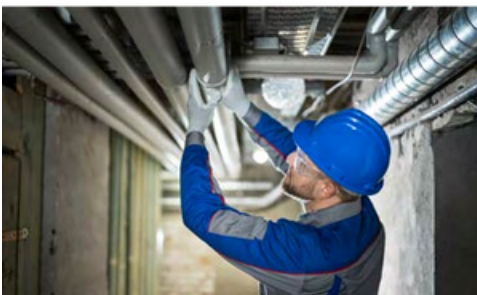


GET A LEAD PAINT RISK INSPECTION. These risk inspections can tell if your home has any lead paint hazards, where the hazard is, and what actions are necessary to reduce the hazard.



LOCATE A TRAINED PROFESSIONAL IN YOUR AREA WHO CAN EVALUATE AND TEST YOUR HOME FOR LEAD.

[Learn more here.](#)



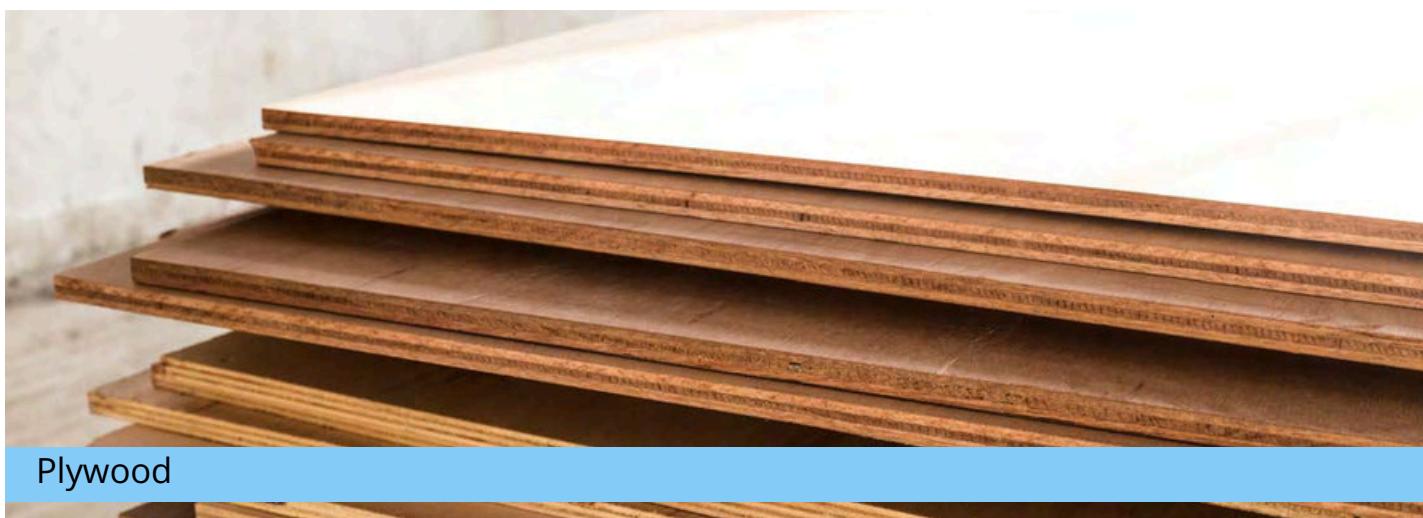
LEARN IF YOU HAVE LEAD IN YOUR DRINKING WATER.

[Learn more here.](#)

**PAINTS CAN HAVE SERIOUS EFFECTS ON YOUR HEALTH.
CHECK OUT OUR PAINT TOOLKIT TO LEARN MORE!**

FORMALDEHYDE

Formaldehyde is a colorless flammable gas that has a strong odor. It has been classified as a known human carcinogen since 2014. Formaldehyde is used in many building products including pressed wood, paints, plywood, fiber board, glues, adhesives, and insulation. Exposure to formaldehyde has negative effects on anyone's health but is particularly harmful to those suffering from respiratory diseases or asthma.



Plywood

HOW TO AVOID FORMALDEHYDE WHILE BUILDING A NEW HOME

Only purchase woods, glues, adhesives, and insulations which specifically indicate that they are formaldehyde free.



VOLATILE ORGANIC COMPOUNDS

Volatile organic compounds are a class of chemical used in many adhesives, coatings, wood protectors, flame retardants, and other building materials. VOCs include a variety of chemicals released from common products, which can have negative health effects. In some cases, VOCs inside the home are measured up to 100 times higher than outside.



HOW TO AVOID VOCS IN YOUR HOME

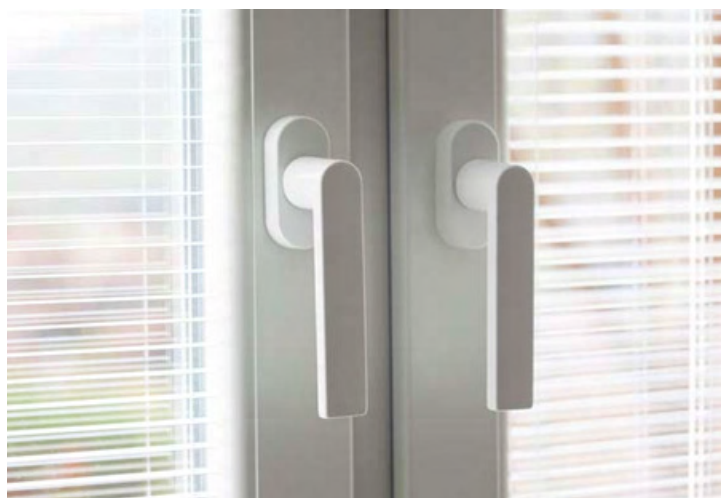


Only purchase building materials which specifically indicate that they are VOC free.



PVC

PVC is a plastic which is used to create the water pipes beneath sinks, sidings, window frames, and electric wiring/cables. PVC is the single most environmentally damaging plastic on the market. During PVC's manufacturing process many toxic chemicals are created which then linger in the plastic and are released into the home.



HOW TO AVOID PVC IN YOUR HOME



Only purchase pipes, window frames, sidings, and cables which specifically indicate that they are PVC free.

[1] [Polyvinyl Chloride \(PVC\) | Uses, Benefits, and Safety Facts.](#)

[2] [Poison Plastic: The Toxic Life Cycle of PVC.](#)



MOTHERS & OTHERS FOR CLEAN AIR

**HEALTHY
INDOORBREATHING
TOOLKIT**

CANDLES



For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM



Burning candles indoors can create indoor air pollution that is risky for your health. Because candles burn wax, they make soot and particulate matter and can trigger allergic reactions. Petroleum-based and paraffin candles are the most dangerous.

Many candles are made from a blend of paraffin wax. Paraffin is derived from petroleum gas. When we burn paraffin candles, we are also burning carcinogenic chemicals that are part of petroleum products, such as benzene, toluene, formaldehyde, acetaldehyde, and soot. These are similar to the chemicals released from a diesel-burning car! They are associated with heart, lung, and even brain diseases.

Candles are not good for indoor air quality. Scented candles can release unidentified chemical fragrances into the air, just like air fresheners. Scented candles can trigger allergic reactions in people (including children) who are allergic to the scents. Scented candles do not clean the air, they just create indoor air pollution with a fragrance added. People with asthma or other lung conditions can experience severe reactions to candle smoke.



WHY IS THIS IMPORTANT TO MY OR MY CHILD'S HEALTH?

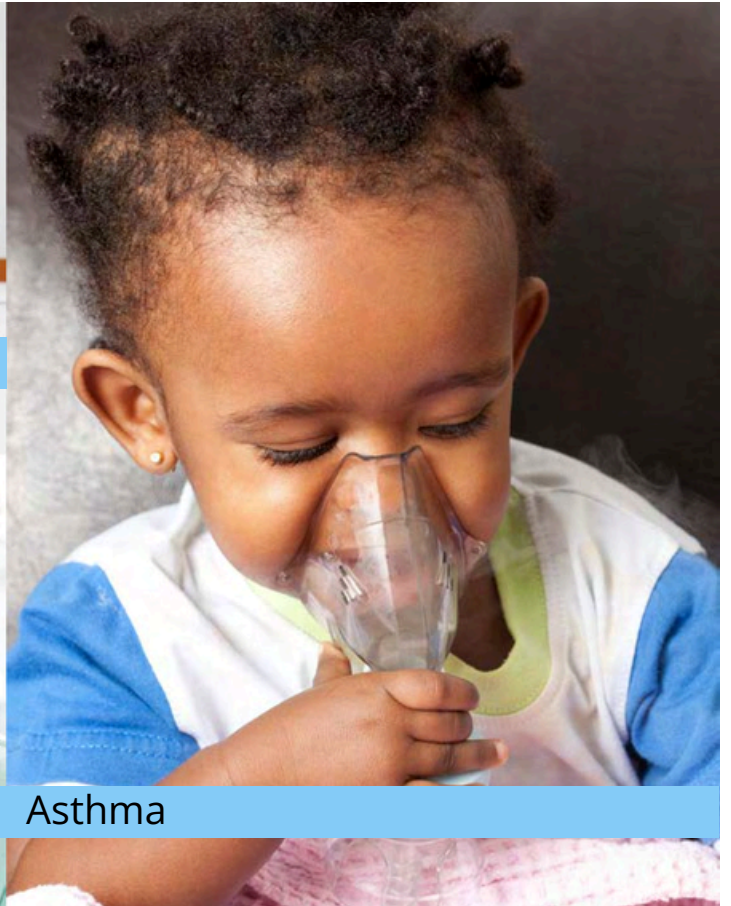
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Allergy



Allergy



Asthma

HEALTH RISKS:

- Itchy Eyes, Nose, and Throat
- Allergies
- Asthma
- Hormone Disruption
- Birth Defects of Male Reproductive System
- Damage to DNA
- Cancer Risk

WHAT TO AVOID

22

It is best to avoid any candles. No candles are subject to environmental review and they all release particles and chemicals into the air.



WHAT TO BUY

There are no candles which are completely safe. All candles make indoor air pollution with soot, particles, and unnecessary chemicals which you can breathe into your lungs. The least harmful candles are unscented beeswax candles. Buying candles at small markets allows you to talk about the ingredients with the candle maker and provides you with the best chance that your candle will be safe.



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

CLEANING PRODUCTS



For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Many traditional cleaning products contain harmful chemicals and fumes which are released into our homes each time we use them. Many cleaners release Volatile Organic Compounds (VOCs) into the air. VOCs are a group of chemicals that vaporize easily, causing indoor air pollution. Because VOCs are organic chemicals, they can cause short and long term health problems.



In some cases, levels of VOCs inside the home are measured up to **100 times higher** than levels outside the home. Growing evidence links cleaning products to the buildup of carcinogens (substances that cause cancer) in the body.



WHY IS THIS IMPORTANT

TO MY OR MY CHILD'S HEALTH?

25

Using toxic cleaning supplies can contribute to...

- Asthma
- Asthma Attacks
- Allergies
- Fatigue
- Eczema/ Bumpy Skin
- Difficulty Breathing
- Irritation of Nose and Throat
- Chemical Burns
- Birth Defects
- Low Birth Weight



Chemical Burn



Skin Allergies



Eczema / Bumpy Skin



Eczema / Bumpy Skin

WHAT TO AVOID

Since a lot of products do not disclose all of their ingredients it can be hard to know which ones are safe to buy. [Instead, try looking for products that say they are free of...](#)

- Phosphates Quaternary Ammonia Compounds (QUACS)
- Formaldehyde
- Sulfates & Sulfuric Acid
- Bleach
- Pine Oil Cleaners (difficult for kids with asthma)
- Citrus Oil Cleaners (difficult for kids with asthma)



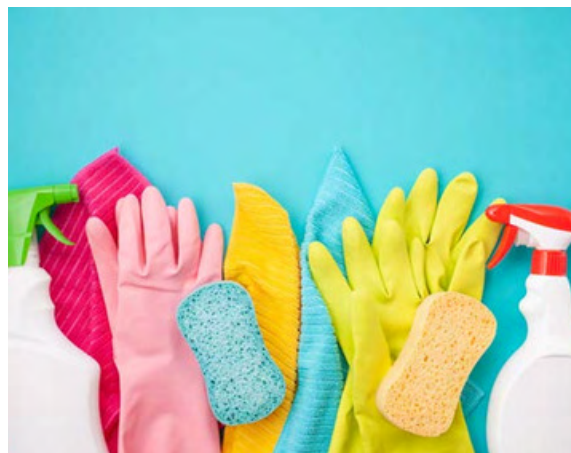
Never mix your cleaning products, this is extremely dangerous. For example, mixing bleach with any product that contains *ammonia* (window cleaners and some floor cleaners) makes toxic gases called *chloramines*. Exposure to *chloramine gases* can cause throat and nose irritation, cough, shortness of breath, and nausea. Mixing bleach with any product that contains acid (vinegar, some window cleaners, dishwasher detergents, toilet bowl and drain cleaners, rust removers, brick/concrete cleaners) makes chlorine gas, which is very irritating at low levels and at high enough levels can cause death.



WHAT TO BUY

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The Environmental Working Group (EWG) has a consumer guide where cleaning products are rated on a scale of “A-F” based on their safety for use inside the home. Look at EWG’s Guide to Healthy Cleaning here to search over 2,500 products. Based on the EWG’s Guide to Healthy Cleaning, Mothers & Others for Clean Air recommends the following products for easy shopping.



[Click here for the EWG Guide to Healthy Cleaning](#)

[Click here for the EPA's Safer Choice Guide](#)

However, we encourage you to do your own research to find what is best for you and your family. All products listed below can be found at Target and/or Walmart and fall within a reasonable price range. [The products listed here received an “A” rating on the Environmental Working Group’s Consumer Guides, except for those specifically marked otherwise \(with B or C next to their name:](#)

GENERAL SURFACE CLEANERS



Baby Ganics All Purpose Surface Wipes
Fragrance Free **A**



Seventh Generation Disinfecting Multi-Surface Cleaner
Lemongrass Citrus **A**



Puracy Natural Multi-Surface Cleaner
Green Tea and Lime **A**

WHAT TO BUY

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CONTINUED

GLASS CLEANERS



Everspring Glass Cleaner

Lemon and Mint **B**



Biokleen

Ammonium Free Glass Cleaner **B**



Method Glass and Surface Cleaner

Mint **B**

BATHROOM CLEANERS



Lemi Shine Shower and Tile Cleaner **A**



Seventh Generation Emerald Cypress and Fir Toilet Bowl Cleaner **A**



Seventh Generation Disinfecting Bathroom Cleaner **A**

WHAT TO BUY

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CONTINUED

LAUNDRY



Everspring Laundry Detergent

Free and Clear **A**



Seventh Generation

Ultra Power Plus
Laundry Detergent
Packs **A**



Mrs. Meyer's Clean Day Laundry Pacs

Lavender **B**

DISHWASHING



Seventh Generation Dishwasher Detergent

Packs or Powder; Free
& Clear, Lemon, or Ultra
Power **A**



ECOS Dishmate Dish Soap

Free and Clear or
Lavender **A**



ECOVER Dish Soap

Pink Geranium **B**

CONTINUED

ANTI-VIRAL/ANTI-BACTERIAL

A daily surface cleaner in the home does not need to be labeled "anti-viral" or "anti-bacterial". These products are harder on the body and they contribute to the problem of antibiotic resistance. Soap or detergent is a very good cleaner because it disrupts bacterial cell walls and is naturally antibacterial. If you feel you need to buy a sanitizer, please visit the EWG Guide to Healthy Cleaning.

[Click here for the EWG Guide to Healthy Cleaning](#)

For more information about cleaning versus sanitizing, please visit the CDC website:

[Click here for the CDC Guide to Cleaning and Sanitizing](#)

The following products are recommended to protect against respiratory viruses, including COVID-19:



**Seventh Generation
Disinfecting Multi-
Surface Cleaner**

Lemongrass Citrus **A**



**Lysol Hydrogen Peroxide
Action Multi-Purpose Cleaner**

Spray or Wipes, Oxygen Splash
or Citrus Sparkle Zest **A**



**Purell Multi Surface
Disinfectant**

Fragrance free, Fresh, or
Citrus **B**

DIY SURFACE CLEANER

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One of the safest ways to clean your home is with good old fashioned soap and water. It does the job and skips all the plastic waste. If you prefer a spray cleaner consider making your own from ingredients already found in your kitchen mixed in a glass bottle. There are many recipes you can easily find online. We listed one here as an example of how you can make your own basic daily surface cleaner.

INGREDIENTS:

- 1/2 cup distilled white vinegar
- 2 cups water
- 20 drops essential oils: lavender, lemongrass, basil, orange, lemon (all have antibacterial or antifungal properties)
- Glass spray bottles

INSTRUCTIONS

1. Pour all ingredients into a bottle.
2. Fit with a spray top.
3. Gently swirl the bottle to mix the ingredients together.
4. Use immediately or as needed.

RECIPE NOTES:

Do not use this cleaner on granite or marble countertops as the vinegar will etch the natural stone. Be careful with cleaning rags/cloths and the clothes you're wearing because vinegar can also eat holes in cotton fabrics.



The background of the entire page is a close-up photograph of various wood floor planks. The planks are arranged in a staggered pattern, showing different wood species and finishes, ranging from light tan to dark brown. The lighting is warm, highlighting the natural grain of the wood.

MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

FLOORS

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM



Installation of Vinyl Tiles

Many types of floors are made in a way that releases harmful chemicals into the air. Vinyl is a popular material for building floors because it is easy to install. However, vinyl is made from PVC, a gasoline-based plastic. PVC can produce dioxin, a chemical that causes cancer. Vinyl flooring also usually contains a type of chemical called phthalates that have been banned from children's toys. Growing evidence connects phthalates to birth defects and hormone disorders.

Old vinyl flooring might contain asbestos, a material known to cause mesothelioma, lung cancer, and some other kinds of cancer.



Application of Vinyl Glue

Glue used to make floors can release chemicals that are harmful to human health when breathed in. Many of these chemicals are Volatile Organic Compounds (VOCs). VOCs are a group of chemicals that vaporize easily, causing indoor air pollution. Because VOCs are organic chemicals, they can cause short and long term health problems.

Floor glue also releases formaldehyde. Formaldehyde can cause burning sensations in the eyes, nose, and throat; coughing; nausea; wheezing; and skin irritation. Formaldehyde is known to cause cancer in animals, and growing evidence shows that it can cause cancer in humans too. It has been classified as a known human carcinogen since 2014.

WHY IS THIS IMPORTANT TO MY OR MY CHILD'S HEALTH?

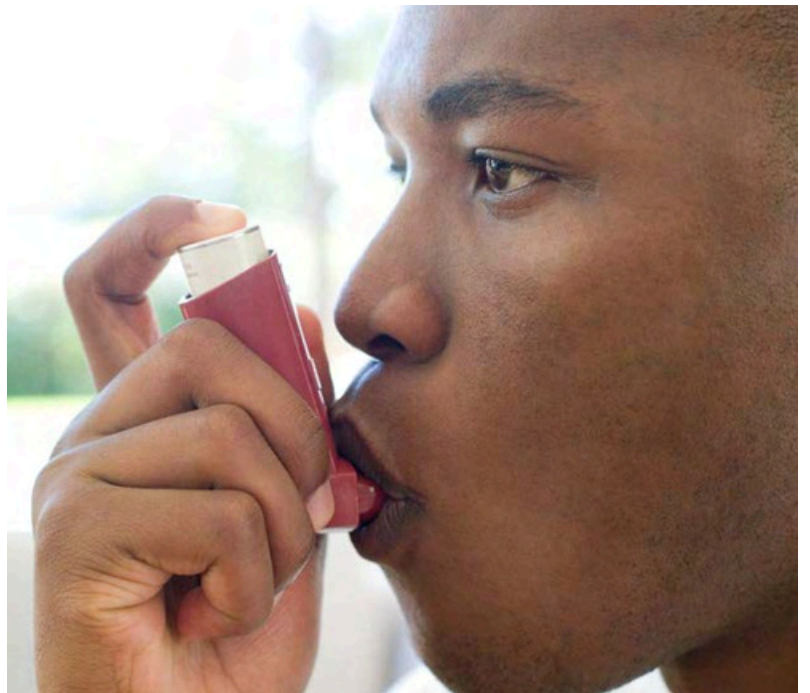
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Unsafe floors can contribute to...



Allergies

- Allergies
- Asthma
- Hormone Disruption
- Difficulty Breathing
- Irritation of Nose and Throat
- Birth Defects
- Cancer risk
- Skin Pain
- Headaches and nausea



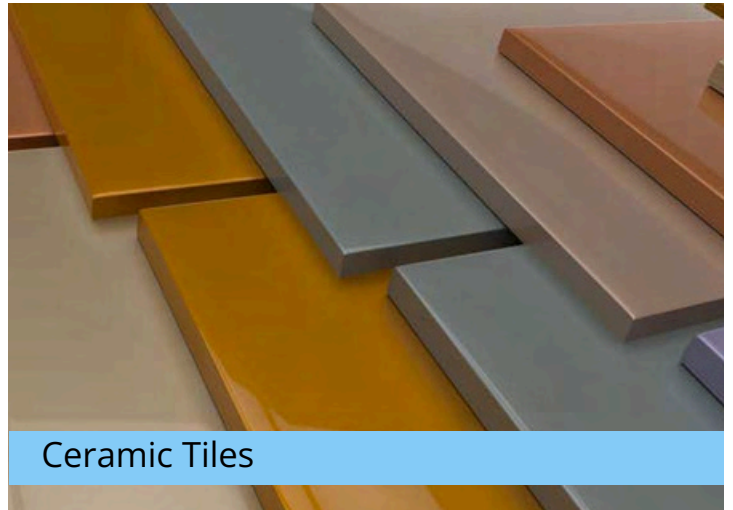
Asthma

Buy flooring that is nailed down or interlocking — floors made in this way do not use glue and release fewer chemicals. Solid surfaces are always preferable to carpeting.

In bedrooms and living rooms:

- Use solid wood flooring, natural linoleum, ceramic, porcelain, or glass tile.
- Make sure all sealants and other treatments are low-VOC. Green-seal GS-11 certification is ideal.
- Engineered hardwood can be used with minimal risks if it is **FSC certified** and installed with formaldehyde-free glues.

[See page 36 for to learn more about FSC.](#)



Ceramic Tiles

In bathrooms and kitchens:

- These floors need to be resistant to water damage and mold.
- Use natural linoleum, ceramic, porcelain, or glass tile.
- Make sure all sealants and other treatments are low-VOC. **Green-Seal GS-11** certification is ideal.
- Cork can be used if the material is not mixed with vinyl, PVC, or rubber.
- Make sure that isocyanate or formaldehyde binders are not used when installing it.



Glass Mosaic Tiles

Buy floors made from sustainable wood.

Some sustainable woods are certified by either the **American Tree Farm System** or **Forest Stewardship Council (FSC)**. Any furniture using woods with these certifications are a good choice for your home.



The mark of
responsible forestry
FSC® A000504



Additionally, the following woods grow fastest in the wild meaning they are the most renewable/sustainable. Purchasing floors made from these woods are a good choice for your home.

- Pine
- Maple
- Eucalyptus
- Aspen
- Bamboo

Use linoleum instead of vinyl.

Linoleum repels dust and allergens making it a hypoallergenic flooring option. The manufacturing process for linoleum does not use VOCs. Upon removal, linoleum is both recyclable and biodegradable.

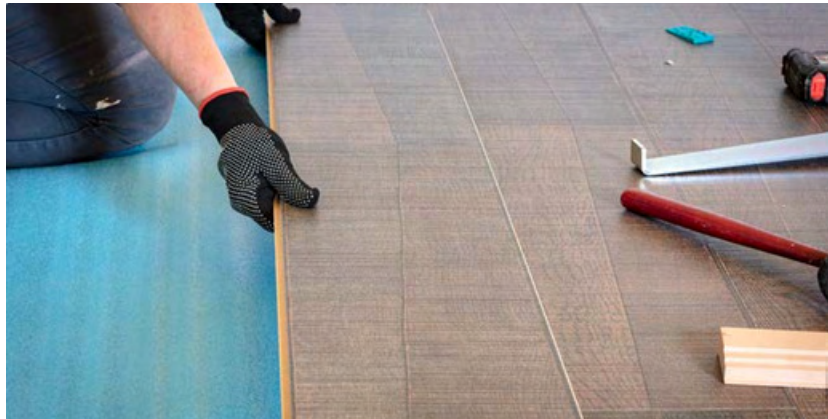
Linoleum comes in many styles and colors and is a relatively affordable flooring option.



Linoleum Tiles

Avoid floors made of laminate, they are made with high amounts of unsafe glues that release formaldehyde. Avoid floors made of vinyl, they are made with plastic that releases harmful chemicals. Avoid floors made with biocides or fungicides — these are used to kill pests but can also be harmful to adults and children. Avoid synthetic carpeting, it can trap chemicals released by other sources of pollution.

LAMINATED FLOORING



VINYL FLOORING



SYNTHETIC CARPETING



A close-up photograph of a person's hand resting on a vibrant, patterned rug. The rug features a complex geometric design in shades of red, blue, and yellow. The background is softly blurred, showing more of the rug and a wooden floor.

MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

FLOOR CARPETS

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM



Carpets and rugs cover the floor in nearly half of the buildings in the United States. Carpets are a chronic source of indoor air pollution. Adhesives which are used during carpet installation, the application of stain treatments to carpets, and the use of flame retardants on carpets release volatile organic compounds (VOCs) into the air.



Not only do materials used in carpet manufacturing and installation release VOCs, but carpets can trap years of toxins, dust, and mold spores.

This trapping of toxins takes a toll on indoor air quality. There are over 80,000 chemicals used in fabrics and carpets, most of which have not been tested for human safety.

CHEMICALS USED

40

ON MANY COMMON CARPETS INCLUDE THE FOLLOWING:

PFAS

PFAs are a family of chemicals used in many personal care and home products. PFAs are a suspected human carcinogen (meaning they are suspected to cause cancer in humans). PFAs are widely used in carpets as a stain/oil resistant treatment. Due to the unique properties of PFAs they are called a “forever chemical (DTSC).” This means that the PFAs do not break down. Upon being released into the environment, PFAs appear everywhere from soil, to water, to the air. As of 2019, nearly all Americans have detectable levels of PFAs in their blood. Home Depot stopped selling carpets with PFAs at the end of 2019.

VOLATILE ORGANIC COMPOUNDS (VOCs)

Volatile Organic Compounds (VOCs) include a variety of chemicals released from common products, including carpets, which have negative health effects. In some cases, VOCs inside the home are measured up to 100 times higher than outside the home.

4PCH (4-PHENYLCYCLOHEXENE)

4pCH (4-Phenylcyclohexene) comes from the backing or adhesives used to attach the backing to carpets.



[1] [Department of Toxic Substances Control \(DTSC\)](#).

[2] [NRDC](#)

[3] Masten, S., & Haneke, K. E. (2002). 4-Phenylcyclohexene [CASRN 4994-16-5] Review of Toxicological Literature.

CONTINUED

FORMALDEHYDE

Formaldehyde is a colorless flammable gas that has a strong odor. Formaldehyde can be released from drying carpet adhesive or through a 4pCH reaction. Exposure to formaldehyde has negative effects on anyone's health but is particularly harmful to those suffering from respiratory diseases or asthma. It has been classified as a known human carcinogen since 2014.

SYNTHETIC RUBBER (STYRENE AND BUTADIENE)

Styrene and Butadiene are both major components in synthetic rubber (used on carpet backings). Short-term exposure to these chemicals can irritate the eyes, nose, and airways. Long-term exposure to low levels is still being studied. To be safe, it's best to avoid them.



[4] National Cancer Institute

[5] Birnbaum, L. S. (1993). A brief survey of butadiene health effects: A role for metabolic differences. Environmental Health Perspectives, 101(SUPPL. 6), 161-167. <https://doi.org/10.1289/ehp.93101s6161>

CONTINUED

PVC

PVC is used on carpet backing. PVC is the single most environmentally damaging plastic on the market. During PVC's manufacturing process many toxic chemicals are created which then linger in the plastic.

OLDER CARPETS

Older carpets trap all sorts of indoor pollutants, viruses, dust, and bacteria. When family members walk on carpets with shoes, they track in all of the outdoor dirt, toxins, and pesticides and trap them in the carpet. When young children spend time on carpets they breathe in trapped toxins.



[Poison Plastic: The Toxic Life Cycle of PVC.](#)

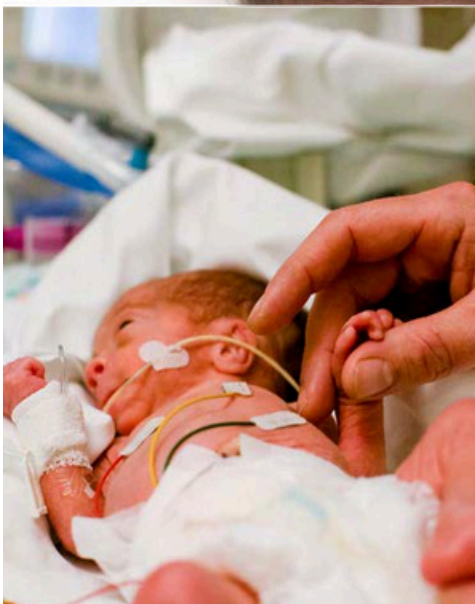
WHY IS THIS IMPORTANT

TO MY OR MY CHILD'S HEALTH?

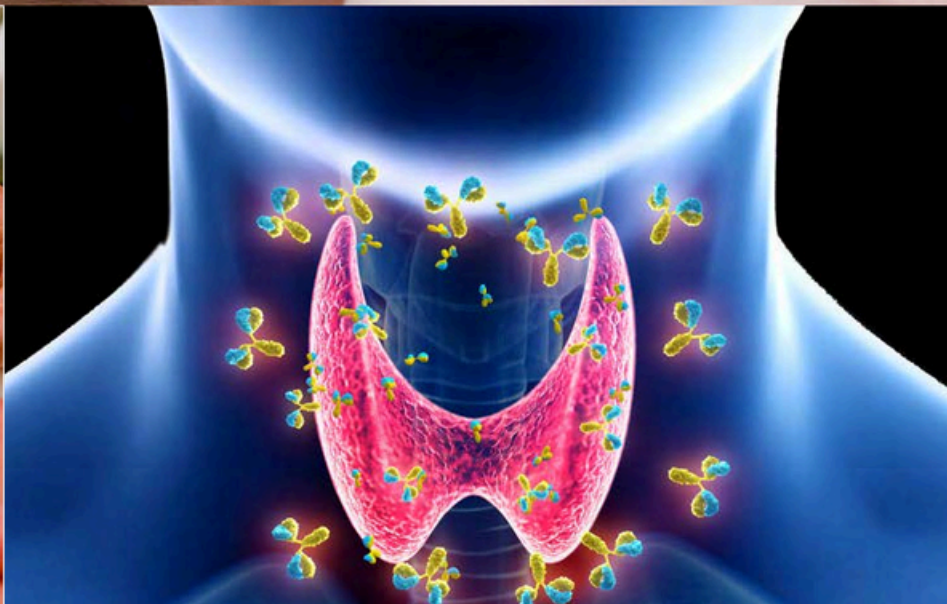
Using carpets treated with toxic chemicals and letting dirty carpets trap pollutants can lead to...



Ear Infection



Low Birth Weight



Thyroid Disease

- Ear, nose, and throat irritation
- Headache
- Nausea
- Fatigue
- Dizziness
- Suppressed immune system
- Liver damage
- Damage to Central Nervous System
- Thyroid disease
- Low birth weight
- Hormone malfunction
- Abnormal fetal and child development
- Cancer

EXISTING CARPETS SAFE:

Without replacing carpets there is a lot you can do to help reduce the levels of toxins contained in your home.

① Keep dust, dirt and pollutants off of the carpet



Place door mats at each door and encourage family members to wipe their shoes before entering the carpeted home.

Better yet, encourage family members to never wear their shoes indoors.

② Use a vacuum frequently to remove dust and other particles from floors and carpets.



It is best to use a High Efficiency Particulate Air (HEPA) vacuum with a tight seal. These vacuums are better at removing the invisible particles, and will prevent the toxins from leaking out.

The American Lung Association recommends vacuuming at least three times a week with a vacuum fitted with a HEPA filter to remove dirt and allergens.

- If you have area rugs that are small enough for you to carry, you can take them outside and bang them on a wall to get some of the dust and particles out.
- If you have a fence, you can air out the area rugs periodically to let some of the pollutants go outside.

③ Make sure you have proper ventilation in your home.



Your heating/cooling appliance filter should be regularly replaced. Air filters for home use are rated using a Minimum Efficiency Reporting Value scale (MERV).

To successfully keep your home's air clean and safe, try to purchase filters with a minimum MERV 13 rating. 1-inch filters need to be replaced every six months, 4-inch filters can be replaced once a year.

In circumstances where you are not responsible for your heating and cooling appliance maintenance, such as in an apartment complex or at school, portable purifiers can help clean the air of toxins and particulates.

Look for HEPA filtration vs. ionization, and as a rule of thumb, portables cover an area of about 500 square feet.



THINKING OF GETTING RID OF YOUR CARPETS?

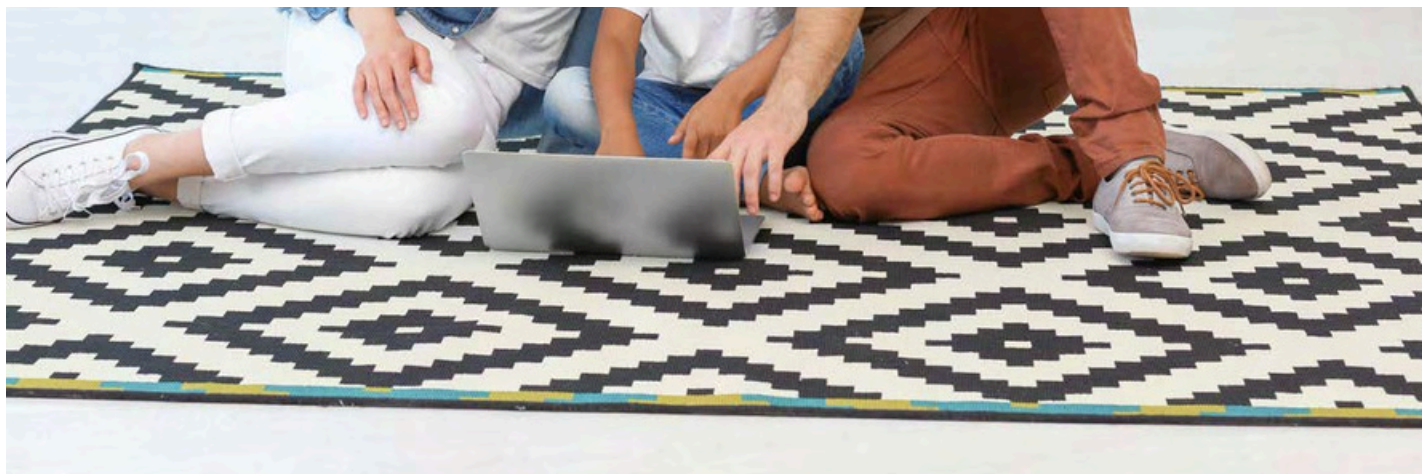
Great choice! Removing the carpets from your home requires much less upkeep and is safer for you and your family. Check out our guide for the most sustainable wood floorings to use in place of the carpet.

Avoid the carpet removal zone, and make sure windows are open during and for an hour after complete removal. While the carpet is being removed all of the toxins in the adhesive and flame retardants leak into the air. Make sure a qualified professional does the removal.

HOW TO PURCHASE

NEW CARPETS:

46



There are certain carpets to avoid. These carpets trap more toxins than others. When purchasing new carpets avoid ones made of the following materials. Additionally, try to avoid wall-to-wall carpeting if possible.

- Polyester
 - Acrylic
 - Acetate and Triacetate
 - Nylon
-
- Stain or Waterproof Treatments
 - VOC adhesives
 - PVC backing
-
- Flame and Heat Resistant Carpets
 - Antimicrobial Treatments
 - Stain Resistant Carpets



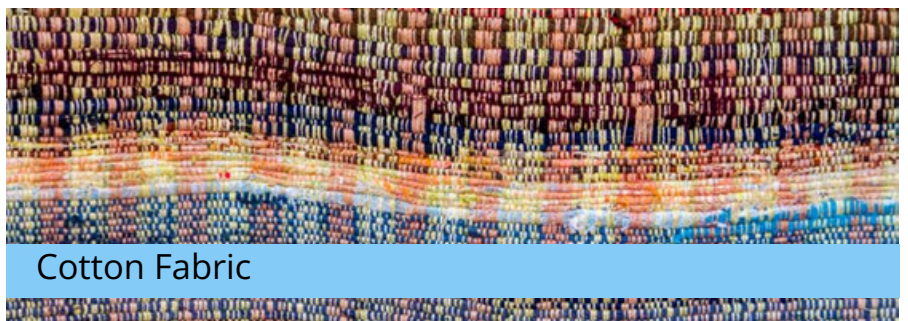
INSTEAD, OPT FOR MORE SUSTAINABLE AND HOME-FRIENDLY MATERIALS:

If you do need to purchase a new carpet, opt for a wool carpet as a healthier alternative. Wool is less likely to trap VOCs and is natural and biodegradable. If wool is too expensive for your budget, try finding carpets made out of some of the **natural materials** below:

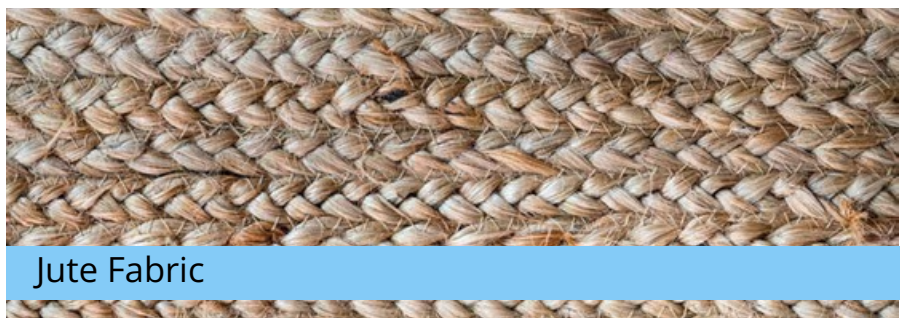
- Sisla
- Sea grass



- Abaca
- Cotton
- Silk



- Jute
- Linen



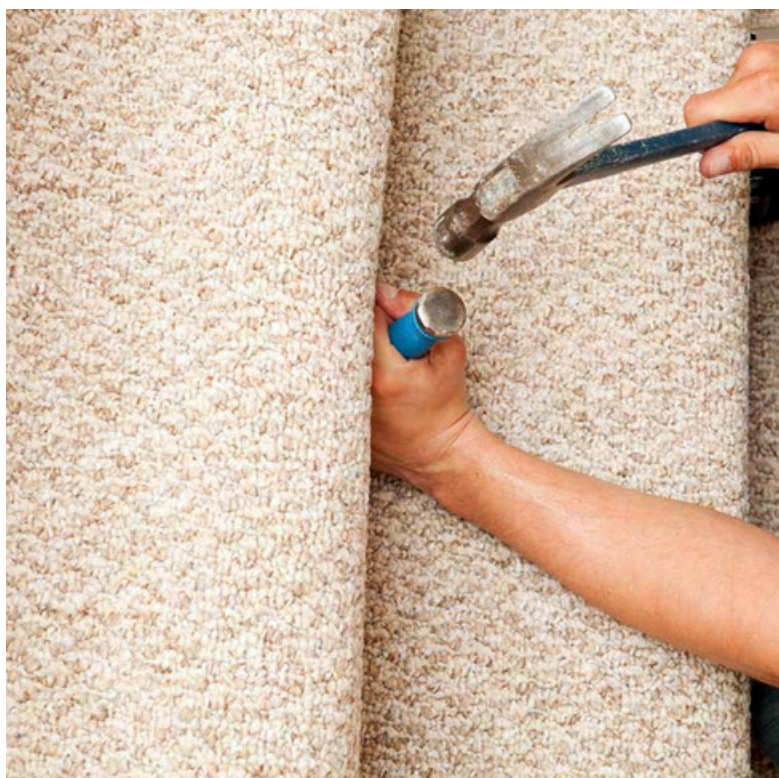
IF YOU MUST OPT FOR A SYNTHETIC CARPET

Select carpets certified with the **Green Label Plus** or **Green-Guard** to ensure low VOC emissions from the carpet and padding.



[CLICK HERE TO VISIT GREEN LABEL PLUS](#)

ENSURE LOW VOC ADHESIVES



Ensure **low VOC adhesives** are used during installation.

Alternatively, install carpets using a **hook or fastener** system which requires no adhesive.



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

FURNITURE

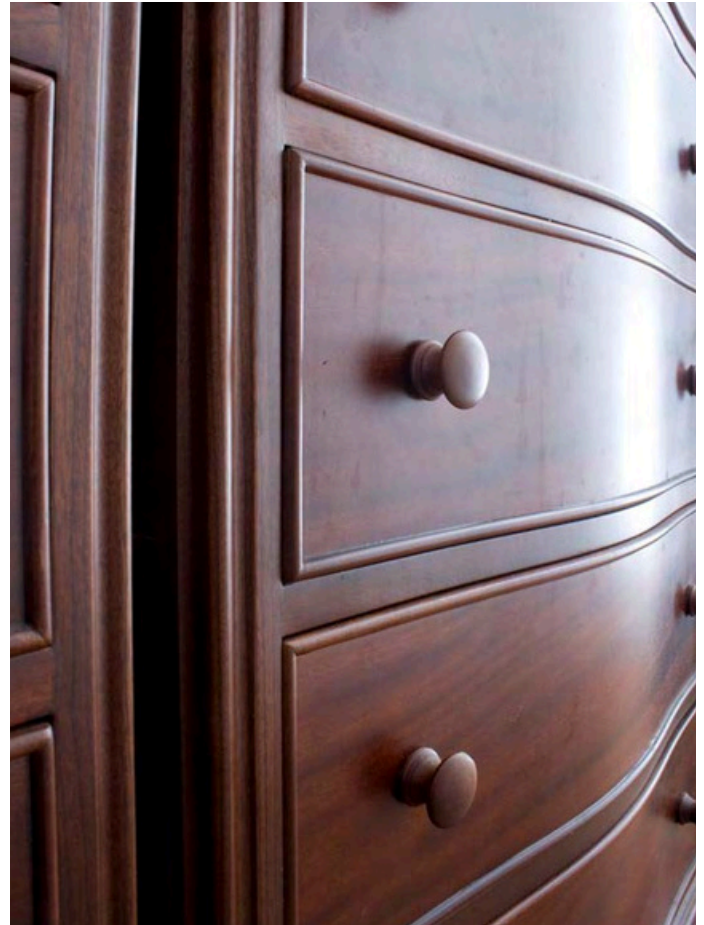


For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Furniture treated with chemical flame retardants, such as PFCs and PBDEs, can release these harmful substances into the environment.

These chemicals accumulate in the body over time, affecting hormones, lowering sperm count, damaging the thyroid, causing cancer, and harming fetal development. Children are especially vulnerable as they frequently ingest these toxins through hand-to-mouth contact.



Many pieces of furniture are made from plywood, particle board, or composite wood frames. These materials are held together by glues that release formaldehyde. Formaldehyde can cause burning sensations in the eyes, nose, and throat; coughing; wheezing; nausea; and skin irritation.

Formaldehyde is known to cause cancer in animals, and growing evidence shows that it can cause cancer in humans too. It has been classified as a known human carcinogen since 2014.

CHEMICALS IN FURNITURE

FLAME RETARDANTS

Flame retardants are chemicals applied to foam-based furniture and upholstery to prevent fires. These chemicals can leak into the air and attach to dust particles, spreading throughout the home.

When ingested through hand-to-mouth contact, they accumulate in the body over time.

As a result, most Americans and their pets have detectable levels of flame retardants in their blood.



Flame retardants are used in memory foam mattresses and pillows



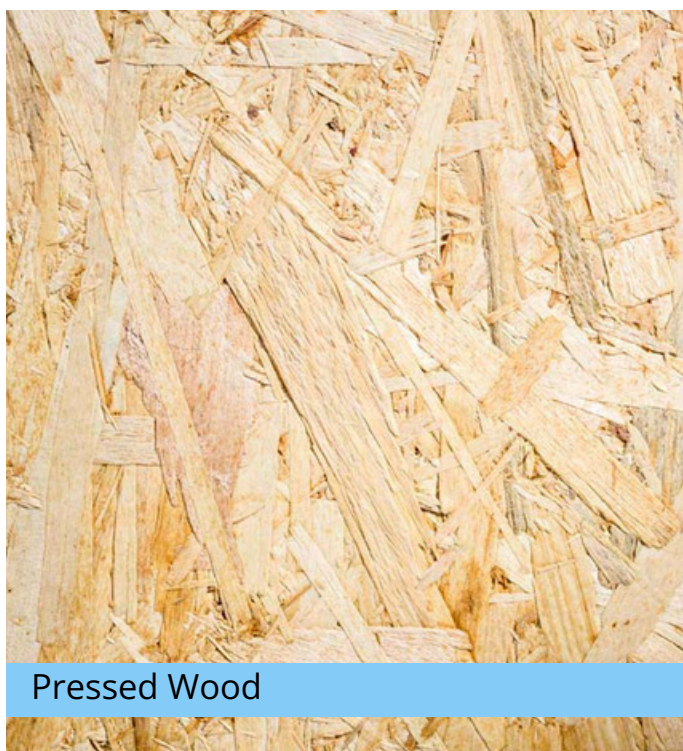
Spraying of Flame Retardant on Dressed Lumber



Flame Retardant Foam

FORMALDEHYDE:

Formaldehyde is a colorless flammable gas that has a strong odor. Materials that contain formaldehyde can release it into the air as a gas. Formaldehyde is often found in pressed wood products. Pressed wood is the material which makes up the surfaces of many tables, desks, and cabinets, as well as the legs of couches and chairs. Formaldehyde is also found in the foams which make up some mattresses and chairs. Exposure to formaldehyde has negative effects on anyone's health but is particularly harmful to those suffering from respiratory diseases or asthma. Formaldehyde has been classified as a known human carcinogen since 2014.



Pressed Wood

LEAD



Chipped Lead Paint

Lead use was banned in paints in 1978. However, before 1978 lead was a widely used ingredient in paints.

Lead can be found in painted furniture (particularly antiques and heirlooms). The presence of lead paint in the home becomes an issue if the paint is likely to peel off. This peeling paint creates lead dust. Once lead paint creates lead dust, we can breathe it, and it gets into our blood. In addition, children are on the floor more and explore by putting things in their mouths, including paint chips or chewing on furniture, so they are at high risk for lead poisoning.

[1] United States Environmental Protection Agency. "Q & A Consumer Fact Sheet on Flame Retardants."

[2] National Institute of Environmental Health Sciences. "Flame Retardants."

VOLATILE ORGANIC COMPOUNDS (VOCs)

Volatile organic compounds are a class of chemical used in many adhesives, coatings, wood protectors, flame retardants, and other building materials.

VOCs include a variety of chemicals released from common products, which can have negative health effects. In some cases, VOCs inside the home are measured up to 100 times higher than outside.



In some cases, VOCs inside the home are measured up to 100 times higher than outside the home.

[3] National Cancer Institute. "Formaldehyde and Cancer Risk."

[4] United States Environmental Protection Agency. "Lead."

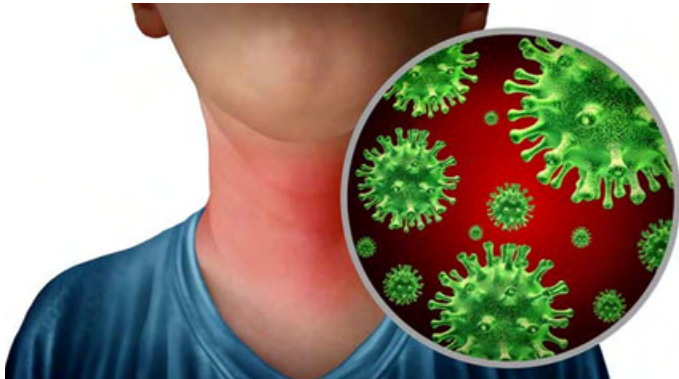
WHY IS THIS IMPORTANT

54

TO MY OR MY CHILD'S HEALTH?

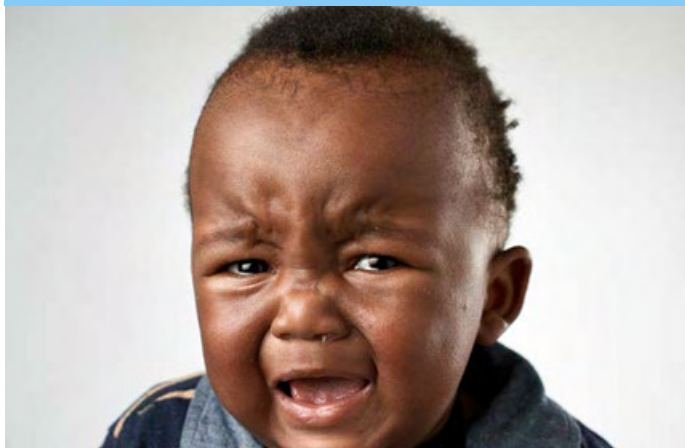
BUYING PLYWOOD FURNITURE

TREATED WITH CHEMICALS CAN CONTRIBUTE TO...



Irritation of Nose and Throat

- Allergies
- Asthma
- Difficulty Breathing
- Irritation of Nose and Throat
- Hormone System Disruption



Behavioral Problems

- Lower IQ
- Behavioral Problems
- Cancer Risk
- Birth Defects



Asthma

HOME SAFE

Without even replacing your furniture there is a lot you can do to help reduce the levels of flame retardants, formaldehyde, and lead within your home.



Reduce dust levels by mopping or wet dusting.

Using a damp cloth effectively traps dust, while a dry cloth only spreads particles into the air, allowing them to resettle elsewhere.



Wash your and your child's hands often.

Frequent washing of hands reduces the amount of dust that is then being transported to your mouth and ingested.



Use a vacuum frequently to remove dust and other particles from floors and carpets.

It is best to use a High Efficiency Particulate Air (HEPA) vacuum. These vacuums are better at removing the invisible particles.



HOW TO KEEP MY HOME SAFE (CONTINUED)

56



Make sure you have proper ventilation in your home.

Your heating/cooling appliance should have an air filter on it. Air filters for home use are rated using a Minimum Efficiency Reporting Value scale (MERV) between 1-13. To successfully keep your home's air safe, try to purchase filters between 8-13 MERV. In a common American home, the air filter should be replaced approximately once a year.



Reduce the humidity in your home.

Humidity can be reduced with proper ventilation. If necessary, consider purchasing a dehumidifier.



FURNITURE

When buying furniture, consider secondhand options to reduce indoor air pollution. Older furniture has already off-gassed harmful fumes, making it a safer choice for indoor air quality.

Be cautious with old painted furniture, as lead paint was used until 1978. Chipped, rustic finishes may contain lead, but affordable tests are available to check for safety.



WHEN BUYING NEW FURNITURE



Look for proper labelling. Buy furniture that is labeled TB117- 2013. This label should read: "The upholstery materials in this product contain NO added flame retardant chemicals."



Always contact the manufacturer if you are unsure or if the label does not clearly state this. Natural latex foam cushions are a good alternative to polyurethane foam.



Look for Certifications. Look for any of the following certifications ensuring low pollution:

- Global Organic Textile Standard (GOTS)
- Global Organic Latex Standard (GOLS)
- Oeko-Tex Standard 100
- Greenguard Gold
- SCS Global Services

NEW FURNITURE (CONTINUED)



Air out new furniture before bringing it inside to reduce indoor air pollution. Place it in a well-ventilated area, like a garage or near an open window, to allow harmful chemicals and VOCs to off-gas. This process, which can take about a month, helps minimize toxic emissions in your home.



Avoid buying products with polyurethane foam. Instead, buy products and furniture filled with cotton, polyester, and wool. Buy solid wood furniture.



When buying new wood furniture try to purchase furniture that is made from solid wood instead of pressed wood.



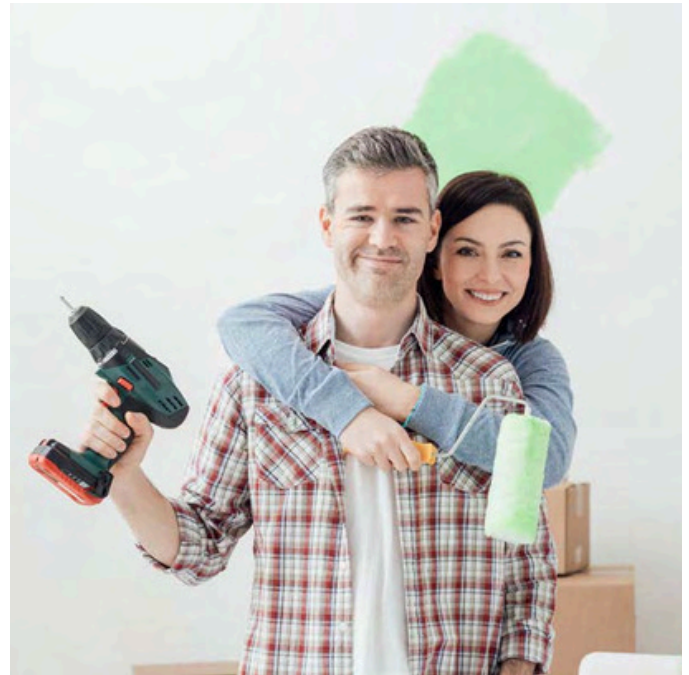
NEW FURNITURE (CONTINUED)

If you cannot obtain solid wood furniture, look for the following certifications ensuring low pollution:

- California Phase 2 Compliant
- NAF or "formaldehyde free"
- ULEF TSCA Title VI compliant



Complete painting before installing carpets, curtains, or furniture, as paint emits chemicals that can be absorbed by these items and later transferred to your body.



Buy "NO FORMALDEHYDE" wood furniture. If you can't get solid wood furniture look for pressed wood furniture which specifically says "No Formaldehyde".

NEW FURNITURE (CONTINUED)

- ✓ Buy furniture made from sustainable wood. Some sustainable woods are certified by either the **American Tree Farm System** or **Forest Stewardship Council (FSC)**. Any furniture using woods with these certifications are a good choice for your home.



The mark of
responsible forestry

FSC® A000504



Additionally, the following woods are the fastest growing meaning they are the most renewable/sustainable. Purchasing furniture made from these woods are a good choice for your home.

The following woods are more renewable/sustainable:

- Pine
- Maple
- Eucalyptus
- Aspen
- Bamboo



Pine Wood Dressed Lumber

NEW FURNITURE (CONTINUED)



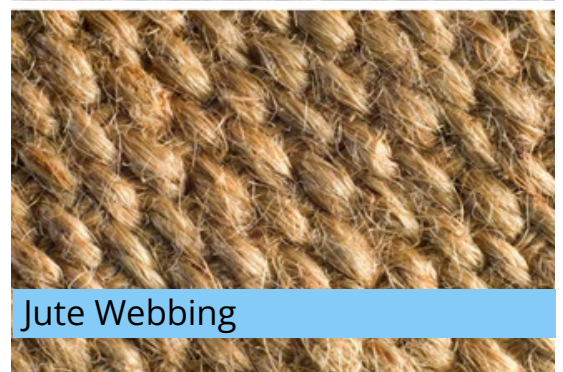
Buy furniture upholstered with natural fabrics. The best fabrics to use are:

- Wool
- Silk
- Bamboo
- Cotton
- Flax/Linen
- Hemp
- Abaca
- Jute
- Kenaf
- Pina
- Coir
- Kapok



Buy furniture filled with natural fillers instead of synthetic foam. The best natural fillers are:

- Down
- Wool
- Cotton Batting
- Wool by-Products
- Soy
- Recycled Natural Fibers
- Silk
- Hemp
- Horse Hair
- Linen Natural
- Rubber Latex Jute
- Webbing
- Buckwheat Hulls



If you have allergies, please consult with your allergist about what kind of furniture to get.

The background of the entire page is a close-up photograph of a textured, brownish surface, likely wood or paper, heavily infested with various types of mold and mildew. The growths are in shades of green, grey, and black, creating a complex, organic pattern. The top half of the image is slightly more uniform in color, while the bottom half shows more intense and varied mold growth.

MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

MOLD & MILDEW

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Mold and mildew thrive in damp areas and can be harmful, whether alive or dead.

Simply killing mold isn't enough; removal is necessary to prevent health risks.



Mold

WHY IS THIS IMPORTANT TO MY OR MY CHILD'S HEALTH?

Molds and Mildews in the home can contribute to...



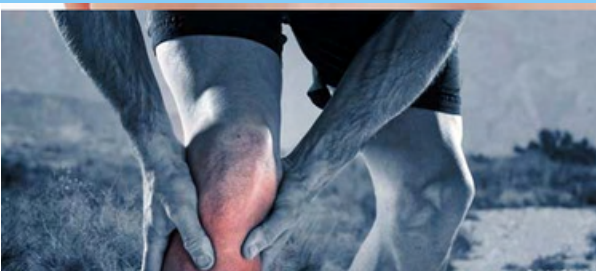
Allergy

- Allergies
- Sneezing
- Coughing
- Digestive Issues



Watery Eyes

- Wheezing
- Watery Eyes
- Fatigue
- Fever



Muscle Cramps

- Headaches
- Shortness of Breath
- Light Sensitivity
- Muscle Cramps

1

Seeing mold

Mold looks like a crusty stain on walls. If you see mold, a lot has grown and an expert is needed to remove it.



2

Flu-like symptoms

A number of issues, such as stress or lack of sleep, can make you feel under the weather. However, mold is a respiratory irritant and can also make you feel sick.



3

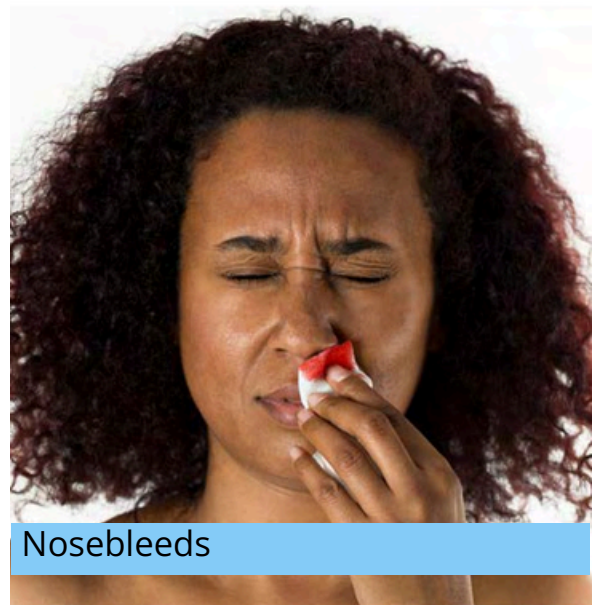
Musty scent

A musty/strange smell that is not normal in your home can be a sign that mold has started growing.

4

Moisture/flooding

If moisture collects in a specific area in your home, mold might be growing there. Because mold grows in wet areas, a history of flooding in your home can easily lead to mold growth.



5

Headaches/nosebleeds

Headaches are a short-term effect of mold exposure. Nosebleeds in response to mold can happen, but this is rare.

6

Breathing

Molds can cause respiratory problems and difficulty breathing.

All information below is summarized from the Environmental Protection Agency (EPA) Biological Pollutants' Impact on Indoor Air Quality page.

[Click here to visit the EPA's website](#)



Install exhaust fans in kitchen, bathrooms, and clothes dryers.

These fans are most useful when they are vented to the outdoors. Fans eliminate the moisture that builds up in these wet areas of a house.



Ventilate attic or crawl spaces.

Keeping humidity in these spaces below 50% prevents mold and mildew growth. This is especially important because mold and mildew grown in these spaces affect the indoor air quality of the rest of the home but they are not as easy to see as mold inside commonly used rooms.



Clean humidifiers regularly.

The insides of humidifiers are wet environments, and this allows for the growth of mold, mildews, and other biological contaminants. Bacteria in humidifiers have the potential for causing disease and making disease worse. Clean your humidifier regularly according to its product manual and be sure to replace the water daily.



CONTINUED



Thoroughly clean, dry, or replace water-damaged carpets or building materials.

Once mold and mildew grow in porous materials like carpets and other materials, they are very hard to remove. If you have odor or health issues, replacement is more likely to solve the problem than cleaning.



Keep the house or apartment clean and dry.

Keeping houses clean and dry prevents mold/mildew build up. Using central ventilation systems can help keep the house dry.



Clean the basement regularly.

Molds and Mildews that grow in basements still affect the indoor air quality of the house. Clean and disinfect the basement floor drain regularly to prevent molds from building up inside of it. Install a dehumidifier in the basement to keep humidity levels below 50%.



HOW TO CLEAN UP MOLD

67

If the moldy area is less than ten feet you can use the following steps to clean the mold up yourself. However, if there is extensive water damage, or if the mold covers more than ten square feet consider calling a professional and asking them to use the EPA Mold Remediation in Schools and Commercial Building Guide to clean up your home.

[Click here to visit the EPA's website](#)

SELF CLEAN-UP



Wear a filtered mask to help prevent the breathing of spores



Wear gloves



Wear goggles



Turn off all plumbing around the molded area and dry the area



Scrub mold off with detergent and water. Dry completely to prevent future mold growth



Note: Absorbent or porous materials such as sponges, carpets, and ceiling tiles are very difficult to clean. It is probably easier, cheaper, and safer to entirely replace these objects when they become moldy.



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

PAINTS

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

The most common source of lead air pollution is paint. Homes built before 1978 used lead-based paint that creates dust, chips, and suspended lead particles that can be inhaled. Unlike some types of pollution, lead does not go away over time, and there is no level of exposure to lead that is safe. Lead exposure is harmful to every system in our body by building up in our bones and kidneys. It is especially harmful to children's nervous systems and can harm them for life, causing behavioral problems, lower IQ, seizures, paralysis, and even death.



Chipped Lead Paint



Chipped Lead Paint



More generally, paint contains a type of chemical called **Volatile Organic Compounds (VOCs)**.

VOCs are a group of chemicals that are connected to negative health effects because of how easy they are to breathe in. A mixture of VOCs in the air can create indoor ozone, a gas that irritates human lungs.

Common paint additives, like nonylphenol ethoxylates and formaldehyde, can also disrupt hormones or cause cancer.

CHEMICALS IN PAINT

VOLATILE ORGANIC COMPOUNDS:

Applying wet paint/stripper or leaving an open can of paint/stripper in a room releases Volatile Organic Compounds (VOCs) into the air. A mixture of VOCs in the air can create indoor ozone, a gas that irritates human lungs.



FORMALDEHYDE:

Wet paints can also release a chemical called Formaldehyde while drying. Formaldehyde is a colorless flammable gas that has a strong odor. It has been classified as a known human carcinogen since 2014.



Asthma Inhaler

Exposure to formaldehyde has negative effects on anyone's health but is particularly harmful to those suffering from respiratory diseases or asthma.

WHY IS THIS IMPORTANT

71

TO MY OR MY CHILD'S HEALTH?

HAVING TOXIC PAINT FUMES IN YOUR HOUSE CAN CONTRIBUTE TO...

- Allergies
- Asthma
- Hormone disruption
- Shortness of breath
- Damage to nervous system
- Anemia
- Cancer risk
- Nosebleed
- Irritation of eyes, nose, throat
- Headache fatigue
- Skin rash
- Dizziness
- Nausea
- Vomiting
- Acute stomach pain
- Constipation
- Fatigue
- Insomnia
- Memory loss
- Developmental delays
- Loss of appetite



Allergy



Nosebleed



Fatigue

[1] United States Environmental Protection Agency. "Volatile Organic Compounds' Impact on Indoor Air Quality."

[2] National Cancer Institute. "Formaldehyde and Cancer Risk."

[3] United States Environmental Protection Agency. "Lead."

AVOID ANTIMICROBIAL OR ANTIFUNGAL PAINTS

72

Avoid paints with VOCs, do not buy paint if it is labeled as “antimicrobial” or “antifungal” (these contain harmful pesticides). Paint should have less than 50g of VOCs per liter. Do not buy oil-based paints. Avoid color additives that are high in VOCs.



Avoid any paints which have the following chemicals: phthalates, glycol ethers, formaldehyde, nonylphenol ethoxylates, mercury, lead. Many of these chemicals are VOCs or carcinogens.

WHAT TO BUY

- Buy paint that is Green Seal GS-11 Certified. This certification limits the levels of pollutants described above.
- Buy water-based latex paints or milk-based paints. These are less toxic and emit fewer pollutants.
- Buy paints with mineral or plant-based pigments. These are less toxic than normal paints.



IF YOUR HOME HAS LEAD PAINT:

If your home was built before 1978 and you suspect it contains lead-based paint or piping, have your home tested for lead and learn about potential lead hazards. You should always hire a certified lead professional to take any steps to reduce lead exposure in your home.



[Click here to find trained professionals with EPA's online tool](#)

- ✓ Get a lead paint inspection before buying a new house. This inspection tells you whether your home has any lead.
- ✓ Get a lead paint risk inspection.
These risk inspections can tell if your home has any lead paint hazards, where the hazard is, and what actions are necessary to reduce the hazard.
- ✓ Locate a trained professional in your area who can evaluate and test your home for lead.
If lead paint is flaking:
The EPA recommends damp-mopping the floors and wiping window ledges with a warm, damp rag and phosphate-containing dishwashing detergent. This removes contaminated dust.
- ✓ For more information about handling lead paint exposure visit CDC's guide to lead in paint.

IF YOU ARE RENOVATING:



REMEMBER:



Keep remodeling areas separated from living areas.



Do not allow children near the remodeling area.



Keep your home dust free.



Hire a professional to remove any lead paint.



Pregnant people and children should not be in the building until the remodeling is finished.

IF USING PAINT STRIPPERS:

Use only alcohol- or soy-based paint strippers. Other commonly available paint strippers are carcinogens and can be fatal to inhale.





PROTECT YOUR HEALTH BY ALWAYS:



Working only in well-ventilated areas with open windows.



Wearing an N-95 mask or respirator in dusty conditions.



Wearing protective clothing like face masks, protective eyewear, gloves, and coveralls.

A man wearing a white protective suit and a respirator mask is using a white spray pump with a green handle and a yellow hose. He is standing in a kitchen with wooden cabinets and a stainless steel oven. The background shows a brick wall and some kitchen equipment.

MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

PESTICIDES

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Using pesticides indoors increases levels of harmful pollutants, including Semi-Volatile Organic Compounds (SVOCs) and Volatile Organic Compounds (VOCs), which are linked to negative health effects.

Some pesticides also release formaldehyde, a known human carcinogen. Formaldehyde exposure can cause eye, nose, and throat irritation, coughing, wheezing, nausea, and skin irritation, with growing evidence of its cancer risks in humans.



Household pesticides help control pests but can be dangerous to children if not properly managed. Each year, about 80,000 children require medical attention due to pesticide exposure or poisoning, according to the American Association of Poison Control Centers.



WHY IS THIS IMPORTANT

78

TO MY OR MY CHILD'S HEALTH?

HAVING PESTICIDES IN THE HOME CAN CAUSE...

- Itchy or Burning Eyes
- Itchy Nose
- Scratchy or Burning Throat
- Headaches
- Dizziness
- Muscle Twitching
- Weakness
- Tingling Sensations
- Nausea



Itchy Eyes

- Long Term Effects on the Central Nervous System
- Long Term decline in Kidney Function
- Cancer Risk
- Pesticide exposure can be serious enough to require a trip to the doctor or emergency room.



Cancer

WHAT TO DO IF

79

YOU HAVE PESTS



Identify the specific pest to ensure the appropriate solution is used.



For assistance, contact your County Cooperative Extension Service, local pesticide dealers, NPIC (1-800-858-7378), or your state pesticide agency.



Assess the needed level of pest control and consider any household members sensitive to chemicals.



Determine which of the options below will be best for eliminating your pest problem.



Follow label precautions when applying pesticides. Ensure proper ventilation, keep pesticides away from food areas, and remove pots, pans, and food if treating the kitchen.



Evaluate the results of the treatment.



PEST CONTROL

Non-chemical pest control is safer, does not introduce harmful chemicals into the air, and is often more effective long-term.

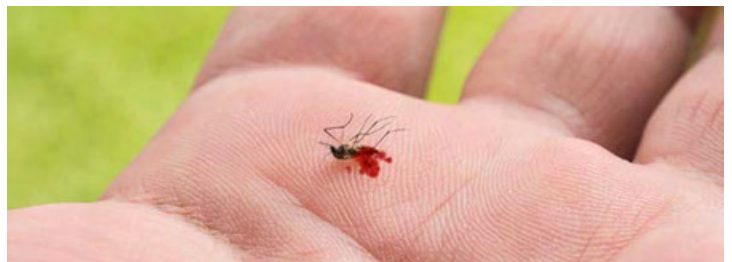
Borax, a naturally occurring mineral, is useful for controlling pests like cockroaches, silverfish, beetles, and fleas with a lower health risk if handled properly. However, it can cause eye, skin, and lung irritation.

Always wear gloves, use it in a well-ventilated area, and place it in hidden spots like behind appliances and switchplates. Keep it out of children's reach.

NON-CHEMICAL PEST CONTROLS EXAMPLES:



Hand picking lone pests from the house



Using a fly swatter



Using pheromone traps



Using other non-chemical traps



HOW TO DECIDE WHAT TO BUY

Use chemical pesticides only as a last resort, as they provide temporary solutions and pests can develop resistance.

If needed, choose the safest option by following EPA guidelines.



Check the EPA Registration Number. This number lets you know that the EPA has reviewed the product and decided it can be used relatively safely if label instructions are followed.

Signal Words:

Caution: Appears on pesticides which are the least harmful

Warning: Moderately hazardous. More poisonous than the pesticides which say "caution"

Danger: Poisonous, corrosive, or irritating to the skin or eyes



Check the Environmental Hazards statement and buy the one which has the least toxic effects on wildlife, fish, wetland, water, or endangered species.

Make sure you have any safety equipment (goggles, gloves, etc.) listed on the packaging of the pesticide.

Ensure that you can follow the storage and disposal guidelines listed on the label.

HOW TO PROPERLY

82

STORE A PESTICIDE

Store pesticides in a secure, isolated area away from children, ignition sources, food, and medical supplies.

Choose products with child-resistant packaging.



HOW TO DISPOSE OF A PESTICIDE

Check with your local solid waste agency, environmental agency, or health department to find out whether your community has a household hazardous waste collection program.

1-800-CLEANUP or www.earth911.com is another source for information about disposal and special waste collection programs in your local area.

If no community program or guidance exists, follow the label directions for disposal. Under federal law, it is legal to dispose of residential pesticides in the trash.

However, state and local laws regarding pesticide disposal may be stricter than the federal requirements.



“Do not pour leftover pesticides down a sink, toilet, or street drain.”




These pesticides will leak into the water supply and will be harmful to human health and the environment.

Never reuse a pesticide container. The residues left in these containers can be just as dangerous as the pesticide itself.

Do not recycle pesticide containers unless your community has a specific program for pesticide container recycling.



[1] Citizen's Guide to Pest Control and Pesticide Safety.



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

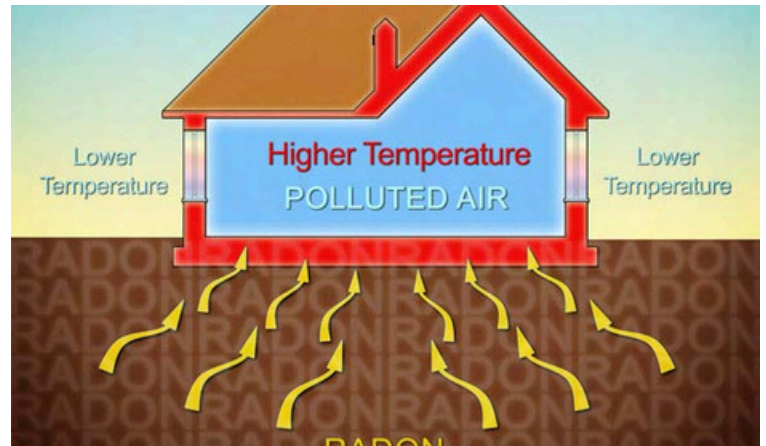
RADON (Rn)

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Radon is the leading cause of lung cancer in non-smokers and the second overall nationwide. This odorless gas forms from uranium decay in soil, rock, and water, seeping into buildings, especially homes. It enters through cracks, gaps, and water sources.

Since radon is invisible and odorless, testing is the only way to detect exposure. High levels can be found in homes across all states.



Wall Cracks



Water Pipes



Floor Cavities

WHY IS THIS IMPORTANT

86

TO MY OR MY CHILD'S HEALTH?

RADON CAN CAUSE



HOW TO TEST FOR RADON

Radon testing is quick and easy, requiring a kit left out for 2-7 days.

Kits are available at hardware stores or through state radon programs.



Find more information about obtaining kits here

RADON CONTRACTOR

The following states have special requirements for radon contractors and the systems they install: CA, DE, FL, IL, IN, IA, KS, KY, ME, NE, NJ, OH, PA, RI, VA and WV. If you live in one of these states, you can use this EPA website to find a list of certified radon specialists where you live by clicking on your state.

Find a certified radon service provider here

If your state does not regulate radon services, ask your contractor these questions:

- Do you hold a certification credential or professional proficiency? Do you follow industry consensus standards?

Examples include the American Society for Testing and Materials, ASTM, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings, E2121

- Do you have a photo ID card from your proficiency program?

Most private proficiency programs provide members with photo ID cards with an expiration date and a list of qualifications.

For more information on private proficiency programs, [click here](#).

- The following resources also have more information:

- National Radon Proficiency Program (NRPP): 1-800-269-4174 www.aarst-nrpp.com/wp/
- National Radon Safety Board (NRSB): 1-866-329-3474 www.nrsb.org

Refer to this document for detailed information on reading radon contracts, checking your radon contractor, and finding appropriate prices.

[1] [US EPA. Radon.](#)

RADON PROOF HOMES

Newly constructed homes can be built with **radon-resistant features**. If you are planning on building a new home, **talk with your contractor** about how to mitigate radon exposure.


You and your contractor can use the EPA's guide to Radon-Resistant Construction to safeguard your new home.



[Click here for EPA'S guide to radon-resistant construction](#)



Sealing Your Floor to Wall Gaps



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

SMOKING & VAPING

For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

The evidence around smoking's health effects are clear: smoking increases risk of disease in every organ in your body (particularly your lungs) and is the leading cause of preventable death. However, second-hand smoke is a large source of preventable air pollution and the diseases it causes.

According to the Environmental Protection Agency (EPA), "Secondhand smoke is a mixture of the smoke given off by the burning of tobacco products...and the smoke exhaled by the smoker."

Secondhand smoke is classified by the EPA as a Group A carcinogen (cancerous) and carries more than 7,000 toxins. Exposure to secondhand smoke commonly occurs in the home and can move from room to room.



THE PROBLEM

Vaping is not safe, though it is less harmful than smoking. The CDC warns that vape smoke contains harmful chemicals, including nicotine, VOCs, cancer-causing agents, heavy metals, and diacetyl, which is linked to lung disease. A 2020 outbreak of lung injuries was linked to black-market vape products.

Vaping is addictive due to nicotine, which increases heart attack risk, harms fetal development, and affects brain development in young people.

Nicotine is as addictive as heroin and cocaine, with some vapes delivering more nicotine per hit than cigarettes. Vaping is linked to asthma, chronic lung disease, and potential organ damage from heavy metals.

Research shows it is not an effective method to quit smoking, as most vapers continue using cigarettes.



[Click here to find other ways to quit smoking](#)

WHY IS THIS IMPORTANT

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TO MY OR MY CHILD'S HEALTH?

FAST FACTS

- Since 1964, 2.5 million nonsmoking adults have died from secondhand smoke exposure.
- Each year, secondhand smoke causes nearly 34,000 nonsmoker deaths from heart disease in the United States.
- Nonsmokers who are exposed to secondhand smoke at home or at work increase their risk of developing lung cancer by 20-30%. Secondhand smoke is particularly harmful to infants and children.
- Secondhand smoke has serious side effects for children who have asthma; it is a known asthma trigger.
- More than half of US children with asthma are exposed to secondhand smoke.
- Smoking during pregnancy results in more than 1,000 infant deaths annually.



WHY IS THIS IMPORTANT

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TO MY OR MY CHILD'S HEALTH? (CONTINUED)

- In 2024, over 1.6 million youth in the U.S. used an e-cigarette.
- 40% of young e-cigarette users had never smoked regular tobacco before using e-cigarettes.
- More than 30% of teens who start using e-cigarettes begin smoking traditional tobacco products within six months.
- As of February 18, 2020, a total of 60 hospitalized deaths and nearly 3000 hospitalizations related to e-cigarette use and vaping have been reported to CDC from all 50 states, the District of Columbia, and two U.S. territories (Puerto Rico and U.S. Virgin Islands).



E-Cigarette



[1] [US EPA. Secondhand Smoke and Smoke-free Homes.](#)

[2] [Centers for Disease Control and Prevention. Health Effects of Secondhand Smoke](#)

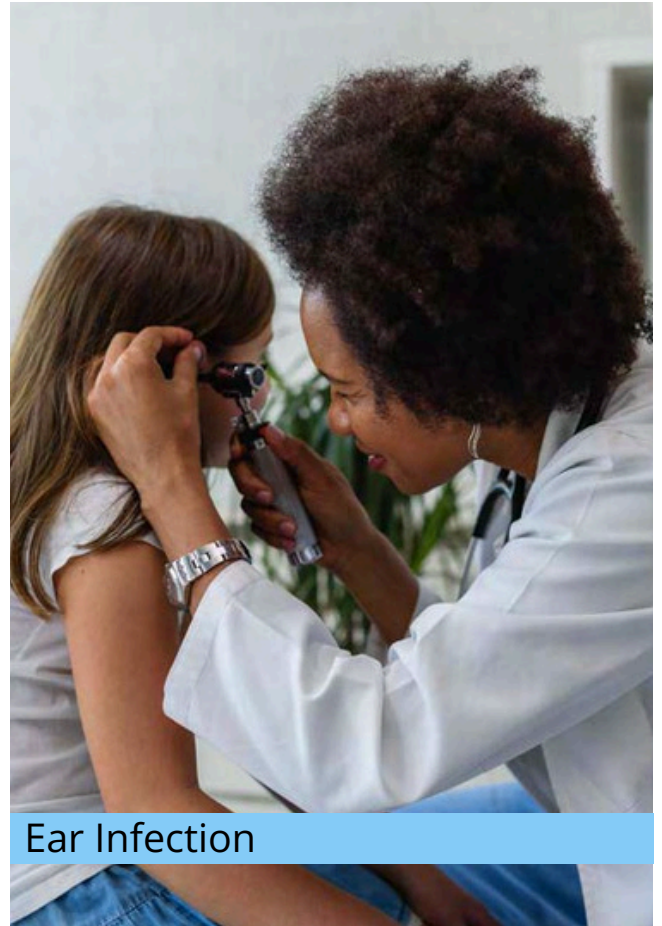
[3] [Food and Drug Administration. 2024 Results from the Annual National Youth Tobacco Survey.](#)

SMOKING CAN CAUSE

94

THE FOLLOWING SYMPTOMS/DISEASES:

- Nasal Irritation
- Coughing
- Wheezing
- Development of Asthma
- Frequent Asthma Attacks
- Respiratory Infections
- Ear Infections
- Low Birth Weight
- Heart Disease
- Stroke
- Lung Disease
- Lung Cancer
- Other Cancers
- Sudden Infant Death Syndrome



Ear Infection



Developing Asthma

VAPING CAN CAUSE

95

THE FOLLOWING SYMPTOMS/DISEASES:

- Nasal Irritation
- Increased Blood Pressure
- Heart Disease
- Gum inflammation
- Lung Disease
- Brain Development Effects
- Severe Lung Injury



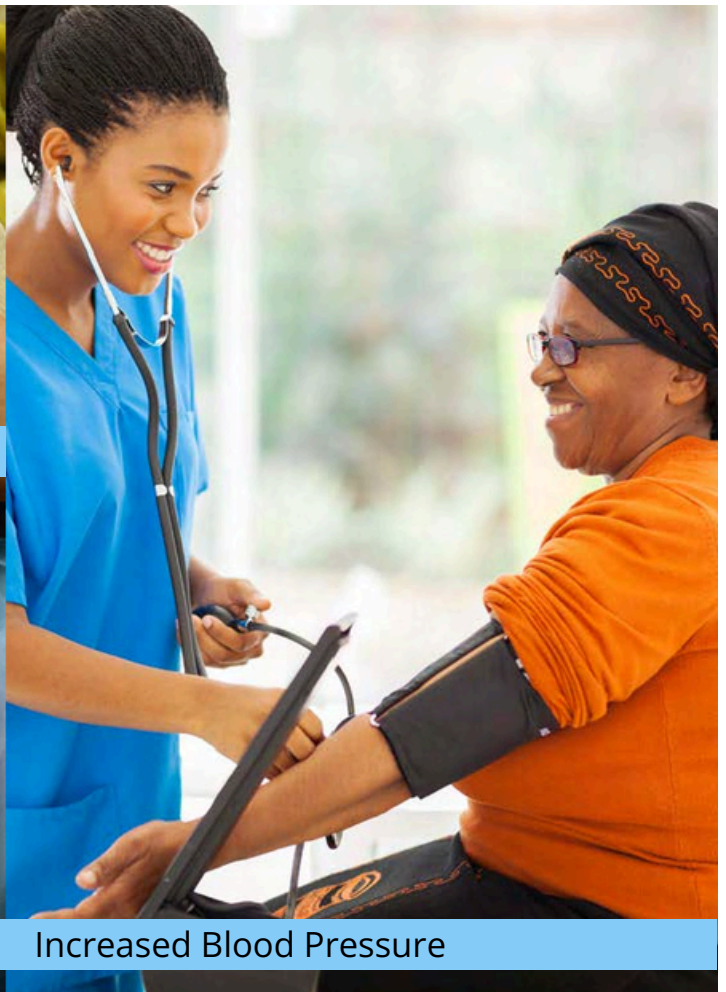
Gum Inflammation



Nasal Irritation



Lung Disease



Increased Blood Pressure

SAFE FROM SECONDHAND SMOKE

If there is a smoker/ vaper in your house or if you do not live in a smoke-free building, there are ways to help reduce second-hand smoke exposure.



DO NOT LET THE SMOKER/VAPER SMOKE OR VAPE INSIDE THE HOME, CAR, AND AROUND CHILDREN.

This is the single most important step to prevent secondhand smoke exposure. Many apartment buildings have smoking zones outside where a smoker/vaper can go.



OPEN DOORS AND WINDOWS TO CREATE VENTILATION.

Open multiple doors and windows in the home to create a cross breeze and clear the toxins from the smoke from your home.



MAKE SURE YOU HAVE PROPER VENTILATION IN YOUR HOME.

Your heating/ cooling appliance should have an air filter on it. Air filters for home use are rated using a *Minimum Efficiency Reporting Value* scale (MERV) between 1-13. To successfully keep your home's air safe, try to purchase filters between 8-13 MERV. In a common American home, the air filter should be replaced approximately once a year.



HELP THE SMOKER/VAPER IN YOUR HOME QUIT TO ELIMINATE ANY EXPOSURE.

To entirely eliminate secondhand smoke exposure in your home, help the smoker or vaper in your family quit. You can find resources below:

For more tips and information, click here for the CDC's Guide for Quitting Smoking

TO DEAL WITH A TOBACCO ADDICTION

QUIT LINES

- **American Cancer Society** (Quit for Life) 866-QUIT-4-LIFE (866-784-8454); 24 hours a day, 7 days a week (except Thanksgiving, Christmas, and July 4)
- **American Lung Association** (Lung Help Line & Tobacco Quit Line) 800-LUNGUSA (800-586-4872)
- **National Cancer Institute** (Smokefree.gov) NCI's telephone quitline: 877-44U-QUIT (877-448-7848); TTY 800-332-8615; 8 AM to 8 PM ET, Monday through Friday (English and Spanish)
 - **LiveHelp**, live online chat assistance, is available 8 AM to 11 PM ET, Monday through Friday (English only).
- **U.S. Department of Health and Human Services** (BeTobaccoFree)

Local and state: 800-QUIT-NOW (800-784-8669)



TO DEAL WITH A TOBACCO ADDICTION:

SUPPORT GROUPS


- [Truth Initiative: Become an EX](#)
- [American Lung Association: Freedom From Smoking](#)
- [QuitNet](#)
- [Nicotine Anonymous](#)

MOBILE APPS

- [Smokefree.gov: QuitSTART](#)
- [LIVESTRONG: MyQuit Coach](#)



[4] [Cancer.net. Resources to Help You Quit Smoking](#)



MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

STOVES



For more information about this research, visit
WWW.MOTHERSANDOTHERSFORCLEANAIR.ORG

THE PROBLEM

Gas and wood-burning stoves release harmful combustion pollutants, including carbon monoxide, nitrogen dioxide, and particulates.

Exposure, especially from cook stoves and open fires, primarily affects women and children and causes about 4 million early deaths globally each year.



CARBON MONOXIDE (CO)

Carbon monoxide (CO) is a colorless, odorless gas from gas stoves. High exposure can cause dizziness, headaches, nausea, chest pain, heart disease, and even death. Long-term low exposure increases the risk of heart disease, low birth weight, and flu-like symptoms.

Improperly adjusted gas stoves can cause your home to have over three times the safe levels of carbon monoxide (California air standards limit CO to 9 ppm for 8 hours of exposure, while badly adjusted stoves can result in 30 ppm).

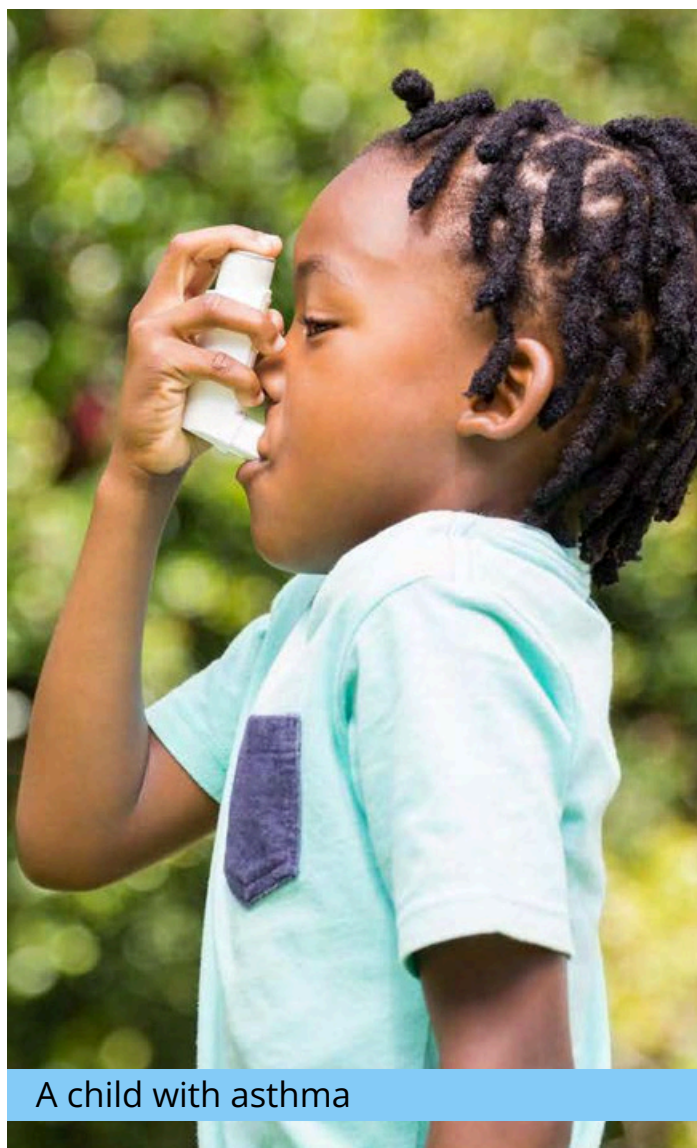


NITROGEN DIOXIDE

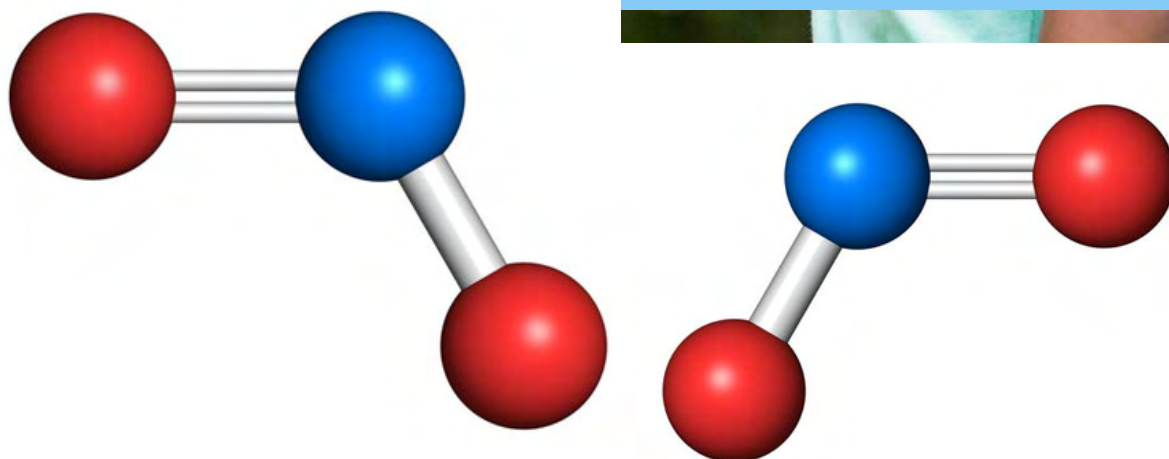
Nitrogen Dioxide is a gas released from gas stoves which is irritating to the eyes, nose, and throat. Consistent low exposure to nitrogen dioxide may increase the risk of lung disease, respiratory infection, asthma, and can damage lung growth in teens. High levels of exposure results in dizziness or shortness of breath.

Exposure to nitrogen dioxide is especially harmful to children already suffering from asthma and other respiratory diseases. It is also connected to reduced cognitive performance, especially in children.

The EPA has no indoor pollution standards for nitrogen dioxide (the World Health Organization standard is 106 ppb), so being extra cautious and opening windows while you cook is important to avoid harmful levels of nitrogen dioxide.



A child with asthma



Nitrogen Dioxide



PARTICULATES

Particulates are released when fuel is incompletely burned and from cooking itself. The particles emitted into the air contribute to indoor air pollution. These tiny particles (called PM2.5) can be inhaled into the lungs and damage lung tissue. Because gas stoves burn fuel to cook, they release twice as much PM2.5 as electric stoves.

PM2.5 is linked to serious and potentially fatal heart and lung problems, strokes, dementia, preterm birth, and low birth weight. A number of carcinogenic compounds such as *benzo[a]pyrene* or radon breakdown compounds can attach themselves to particulates and use the particulates as a way to travel into your lungs.

WHY IS THIS IMPORTANT

103

TO MY OR MY CHILD'S HEALTH?

Chronic exposure to pollutants released from gas and wood burning stoves can lead to...



Fatigue



A child with Asthma



Itchy Eyes



Vomiting

- Nausea
- Vomiting
- Chest pain
- Heart disease

- Asthma/
Asthma Attacks
- Headaches
- Dizziness

- Itchy eyes,
ears, nose,
throat
- Fatigue
- Cancer

- Respiratory Infection
- Lung Disease
- Difficulty Breathing

OPEN WINDOWS, INSTALL EXHAUST FAN

Install an exhaust fan above your stove to remove pollutants from the air.

If using a gas or wood stove, open windows while cooking to help ventilate harmful gases and particulates.



Open a Window



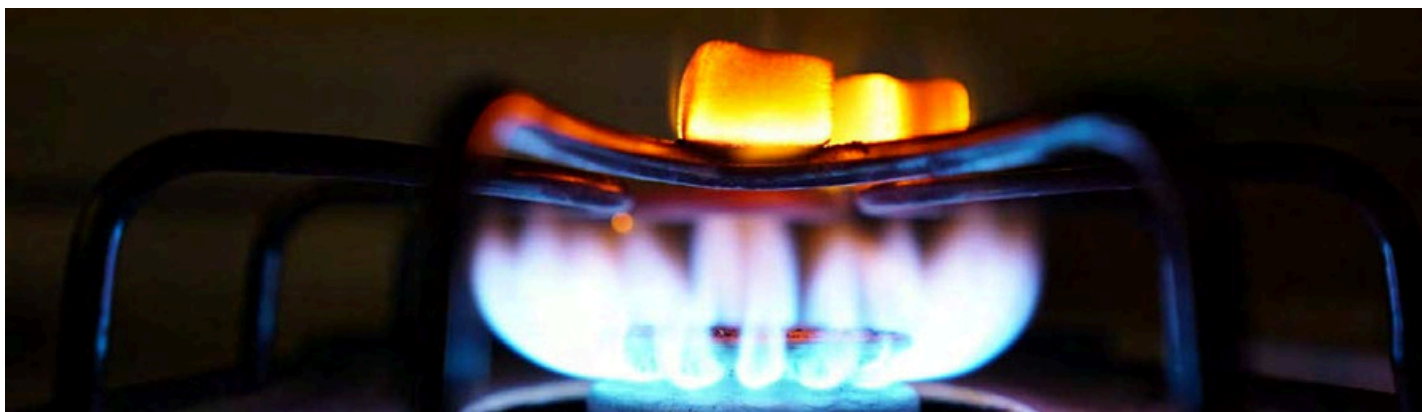
Install an Exhaust Fan



Use an Exhaust Fan

MAKE SURE YOUR FLAME TIP IS BLUE

While using a gas stove, ask your gas company to adjust the burner so that your flame tip is blue. A yellow-tipped flame indicates an improperly adjusted stove, and releases increased pollutants into the air. If you purchase a new gas stove, purchase one with pilotless ignition. A continuously burning pilot light releases more pollutants into the air.



IF BURNING WOOD, DO IT RIGHT

If you use a wood burning stove, make sure that the doors of the stove fit tightly. Only burn aged or dried wood. Other woods may be chemically treated. Pressurized or chemically treated woods should never be burned indoors.

Be careful when replacing gaskets in old wood stoves. Some older gaskets contain asbestos.

Refer to proper asbestos disposal by the EPA. Try to keep wood stove use to a minimum and only use wood stoves if they meet current EPA emission standards.



[Click here to check if your wood stove meets EPA emissions standards](#)

ELECTRIC AND INDUCTION STOVES ARE PREFERABLE

If you are in a position where replacing your stove is an option, replace your gas or wood burning stove with an electric or induction cooktop. If you are not able to replace the entire appliance, small portable induction cooktops are available. These stoves release fewer pollutants and are better for the environment.





MOTHERS & OTHERS FOR CLEAN AIR

HEALTHY INDOOR BREATHING TOOLKIT

TEFLON PANS

For more information about this research, kindly visit
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TEFLON PANS

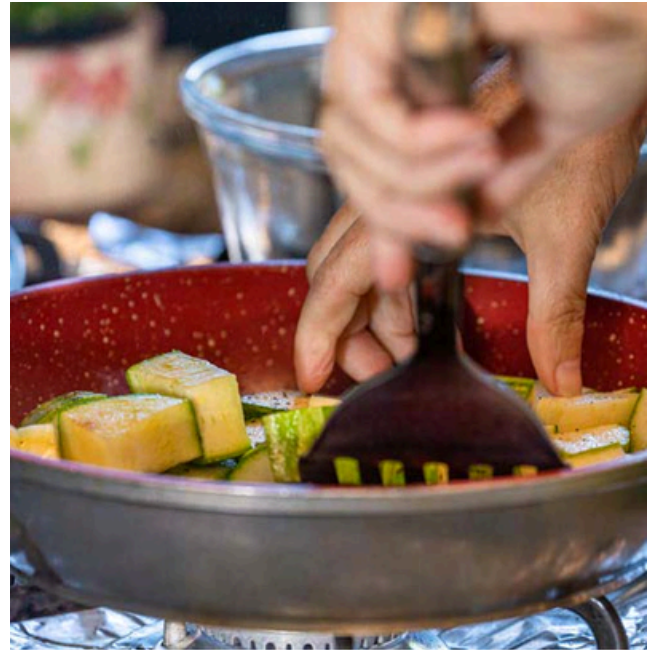
107

(ALSO CALLED "NON-STICK PANS")

THE PROBLEM

Non-stick coating in pans is made using laboratory-created chemicals, which are linked to chronic health and reproductive problems.

These chemicals are called PFOAs, PFAs, PFOs, Short Chain PFAS or GEN-X. These chemicals do not occur naturally and are very environmentally persistent – meaning they do not break down once they are in the natural environment. Wherever a pan ends up after it is thrown out, PFOAs will stick around without breaking down.



When non-stick pans are heated to a high level, the chemicals in the Teflon coating start to break down. At this point, the pans release toxic vapors and gases into the air. The PFOAs in these vapors are known to cause cancer in most animals. There are many reports of pet dogs and birds dying from over-exposure to PFOAs. PFOAs are suspected to cause cancer in humans as well. The Environmental Protection Agency (EPA) encourages companies to stop using PFOAs. At this point, nearly all Americans have detectable levels of PFOAs in their blood.



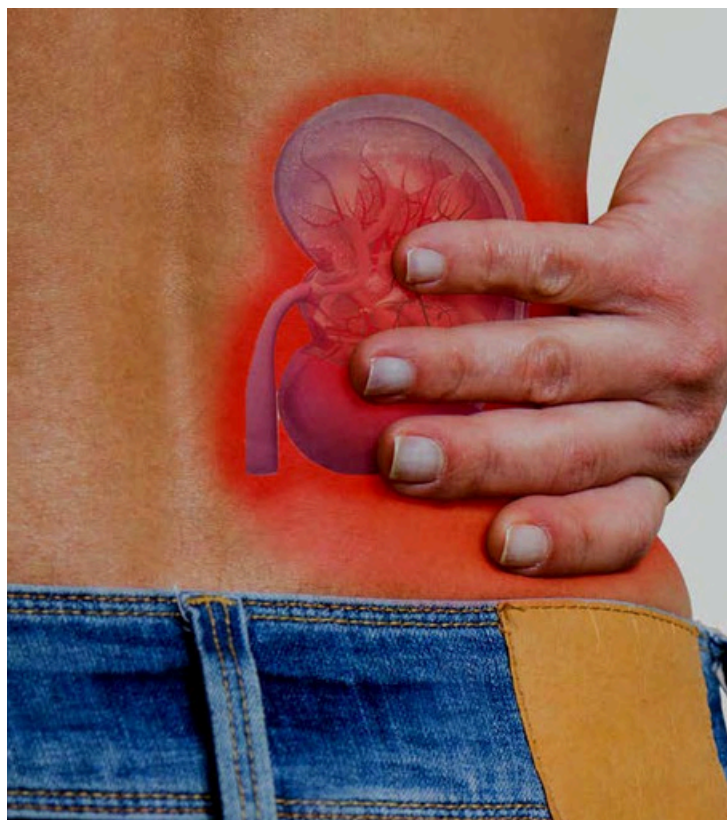
WHY IS THIS IMPORTANT

108

TO MY OR MY CHILD'S HEALTH?

USING TEFLON (NON-STICK) PANS MAY LEAD TO...

- High Cholesterol
- Liver Issues
- Kidney Disorders
- Thyroid Disorders
- Reproductive Effects
- Pregnancy Induced
- Hypertension
- Preeclampsia
- Testicular Cancer
- Kidney Cancer



Kidney Disorder



Pregnancy Induced Hypertension

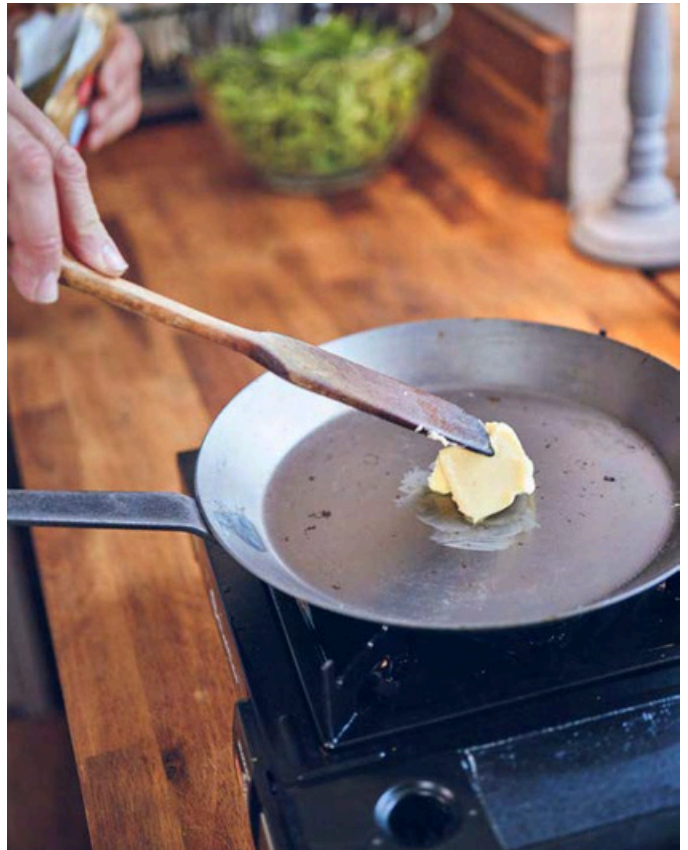


Thyroid Disorders

WHAT YOU CAN DO

109

Avoid buying coated or non-stick cookware – especially cookware that does not disclose the chemicals used to make their coating. If you have non-stick pans and can't replace them, avoid heating them to high temperatures. Instead, only use them to cook food at low temperatures.



WHAT TO BUY

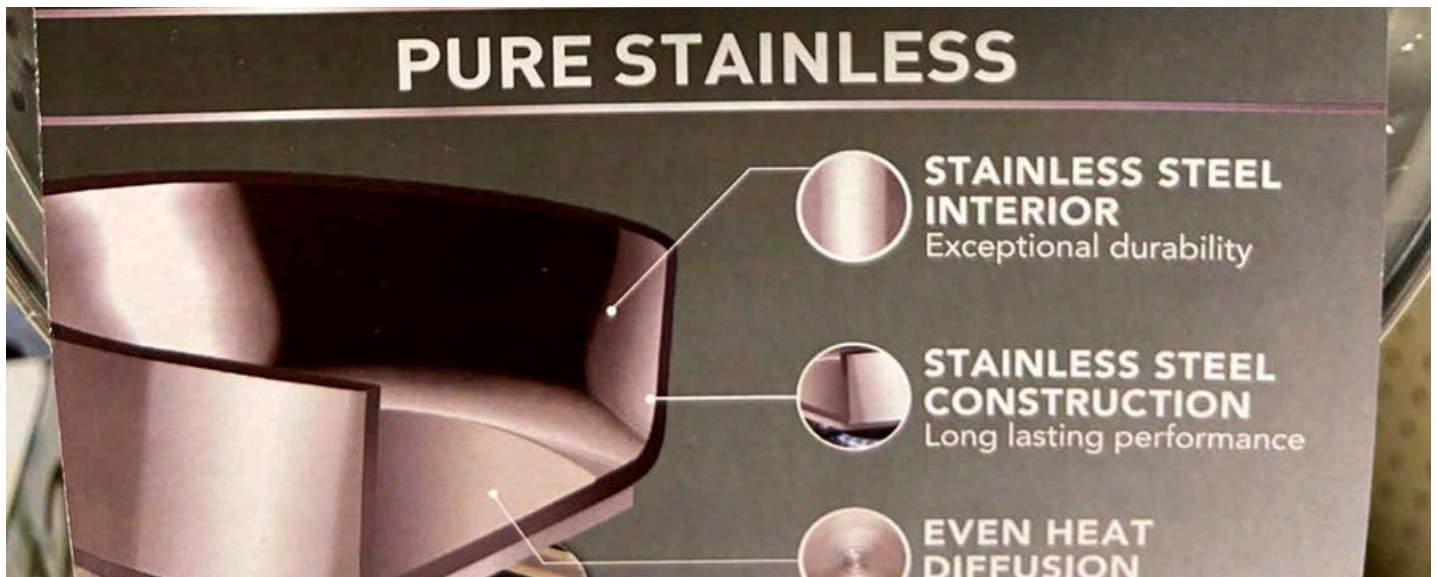
Since there are known health effects of Teflon and a lot of Teflon alternatives, it's best to buy stainless steel or cast iron pans instead.



One of Mothers & Others For Clean Air's Research Associates went to their local big box store and followed the Healthy Indoor Breathing Toolkit when looking for a new pan.

WHAT TO BUY:

EXAMPLE NO. 1



You can see here, on the packaging (above photo), that stainless steel cookware doesn't have any additional coating or chemicals.

To be sure you're not polluting your home, buy stainless steel or cast iron cookware.

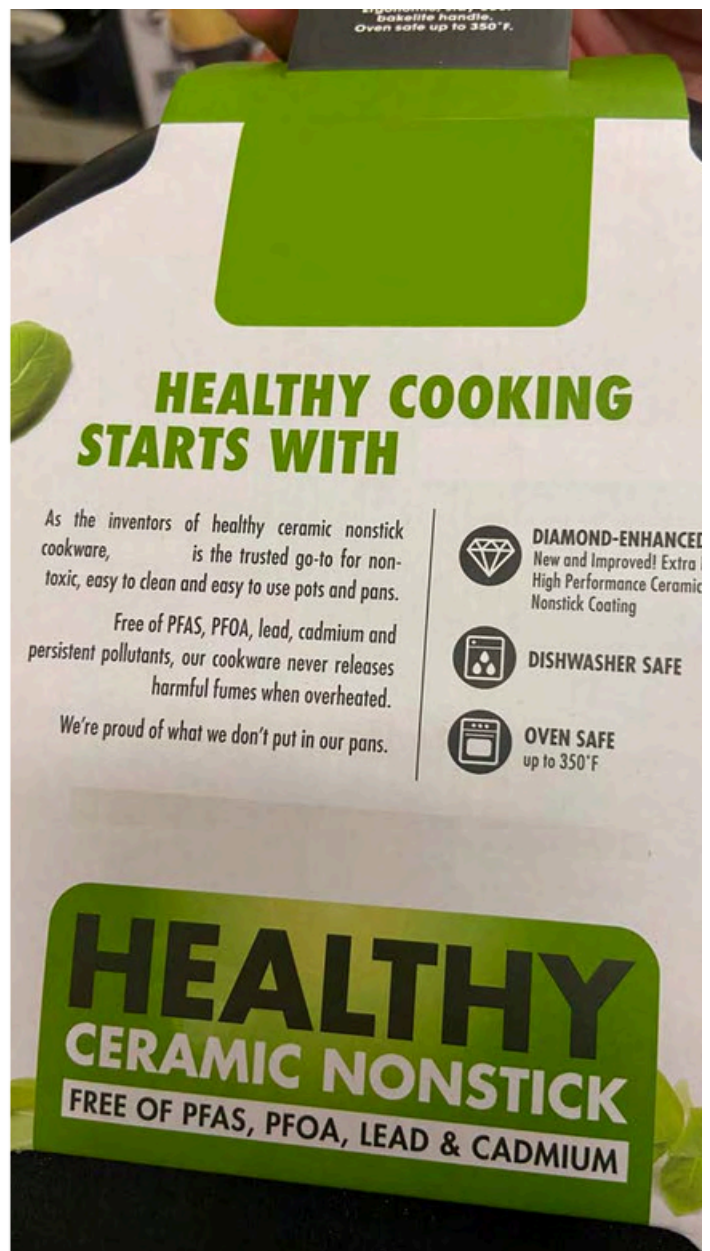


WHAT NOT TO BUY:

EXAMPLE NO. 1

The first thing to look out for is the packaging on this pan says “nonstick”. Nonstick pans have chemical coating. Even though the backside packaging says there are no PFAs or PFOAs, the Toolkit tells us that other chemicals could have perfluorooctane sulfonic acid (PFOS), polyfluoroalkyl substances (PFASs) or GenX.

This product does not show a complete set of chemical ingredients, so we can’t be sure if it’s safe.



WHAT NOT TO BUY:

EXAMPLE NO. 2

This pan's packaging only talks about PFOAs, so it has even more problems than the first pan we looked at.



It doesn't even mention releasing fumes!

Definitely avoid this one!

FURTHER READING AND RESOURCES

- ✓ [AirNow local air quality updates](#)
- ✓ [CDC Healthy Housing Reference Manual](#)
- ✓ [CDC on Indoor Air Pollution](#)
- ✓ [Center for Sustainable Communities](#)
- ✓ [EPA Consumer's Guide to Radon Reduction](#)
- ✓ [EPA on Indoor Air Quality](#)
- ✓ [PurpleAir real-time air pollution map](#)
- ✓ [EPA report on PurpleAir accuracy, read alongside the above link](#)
- ✓ [EPA's Safer Choice](#)
- ✓ [EWG's guide to healthy cleaning](#)
- ✓ [EWG's healthy home guide](#)

FURTHER READING AND RESOURCES

- ✓ [Gozmochina's top 5 air monitoring apps](#)
- ✓ [MOCA Research Hub](#)
- ✓ [Mothers & Others for Clean Air](#)
- ✓ [National Center for Healthy Housing state-specific guides](#)
- ✓ [Consumer Reports Air Purifier Buying Guide](#)
- ✓ [Wellness Within Your Walls](#)

TAKE ACTION!

Even if you only have a minute to spare, you can still take a meaningful action to combat air pollution.

Sign one of our targeted petitions!

Together, we are making a difference!



SIGN A PETITION!

ACKNOWLEDGEMENTS

Our deepest gratitude goes to Katie Matuska, our former research intern, who took this project under her wing. This toolkit would not have come together without her vision, thorough research and hard work. We are so grateful to her.

We are also grateful to Dr. Anne Mellinger-Birdsong, MD, MPH, and research interns Andrei Olaru and Lily Wang who worked hard to finish where Katie left off. They ensured this document had all the latest research along with helpful pictures and guides to make it useable in a store setting.

Thank you to Jillian Pritchard Cooke and Nonnie Preuss of *Wellness Within Your Walls* for their expertise. Their guidance was critical to ensuring this toolkit is as comprehensive as possible. We are forever grateful for your work and inspiration.

A big thank you to Rev. Michael Malcom, Rev. Dallas Conyers, Gary Harris, Faith Harris, Frank Figgers, Kaleia Martin, and Rev. Susannah Tuttle for your invaluable input. Your insight ensured this document is useable in the communities you serve.

This work was made possible by the generous financial support of Stephanie Blank, Laura Turner Seydel, the Turner Foundation, and the Jane Smith Turner Foundation.