

How Housing Matters

Clean Air Means a Healthy and Comfortable Home

Virginia Cooperative Extension



Indoor Air Quality

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Why Should You Care About the Indoor Air Quality in Your Home?

Most people spend more time inside their homes or other buildings than outside. However, indoor air can often be more polluted than outdoor air. If your home has poor air quality, it can be annoying or unpleasant. It can also lead to serious health problems.

How Can You Improve Overall Air Quality in Your Home?

Step 1: Identify the Source of Indoor Air Problems

- Identifying the pollutants in your home is the first step to a clean, breathable, and healthy home. Addressing the problem at its source is the easiest and most cost-effective approach.

What pollutants can cause poor indoor air quality?

Fuel-Burning Appliances

- Appliances like oil or gas furnaces, fireplaces, kerosene space heaters, and gas ranges and cook tops create airborne combustion byproducts. These byproducts are pollutants like carbon monoxide, nitrogen, and other tiny, breathable particles. Never use these appliances in a nonventilated room.
- Be aware of backdrafts! Backdrafts occur when indoor air pressure is lower than outdoor air pressure. This causes combustion pollutants to be pulled back into the living space instead of being fully vented outside.
- A carbon monoxide detector can alert you to problems with backdrafts.

Radon

- Radon is a naturally occurring radioactive gas found in rocks and soil in many areas. It enters the home through cracks in the home's foundation. You cannot see, taste, or smell radon.
- To find out the level of radon in your home, you can buy a test kit from a home improvement store.
- High radon levels can cause lung cancer if a person is exposed over a long period of time.

Allergens

- Allergens cause allergies. An allergen is something that causes a reaction in you. An allergy is a developing sensitivity to a certain substance or environmental factor.
- Common allergens are things like dust, pollen, pet dander, and mold.
- Allergic reactions can include a runny or stuffy nose, coughing, puffy eyes, itching, hives, or a rash. A more serious reaction could be an asthma attack or swelling of the breathing tubes and neck, causing the person to pass out or even die from lack of air.

Tobacco Smoke

- Smoke from cigarettes, cigars, and pipes contain many throat and lung irritants. They also contain cancer-causing chemicals.

- Smoke puts everyone in the home at risk — especially children.

Biological Contaminants

- Biological contaminants come from living or once-living organisms. These include things like animal hair and dander, mold and fungi, dust mites, insect residue, and pollen.
- Biological contaminants can cause allergic reactions, infectious diseases, and respiratory problems.

Hazardous Household Products

- Many common household cleaning products have dangerous chemicals in them that can be harmful to you and your family when used incorrectly.
- Make sure to use cleaning products away from children and pets and in ventilated areas.
- When storing products, close bottles tightly. Store them away from food and eating areas. Keep out of reach of children and pets. Also, keep products in their original packaging. By keeping a product in its package, you will have instructions for how to use the product and know when to throw it away.
- Never mix products.
- NEVER mix ammonia and bleach when cleaning!

Step 2: Ventilation

- After identifying and reducing the sources of pollutants in the air, the second step is to dilute, or lessen, the concentration of air pollutants by increasing ventilation.
- Ventilation is even more important in seasons where the windows and doors are kept shut.
- Check for ventilation by noticing smells that stay around for a while.
- If you can see mold; dust; or cracks in the walls, foundation, or between door and window frames, your home has poor ventilation. Sealing cracks as well as improving overall ventilation will reduce these pollutants in your home.

Step 3: Air Cleaning

- Air filters improve air quality in your home.
- Check air filters in any existing heating or cooling systems. Clean or replace filters if they are dirty or clogged.
- High-efficiency air filters will catch more of the fine particles in the air, like dust, smoke, and pollen.
- Types of air cleaners differ according to the way they clean air.

Mechanical Air Filters

- Mechanical air filters are good at removing fine particles, like dust or pollen, from the air.
- Mechanical filters catch particles on an air filter.
- Mechanical filters can only catch fine particles in the air. Heavier particles settle on surfaces quickly and will not be picked up by a mechanical filter.

- The effectiveness of an air filter is determined by its MERV (minimum efficiency reporting value) number. Filters are rated on a scale from 1 (low quality) to 20 (high quality).

Electronic Air Filters

- Electronic filters also remove particles from the air, but they catch particles using static electricity.
- The particles are given a charge and pushed past plates that have the opposite charge. The opposite charges are attracted to each other and stick together.
- There is no standard measurement for the effectiveness of electronic air cleaners.
- Electronic air cleaners can produce ozone — a lung irritant. The amount of ozone produced varies among models. Electronic air cleaners can also produce ultrafine particles that result from the reaction of ozone with indoor chemicals, such as those coming from household cleaning products, air fresheners, certain paints, wood flooring, or carpets.

Sorbent Cleaners

- Sorbent cleaners are good for removing some types of gas pollutants. They are designed to remove one or more types of gas in low concentrations.

Where Can I Learn More About Indoor Air Quality?

- Gas filters – www.epa.gov/iaq/pubs/residair.html
- Mechanical filters – www.epa.gov/iaq/pubs/airclean.html

Virginia Cooperative Extension offers detailed fact sheets on individual pollutants:

- Asthma and Allergens, Virginia Cooperative Extension publication FCS-14 – www.pubs.ext.vt.edu/FCS/FCS-14/FCS-14_pdf.pdf
- Household Hazardous Products, Virginia Cooperative Extension publication FCS-2 – www.pubs.ext.vt.edu/FCS/FCS-2/FCS-2_pdf.pdf
- Lead Hazards, Virginia Cooperative Extension publication FCS-9 – www.pubs.ext.vt.edu/FCS/FCS-9/FCS-9_pdf.pdf
- Mold, Virginia Cooperative Extension publication FCS-3 – www.pubs.ext.vt.edu/FCS/FCS-3/FCS-3_pdf.pdf
- Radon, Virginia Cooperative Extension publication FCS-10 – www.pubs.ext.vt.edu/FCS/FCS-10/FCS-10_pdf.pdf

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