

# Home Indoor Air Quality Assessment

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Do your eyes burn? Do you complain of nose and throat irritations, headaches, dizziness, or fatigue? Perhaps the problem is poor air quality in your home. In the last several years, a growing body of scientific evidence shows that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. The Federal Clean Air Act regulates and controls emissions from cars and industries, but such initiatives deal only with the outdoor environment. Research shows that people spend approximately 90% of their time indoors. As a result, indoor air pollution in the home has become recognized as a serious problem.

## SOURCES OF INDOOR AIR POLLUTION

When we talk about indoor air quality, we are referring to various natural and manmade pollutants in the air inside our homes. These pollutants can be chemicals, gases, particles, and other substances. Pollutants which can occur in the home include:

- Volatile organic compounds, often referred to as VOC's, from household chemicals, solvents, paints, aerosols, and cleaning products
- Formaldehyde

- Breathable particles generated by wood stoves, open fireplaces, and tobacco smoke
- Combustion byproducts such as nitrogen oxides, carbon monoxide, and carbon dioxide
- Radon
- Asbestos
- Lead
- Biological pollutants including mold, mildew, dust mites, and pet dander

Moisture control and proper ventilation play an important part in keeping your indoor air healthy. For instance, either very high or very low humidity levels in the home can create conditions suitable for bacterial or biological organisms such as mold, mildew, fungi, dust mites, or viruses. Another important consideration for a healthy home is in the choice and use of housing and household products. Also, various testing methods could help discover problem areas which you should correct. These projects range from inexpensive to a large investment of time and dollars.

## EFFECTS OF AIR TIGHTNESS ON AIR QUALITY

The air exchange rate, a measurement of the amount of outdoor air that replaces indoor air over a specified period, is usually given as average air changes per

hour or ACH. The more tightly constructed a house is, the lower its air change rate will be. Tightening a home, while saving energy, may cause an increased concentration of the indoor air pollutants that are already in the home thus these potential problems need to be addressed.

How do I know if my house has an air quality problem?

If you are concerned about air quality in your house, you can make a common-sense diagnosis by keeping track of health complaints. Professionals often use the following questions when considering the possibility of indoor air pollution:

- What health complaints have you or other family members experienced?
- Does more than one family member have these health problems?
- When did you first notice these health concerns?
- Can you link these complaints with certain events or activities, such as moving to a new house, remodeling, or adding new furnishings, carpeting, or draperies?
- Do the health concerns happen seasonally, at a certain time of the day, or when a family member is in a specific area of the house?
- How often do the problems happen, and how long do they last?
- Do the reactions disappear when you are away from the house? Do they return when you come back home?
- Do visitors have the same problems?
- Are the problems or reactions less severe when you ventilate the house?

What instruments or other assistance are available to test the air quality of my house?

You can buy simple monitors for detecting the presence of radon, carbon monoxide, formaldehyde, and nitrogen dioxide. You usually place these devices in your home for three days to three months, depending on the pollutant you're monitoring. At the end of the monitoring period, return the devices to the laboratory you bought them from. After the analysis, they will send the results back to you.

### **What if I have an indoor air quality problem?**

There are common-sense measures that will help improve the indoor air in your home. You must decide, either through sampling, medical advice, or common-sense diagnosis, whether indoor pollutants are a problem for you or family members. Some corrective measures involve changing lifestyle habits. Some are just routine maintenance on the house. Some are low-cost, while others may be expensive or difficult to install. Occasionally, with a pollutant like asbestos, unless it poses an immediate threat because it's broken or crumbling, the best strategy might be to do nothing. While the following suggestions are by no means a complete list of air quality improvements, some ideas may be useful to you.

If your home is very energy efficient, you can improve the exchange of stale indoor air with outdoor air by making sure that all kitchen and bathroom vents go to the outside, not to the crawl space or attic. Use these vents when showering and cooking. Check that attic and crawl space vents are open and not blocked by shrubs, trees, or debris.

If your home seems too humid or has too much condensation on windows, remove as many sources of moisture in the house as possible. This includes fixing leaking pipes and basements. Some areas, such as damp basements, may need a dehumidifier.

Other methods to improve air quality in the home are to stop using pollutant-producing products and to use alternatives when possible. Whenever you are cleaning your home or building or adding onto your house, consider products that have fewer

pollutant emissions. For example, grades of plywood made with phenol or other resins don't give off as much formaldehyde gas and cost only a little more. When remodeling, try not to disturb products that you think might contain asbestos. You'll need professional help when removing or disturbing large areas that have lead-based paint or asbestos.

You can also limit the use of certain pollution-producing products. If you use wood as a fuel, consider reducing the amount of time you burn the wood and be sure to bring some fresh or outside air into the house periodically when the wood is burning. "Air-tight" wood-burning appliances with catalytic combustors improve the burning efficiency and reduce pollutants.

Consider using household products that are nonpolluting. Improve ventilation when you work with products such as solvents, furniture refinishing compounds, and even household cleaners. If you have an outside-vented exhaust fan where you are working, use it when you work with these products. If you don't have such fans, consider adding them or use the products outdoors or with as much natural ventilation as possible.

## SUMMARY

You want to make sure your home is a safe and healthy place to live. Whether you live in a new, energy-efficient home or an older home that is not as airtight, you will probably be exposed to pollutants. Keys to improving the quality of indoor air include good ventilation, limiting the use of pollutant-producing products, controlling the pollutant at its source, and using alternative products.

If you think you have a serious pollution problem, you may want to contact your county health department or the State Division of Air Quality. Your county Extension office may also be able to give you more information about indoor air quality, sources of monitoring devices, and names of local or county health agencies which can help.

### Additional resources:

<https://www.cpsc.gov/Safety-Education/Safety-Guides/Home/The-Inside-Story-A-Guide-to-Indoor-Air-Quality>

<https://www.airnow.gov> and enter your zip code  
[heathtracking.ky.gov](https://heathtracking.ky.gov)

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