



## Indoor Air Pollutants: Detection and Control Measures

Keep your home safe by following good indoor air management practices. Allow recommended ventilation in all living areas of your home and remove excess moisture through use of exhaust fans in the cooking and bathroom areas and venting your clothes dryer to the outside. Be alert for any problems with pollutants. Some symptoms may be seen, such as mildew and mold, while others may be detected by an odor, such as formaldehyde. Many, such as radon and carbon monoxide, however, may be undetected until tested or physical symptoms appear. As a safeguard, follow all precautions in the selection, installation and recommendations for use of all home products in order to protect all members of your household.

<b>POLLUTANTS FROM NATURAL SOURCES</b>		
<b>Pollutant</b>	<b>Detection</b>	<b>Control Measures</b>
<b>Radon</b>	<ul style="list-style-type: none"> <li>■ Measure levels of radon in your home using test kit that has passed EPA's testing program</li> <li>■ Hire trained contractor to do the testing</li> </ul>	<ul style="list-style-type: none"> <li>■ Seal cracks to soil with caulk</li> <li>■ Use sub-slab suction (active soil depressurization), drain-tile suction, or block-wall ventilation</li> <li>■ Use basement pressurization</li> <li>■ Cover exposed earth in basement or crawl space with heavy plastic air barrier</li> <li>■ Use water filtration or aeration</li> </ul>
<b>Biological Contaminants and Excessive Moisture</b>	<ul style="list-style-type: none"> <li>■ Observation</li> <li>■ Formation of mold, mildew</li> <li>■ Standing pools of water or wet, moist surfaces</li> </ul> <p><b>Control Measures:</b></p> <ul style="list-style-type: none"> <li>■ Close off basement openings into crawl spaces or open sumps</li> <li>■ Use air conditioning or dehumidifiers for high humidity areas</li> <li>■ Remove standing water in basements and crawl spaces</li> <li>■ Repair leaking water lines and drains</li> </ul>	<ul style="list-style-type: none"> <li>■ Maintain relative humidity between 30 and 50 percent</li> <li>■ Keep the home clean and use air filters and cleaners</li> <li>■ Empty and clean humidifiers, dehumidifiers and air conditioners regularly with disinfectants according to manufacturers' instructions</li> <li>■ Cover exposed earth in basement or crawl space with heavy plastic vapor barrier and keep ventilated</li> <li>■ Use exhaust fans that vent to the outside in bathrooms and kitchens</li> <li>■ Ventilate crawl spaces and basements during warm weather</li> </ul>

## POLLUTANTS FROM MAN-MADE SOURCES

Pollutant	Detection	Control Measures
<b>Asbestos</b>	<ul style="list-style-type: none"> <li>■ Visual inspection of any materials suspected of containing asbestos to check for damage or deterioration</li> <li>■ Inspection by trained professional</li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid materials containing asbestos</li> <li>■ Don't disturb asbestos materials that are in good condition</li> <li>■ Don't dust, sweep or vacuum materials suspected of containing asbestos</li> <li>■ Use professionally trained contractor for repair or removal of materials containing asbestos</li> </ul>
<b>Volatile Organic Chemicals (VOCs)</b>	<ul style="list-style-type: none"> <li>■ Be alert to chemical odors, discomfort or physical symptoms when around possible sources</li> </ul>	<ul style="list-style-type: none"> <li>■ Carefully follow instructions on labels for recommended use and storage</li> <li>■ Use outside vented exhausts</li> <li>■ Increase ventilation in house</li> <li>■ Use solvents and paint products outside when possible</li> <li>■ Use alternative products, air cleaners</li> </ul>
<b>Formaldehyde</b>	<ul style="list-style-type: none"> <li>■ Distinctive, pungent odor at higher concentrations</li> <li>■ Physical symptoms appear (see Health Impacts)</li> <li>■ Testing by trained professional</li> </ul>	<ul style="list-style-type: none"> <li>■ Remove or limit sources</li> <li>■ Use building materials with little or no formaldehyde</li> <li>■ Seal formaldehyde-containing floor and wall surfaces with vinyl flooring or vinyl wallpaper or formaldehyde-absorbent paint</li> <li>■ Use air conditioners and dehumidifiers to decrease emissions</li> <li>■ Ventilate area where formaldehyde-containing products are in use or new formaldehyde-containing products have been installed</li> </ul>
<b>Lead</b>	<ul style="list-style-type: none"> <li>■ Inspection by professional or qualified service technician</li> <li>■ Home test kits (although not as accurate as professional testing)</li> <li>■ Abatement by licensed professional only</li> </ul>	<ul style="list-style-type: none"> <li>■ Never sand or scrape old (pre-1978) paint (paint surfaces from pre-1950's can contain as much as 50% lead)</li> <li>■ Use a damp mop or cloth (rather than a vacuum) to control dust</li> <li>■ Do not drink "first draw" water in the morning (let it run 1 to 2 minutes)</li> <li>■ Wash hands before meals (important for reducing lead exposure)</li> <li>■ Proper diet (adequate calcium and iron, low fat) can help protect children against lead</li> <li>■ Have children tested if you think there could be a problem (pre-1978 housing is an important risk factor)</li> </ul>

<b>POLLUTANTS FROM MAN-MADE SOURCES</b>		
<b>Pollutant</b>	<b>Detection</b>	<b>Control Measures</b>
<b>Carbon Monoxide (CO), Nitrogen Oxides, and Sulfur Dioxide</b>	<ul style="list-style-type: none"> <li>■ Install carbon monoxide detectors</li> <li>■ Testing by qualified service technician</li> </ul>	<ul style="list-style-type: none"> <li>■ Have trained professional inspect, clean and tune-up central heating system (furnaces, flues, and chimneys) annually</li> <li>■ Install and use exhaust fan vented to outdoors over gas stoves</li> <li>■ Supply adequate outdoor make-up air for combustion</li> <li>■ Direct-vent all combustion exhaust, including gas dryers, outside</li> <li>■ Open flues when using fireplaces</li> <li>■ Never warm up a car in an attached garage</li> </ul>
<b>Respirable Suspended Particulates (RSP)</b>	<ul style="list-style-type: none"> <li>■ Eye, nose and throat irritation (see Health Impacts)</li> </ul>	<ul style="list-style-type: none"> <li>■ Properly maintain, vent, and provide outdoor make-up air for combustion equipment and appliances</li> <li>■ Keep the home clean</li> <li>■ Control source of irritants, use alternative products</li> <li>■ Use air filters and cleaners</li> <li>■ Use a kitchen exhaust fan vented to the outside when cooking</li> </ul>
<b>Environmental Tobacco Smoke (ETS)</b>	<ul style="list-style-type: none"> <li>■ Particle levels in homes without smokers or other strong particle sources are the same as, or lower than, those outdoors</li> <li>■ Irritate eyes and respiratory symptom</li> </ul>	<ul style="list-style-type: none"> <li>■ Remove the source</li> <li>■ If you smoke, smoke outdoors, especially if you have children or family members with respiratory problems</li> <li>■ Increase ventilation in home</li> <li>■ Separate smoking area, mechanical ventilation or air cleaners may reduce, but will not eliminate ETS</li> </ul>

**References:**

- *Indoor Air Quality and Your Home*, New York State Energy Research and Development Authority, Albany, NY.
- *Home Indoor Air Quality Assessment*. Michael P. Vogel, Ed.D., Extension Housing Specialist, Montana State University Extension Service.
- *Quick IAQ Facts for the Community Educator*. Joseph T. Ponessa, Ph.D., Associate Professor/Housing & Energy Specialist, Rutgers Cooperative Extension Service, New Jersey.