



## Common Indoor Air Pollutants: Sources And Health Impacts

POLLUTANTS FROM NATURAL SOURCES		
Pollutant	Major Sources in the Home	Possible Health Impacts
<b>Radon –</b> <i>Colorless, tasteless, and odorless gas that comes from the radioactive decay of uranium or radium.</i>	<ul style="list-style-type: none"> <li>■ Earth and rock under buildings</li> <li>■ Some earth-derived building materials</li> <li>■ Groundwater; well-water from private supplies</li> </ul>	<ul style="list-style-type: none"> <li>■ No immediate symptoms.</li> <li>■ Lung cancer. Causes estimated 20,000 lung-cancer deaths yearly. Smokers are at higher risk of developing radon-induced lung cancer.</li> </ul>
<b>Biological Contaminants–</b> <i>Molds, mildews and fungi, bacteria, viruses, dust, mites</i>	<ul style="list-style-type: none"> <li>■ House dust</li> <li>■ Infected humans or animals</li> <li>■ Bedding</li> <li>■ Poorly maintained humidifiers, dehumidifiers &amp; air conditioners</li> <li>■ Wet or moist surfaces</li> <li>■ Carpets and home furnishings</li> </ul>	<ul style="list-style-type: none"> <li>■ Allergies and asthma</li> <li>■ Headaches</li> <li>■ Eye, nose and throat irritation</li> <li>■ Colds, flu, and pneumonia</li> </ul>

POLLUTANTS FROM COMBUSTION (BURNING)		
Pollutant	Sources	Health Effects
<b>Carbon Monoxide (CO) –</b> <i>Colorless, odorless gas produced by incomplete combustion of all carbon fuels.</i>	<ul style="list-style-type: none"> <li>■ Heating equipment (furnaces, water heaters, fuel-fired space heaters)–natural gas, kerosene</li> <li>■ Wood or coal stoves</li> <li>■ Fireplaces</li> <li>■ Cook tops and ovens</li> <li>■ Charcoal grills</li> <li>■ Engines (gasoline, diesel)</li> <li>■ Tobacco smoke</li> </ul>	<ul style="list-style-type: none"> <li>■ Headaches, drowsiness, dizziness</li> <li>■ Impairment of human respiration, vision &amp; brain functioning, nausea, mental confusion</li> <li>■ Symptoms often mistaken for the flu</li> <li>■ Very high levels can cause death</li> </ul>
<b>Nitrogen Oxides and Sulfur Dioxide –</b> <i>Gases formed by incomplete combustion of all carbon fuels.</i>	<ul style="list-style-type: none"> <li>■ Same as for carbon monoxide</li> </ul>	<ul style="list-style-type: none"> <li>■ Damage to respiratory tract and lungs (Nitrogen dioxide)</li> <li>■ Irritation of eyes, nose and respiratory (sulfur dioxide)</li> </ul>

POLLUTANTS FROM COMBUSTION (BURNING)		
Pollutant	Sources	Health Effects
<p><b>Respirable Suspended Particulates (RSP)</b> –  <i>Particles small enough to inhale that come in a variety of sizes, shapes, and levels of toxicity.</i></p>	<ul style="list-style-type: none"> <li>■ Wood-burning stoves, fireplaces</li> <li>■ Unvented kerosene space heaters</li> <li>■ Gas-fired ranges, furnaces, water heaters</li> <li>■ Vacuum cleaning and house dust</li> <li>■ Tobacco smoke</li> <li>■ Soap powders, pollen, lint, dust, cleaning and cooking sprays</li> </ul>	<ul style="list-style-type: none"> <li>■ Eye, nose, and throat irritation</li> <li>■ Respiratory infections and bronchitis</li> <li>■ Emphysema</li> <li>■ Lung cancer</li> </ul>
<p><b>Environmental Tobacco Smoke</b> –  <i>Secondhand smoke exhaled by smokers, also called side stream smoke.</i></p>	<ul style="list-style-type: none"> <li>■ Cigarettes</li> <li>■ Cigars</li> <li>■ Pipes</li> </ul>	<ul style="list-style-type: none"> <li>■ Eye, nose and throat irritation</li> <li>■ Respiratory irritation (wheezing, coughing)</li> <li>■ Bronchitis and pneumonia (particularly in children)</li> <li>■ Increased risk of emphysema, lung cancer, and heart disease</li> </ul>

Pollutants from Man-Made Sources		
Pollutant	Sources	Health Effects
<p><b>Asbestos</b> –  <i>A natural mineral fiber used in various building materials. All homes more than about 20 years old are likely to have some asbestos.</i></p>	<ul style="list-style-type: none"> <li>■ Damaged or deteriorating ceiling, wall, and pipe insulation</li> <li>■ Vinyl-asbestos floor material</li> <li>■ Fireproof gaskets in heat shields, wood stoves, and furnaces</li> <li>■ Acoustical materials</li> <li>■ Thermal insulation</li> <li>■ Exterior siding</li> </ul>	<ul style="list-style-type: none"> <li>■ No immediate symptoms</li> <li>■ Chest, abdominal and lung cancers and asbestosis</li> <li>■ Asbestos can cause lung cancer, especially among smokers</li> <li>■ 600 to 1,000 U.S. deaths yearly are asbestos-related--mostly from workplace exposure</li> </ul>
<p><b>Volatile Organic Chemicals (VOCs)</b> –  <i>Airborne chemicals contained in many household products</i></p>	<ul style="list-style-type: none"> <li>■ Aerosol sprays, hair sprays, perfumes, solvents, glues, cleaning agents, fabric softeners, pesticides, paints, moth repellents, deodorizers, and other household products</li> <li>■ Dry-cleaned clothing</li> <li>■ Moth balls</li> <li>■ Tobacco smoke</li> </ul>	<ul style="list-style-type: none"> <li>■ Eye, nose, throat irritation</li> <li>■ Headaches</li> <li>■ Loss of coordination</li> <li>■ Confusion</li> <li>■ Damage to liver, kidneys, and brain</li> <li>■ Various types of cancer</li> </ul>

<b>Pollutants from Man-Made Sources</b>		
<b>Pollutant</b>	<b>Sources</b>	<b>Health Effects</b>
<b>Formaldehyde –</b> <i>Pungent gas released into air.</i>	<ul style="list-style-type: none"> <li>■ Pressed wood products (plywood, paneling, particle board)</li> <li>■ Urea-formaldehyde foam wall insulation</li> <li>■ Carpets, draperies, furniture fabrics</li> <li>■ Paper products, glues, adhesives</li> <li>■ Some personal care products</li> <li>■ Tobacco smoke</li> </ul>	<ul style="list-style-type: none"> <li>■ Allergic reactions</li> <li>■ Eye, nose and throat irritation</li> <li>■ Headaches</li> <li>■ Nausea, dizziness, coughing</li> <li>■ Cancer a possibility</li> <li>■ Sensitivity varies widely</li> </ul>
<b>Lead –</b> <i>Natural element once used as a component in gasoline, house paint, solder and water pipes.</i>	<ul style="list-style-type: none"> <li>■ Household dust from lead paint</li> <li>■ Lead-based paint</li> <li>■ Water from lead or lead-soldered pipes or brass fixtures</li> <li>■ Soil near highways/ lead industries</li> <li>■ Hobbies such as working with stained glass and target shooting</li> <li>■ Lead-glazed ceramic ware</li> <li>■ Some folk medicines</li> </ul>	<ul style="list-style-type: none"> <li>■ Damage to brain, kidneys, and nervous system</li> <li>■ Behavioral and learning problems</li> <li>■ Slowed growth</li> <li>■ Anemia</li> <li>■ Hearing loss</li> <li>■ Large doses can be fatal</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.

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