

Common Indoor Air Pollutants: Sources And Health Impacts

POLLUTANTS FROM NATURAL SOURCES		
Pollutant	Major Sources in the Home	Possible Health Impacts
Radon – <i>Colorless, tasteless, and odorless gas that comes from the radioactive decay of uranium or radium.</i>	<ul style="list-style-type: none"> • Earth and rock under buildings • Some earth-derived building materials • Groundwater, well-water from private supplies 	<ul style="list-style-type: none"> • No immediate symptoms • Lung cancer – causes an estimated 21,000 lung-cancer deaths yearly; Smokers are at higher risk of developing radon-induced lung cancer
Biological Contaminants – <i>Molds, mildews and fungi, bacteria, viruses, dust, mites</i>	<ul style="list-style-type: none"> • House dust • Sick humans or animals • Bedding • Poorly maintained humidifiers, dehumidifiers, and air conditioners • Wet or moist surfaces • Carpets and home furnishings 	<ul style="list-style-type: none"> • Allergies and asthma • Headaches • Eye, nose, and throat irritation • Colds, flu, and pneumonia
Carbon Monoxide (CO) – <i>Colorless, odorless gas produced by incomplete combustion of all carbon fuels.</i>	<ul style="list-style-type: none"> • Heating equipment (furnaces, water heaters, fuel-fired space heaters) natural gas, kerosene • Wood or coal stoves • Fireplaces • Cooktops and ovens • Charcoal grills • Engines (gasoline, diesel) • Tobacco smoke 	<ul style="list-style-type: none"> • Headaches, drowsiness, dizziness • Impairment of human respiration, vision and brain functioning, nausea, mental confusion • Symptoms often mistaken for the flu • Very high levels can cause death

POLLUTANTS FROM COMBUSTION (BURNING)		
Pollutant	Sources	Health Effects
Nitrogen Oxides and Sulfur Dioxide – <i>Gases formed by incomplete combustion of all carbon fuels.</i>	<ul style="list-style-type: none"> • Same as for carbon monoxide (see above sources) 	<ul style="list-style-type: none"> • Damage to respiratory tract and lungs (nitrogen dioxide) • Irritation of eyes, nose, and respiratory tract (sulfur dioxide)
Respirable Suspended Particulates (RSP) – <i>Particles small enough to inhale that come in a variety of sizes, shapes, and levels of toxicity.</i>	<ul style="list-style-type: none"> • Wood-burning stoves, fireplaces • Unvented kerosene space heaters • Gas-fired ranges, furnaces, water heaters • Tobacco smoke • Soap powders, pollen, lint, dust, cleaning and cooking sprays 	<ul style="list-style-type: none"> • Eye, nose, and throat irritation • Respiratory infections and bronchitis • Emphysema • Lung cancer • Aggravated asthma • Decreased lung function
Environmental Tobacco Smoke – <i>Secondhand smoke exhaled by smokers, also called side stream smoke.</i>	<ul style="list-style-type: none"> • Cigarettes • Cigars • Pipes • E-cigarettes (vaping) • Marijuana 	<ul style="list-style-type: none"> • Eye, nose, and throat irritation • Respiratory irritation (wheezing, coughing) • Bronchitis and pneumonia (particularly in children) • Increased risk of emphysema, lung cancer, and heart disease

POLLUTANTS FROM MAN-MADE SOURCES

Pollutant	Sources	Health Effects
Asbestos – <i>A natural mineral fiber used in various building materials. All homes more than about 45 years old are likely to have some asbestos.</i>	<ul style="list-style-type: none"> • Damaged or deteriorating ceiling, wall, and pipe insulation • Vinyl-asbestos floor material • Fireproof gaskets in heat shields, wood stoves, and furnaces • Acoustical materials • Thermal insulation • Exterior siding 	<ul style="list-style-type: none"> • No immediate symptoms • Chest, abdominal, and lung cancers, and asbestosis • Asbestos can cause lung cancer, especially among smokers • 1,000 to 1,500 U.S. deaths yearly are asbestos-related, mostly from workplace exposure
Volatile Organic Chemicals (VOCs) – <i>Airborne chemicals contained in many household products</i>	<ul style="list-style-type: none"> • Aerosol sprays, hair sprays, perfumes, solvents, glues, cleaning agents, fabric softeners, pesticides, paints, moth repellents, deodorizers, and other household products • Dry-cleaned clothing • Mothballs • Tobacco smoke 	<ul style="list-style-type: none"> • Eye, nose, throat irritation • Headaches • Loss of coordination • Confusion • Damage to liver, kidneys, and brain • Various types of cancer
Formaldehyde – <i>Colorless, flammable gas at room temperature which has a strong odor.</i>	<ul style="list-style-type: none"> • Pressed wood products (plywood, paneling, particle board) • Urea-formaldehyde foam wall insulation • Carpets, draperies, furniture fabrics • Paper products, glues, adhesives • Some personal care products • Tobacco smoke • Fertilizers and pesticides 	<ul style="list-style-type: none"> • Allergic reactions • Eye, nose, skin, and throat irritation • Headaches • Nausea, dizziness, coughing • Cancer a possibility • Sensitivity varies widely

POLLUTANTS FROM MAN-MADE SOURCES

Pollutant	Sources	Health Effects
Lead – <i>Natural element once used as a component in gasoline, house paint, solder, and water pipes.</i>	<ul style="list-style-type: none"> • Household dust from lead paint • Lead-based paint • Water from lead or lead-soldered pipes or brass fixtures • Soil near highways or lead industries • Hobbies such as working with stained glass and target shooting • Lead-glazed ceramicware • Some folk medicines 	<ul style="list-style-type: none"> • Damage to brain, kidneys, and nervous system • Behavioral and learning problems • Slowed growth • Anemia • Hearing loss • Large doses can be fatal

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.

Additional resources:

<https://www.epa.gov/indoor-air-quality-iaq>

<https://www.airnow.gov> & enter your zip code

heathtracking.ky.gov

Linda Adler, M.A.

Extension Specialist for Home Furnishings

University of Kentucky Cooperative Extension Service.

Updated by Hardin Stevens, senior Extension associate, University of Kentucky, College of Agriculture, Food and Environment, July 2023

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