

## Common Gaseous, Particulate and Biological Pollutants Sources and Their Health Effects (Backup – Archive)

	Pollutant	Health Effects	Sources
particles	Asbestos	Lung cancer, asbestosis, mesothelioma. Smoking greatly increases risk of asbestos-related lung cancer. Victims: Asbestos workers.	Asbestos cement; pipe, furnace, and boiler insulation; ceiling and floor tiles; shingles and siding; vermiculite insulation.
	Biological particles	Allergies, asthma, infectious diseases, toxic effects. Victims: Occupants of buildings with moisture problems.	Plants, animals, and humans; pillows, household dust; damp materials; standing water; humidifiers, evaporative coolers, air conditioners, water heaters.
	Combustion particles	Decreased lung function, cancer. Victims: Smokers, wood stove users, city dwellers.	Combustion appliances, tobacco smoke.
	Lead	Damage to kidneys, nervous system, and red blood cells. Victims: Toddlers who ingest lead dust hand-to-mouth; demolition and renovation workers who breathe lead dust.	Lead-based paint, outdoor lead dust from lead-containing gasoline, lead-using activities like soldering, stained-glass work, handling wheel weights, and lead-acid batteries.
	Radon progeny	Lung cancer. Victims: Long-time occupants of buildings with high radon levels.	Soil and rock, well water; some building materials.
gases	Carbon monoxide	Known as the "silent killer"; odourless, colourless and invisible. Causes decreased reaction time and work capacity; chest pain and exacerbation of existing respiratory problems; headaches, nausea; asphyxiation, brain damage, coma, and death in high concentrations. Victims: Occupants of buildings with CO from combustion appliances and tobacco smoke.	Gas cook stoves; unvented gas or kerosene heaters; fireplaces and wood stoves; gas and oil furnaces, boilers, and water heaters; tobacco smoke.
	Carbon dioxide	Inhalation: Low concentrations are not harmful. A high concentration can displace oxygen in the air. Lack of oxygen can cause permanent damage to organs including the brain and heart.	'Tight' (energy-efficient) home construction without adequate ventilation, common human & household activity (breathing, and burning candles, gas, wood, or other combustion), or HVAC equipment needs repair or service.
	Formaldehyde	Irritant, allergen, and possible carcinogen. Exacerbates existing respiratory problems. Victims: New home occupants, smokers, occupants of recently remodeled buildings.	Particle board, plywood, drywall; cabinetry and furniture; carpet and drapery fabrics; tobacco smoke.
	Nitrogen dioxide	Retards pulmonary function in children and possibly in adults. Animal studies suggest decreased immune capacity. Victims: Occupants of buildings with combustion gases in indoor air.	Gas cook stoves; gas or oil heaters and water heaters; wood stoves; fireplaces; unvented gas and kerosene heaters; vehicle exhaust; tobacco smoke.
	Ozone	Ozone is an oxidant and by-product of ozone-surface reaction includes irritation to the upper respiratory tract. Affects healthy people and people with	Most of the ozone indoors comes in from outside. The level of ozone indoors is generally lower than the level outside. Specific appliance can generate

		respiratory problems.	uncontrolled amount of indoor ozone such as electronic air cleaners, ion generators, photocopiers, and printers etc.
	Volatile organic compounds	Respiratory irritants. Damages nervous system, cardiovascular system, kidneys, and liver. Many VOCs are carcinogens. Victims: New home occupants, workers using solvents, wood stove users, smokers.	Tobacco smoke, kerosene heaters, wood-burning stoves / fireplaces, perfumes and hair sprays, furniture polish cleaning solvents, hobby and craft supplies, carpet, glues and adhesives; sealants, paints, varnishes, and stains, wood preservatives; dry-cleaned clothes, moth repellents, air fresheners, automotive products; and plastics.
mixtures	Tobacco smoke	Carcinogen. Irritates mucous membranes. Chronic and acute cardiopulmonary effects in children. Victims: Occupants of buildings with indoor smoking.	Tobacco smoking.
	Wood smoke	Acute respiratory illness. Chronic lung disease. Victims: Residents of wood-heated buildings and towns with many wood stoves.	Wood-burning stoves, fireplaces.