

**Today's buildings may appear comfortable and safe... However, many construction techniques and materials, heating systems, and furnishings can be hazardous to your health.**

The energy crisis has caused buildings to be tightened up, and air in ventilation systems to be recycled, to save money on energy bills. The resulting reduction of fresh air, combined with synthetic materials outgassing toxic chemicals, and the combustion by-products of gas appliances, wood stoves, etc., has caused indoor air pollution to increase 5-15 times higher than outdoor air levels. Individual pollutants can be 100 times higher indoors.

**According to the World Health Organization, effects of indoor air pollution** may include irritation of eyes, nose, throat, and lungs, hyperactivity, headache, memory loss, inability to concentrate, coughing, hoarseness, wheezing, dizziness, and nausea. Other health effects may include asthma, fatigue, irritability, learning problems, drowsiness, falling asleep, ringing in the ears, blurred vision, chills, flushing, hot flashes, skin rashes, allergies, inflammation, joint pains, hormone disruption, cardiovascular disease, immune system dysfunction, cancer, and birth defects.

### FINDING THE CAUSE:

#### Sources of poor indoor air quality

Below are products, materials, substances and other factors that may contribute to indoor air pollution.

- **Synthetic carpets & pads:** They can contain and outgas many toxic chemicals such as flame retardants, mothproofing, stain-resisting, and mold-and-bacteria-inhibiting chemicals. Carpets collect dirt, pesticides, mold, and dust mites.
- **Fragrances** in air fresheners, fabric softeners, laundry detergents, perfumes, personal care products, and many other products can cause severe indoor air pollution, and contribute to adverse health effects. Fragrances contain toxic chemicals.
- **Pesticides:** All pesticides are toxic chemicals, are extremely difficult to remove and even small amounts can cause severe health effects.
- **Plastics** All plastics outgas and leach toxic plasticizers and other chemicals into air, water and food. Plastics are used in vinyl products, furnishings, clothes, food packaging and containers, etc.
- **Manufactured wood products:** These can release volatile organic compounds (VOCs), including formaldehyde, a potent sensitizer, carcinogen, mutagen and one of the most insidious of all indoor air pollutants. It is used in manufactured building materials (plywood, particleboard), carpeting, fabrics, insulation, paints, shampoos, plastics, and many other products.
- **Paints, stains, sealants, glues, adhesives, caulking, grouting:** These can contain VOCs, mercury, lead, pesticides, and plasticizers. They outgas chemicals and degrade over time.
- **Cleaning products** (disinfectants, cleaners, waxes, polishes): These may contain high VOCs, anti-bacterials, fragrances, and other toxic chemicals.
- **Household products:** Pots and pans with non-stick coatings may contain PFOA (perfluorooctanoic acid).
- **Heating systems:** There are pros and cons for every type of heating system. See brochure for more information.
- **Combustion by-products:** Chemicals and particulates are released during the burning of: fuels (gas, oil, wood, coal, gasoline, diesel or kerosene for heating, cooking, refrigeration, lighting, clothes drying, energy generation), tobacco, candles, and incense. Combustion by-products can cause severe health problems. Unvented gas kitchen stoves cause health problems, including a constant low-level exposure to the natural gas and combustion fumes (carbon monoxide, etc.), and lowered oxygen levels. Combustion fumes must be

vented outside. It is safest to vent furnaces, gas fireplaces and hot water heaters out of a chimney, not power vented through side walls.

- **Particulates** are tiny particles that float in the air, can have chemicals adhering to their surfaces, and can be inhaled deeply into the lungs. Examples are smoke, exhaust, mold spores, cat and dog dander, pollen, dust-mite feces, fabric fibers, fiberglass fibers, asbestos, lead and mercury paint dust, copper-chromated arsenic dust, drywall dust, and copier toner. Wood smoke is a major source.
- **Radiation:** It is an invisible form of energy that includes electromagnetic fields (EMFs) and electrical fields (EFs); radon; radioactive material (smoke detectors, recycled radioactive metal); and wireless technology.
- **Mold:** A serious problem when moisture is trapped by improperly designed and built, poorly ventilated, or inadequately maintained buildings. In addition to spores, mold can produce airborne mycotoxins, which can cause severe illness.
- **Air pressure differences:** Kitchen and bathroom fans or a clothes dryer forces air out of buildings, causing less air (negative pressure) in the building. In tight buildings, to balance the pressure, replacement air enters through openings and cracks pulling pollutants (mold, combustion by-products, chemicals) into the living space.
- **Outdoor air pollution:** Some indoor pollution may come from outside sources. See #4 below, Choose a healthier location.

### SOLVING THE PROBLEM:

#### Ways to improve indoor air quality

1. **Eliminate toxic materials and products** Healthier choices can significantly contribute to a permanent reduction of indoor air pollutants, as many materials and products will outgas chemicals and pollute indoor air for months or years.
2. **Isolate unhealthy materials** If toxic materials can't be eliminated because they can't be removed, or healthier substitutes are expensive, difficult to obtain or not available, then isolate these materials from living spaces.
3. **Provide fresh air** with frequent, complete air exchanges (open windows or mechanical ventilation). Energy-efficient tight buildings without adequate, frequent ventilation can increase pollutants and carbon dioxide, and lower oxygen to unhealthy levels.
4. **Choose a healthier location** Sources of indoor air problems may come from outdoor air. Avoid locating near highways, dry cleaners, gas stations, auto repair/body shops, foundries, manufacturing, chemically treated areas (lawns, orchards, golf courses, conventional agriculture), incinerators, landfills, power plants, sewage treatment facilities, high tension lines, electrical transformers and substations, and microwave and cell phone towers. Avoid wet, damp or shaded locations, and valleys or areas prone to air inversions or stagnation.

**WHEN YOU BREATHE CLEAN AIR, you should feel energized, be able to work long hours with little loss of energy, and not need stimulants such as coffee or sweets. Less-polluted environments can boost energy and creativity, prevent illness and retard aging for healthy people, and support the recovery of sick people.**



FOR MORE INFORMATION, ORDER THE CREATING HEALTHY INDOOR ENVIRONMENTS BROCHURE  
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See order information.

#### REDEMSKE DESIGN

344 Gardiner Road, Jefferson, ME 04348  
207-549-3531 • [www.HealthBrochures.info](http://www.HealthBrochures.info)

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