



## Air

### Information Sheet

#### **Scientific Background**



Unlike in history when our forebears spent most of their time outdoors, today, we spend over 90% of our time indoors. Since the oil crisis of the early 1970s, North Americans have been busy adding insulation to their homes and sealing around windows, doors and other openings. Windows are rarely opened because of noise, safety, or the misconception of energy conservation. The more tightly sealed homes become, the more indoor climate problems seem to crop up. Indoor pollution sources that release gases or particles into the air are the primary cause.

Based on thousands of surveys, 65% of all offices are bad. That means 2 out of 3 people work in office buildings that are placing them at health risk. In addition, it has been found that homes are often 6-10 times worse indoors than the outdoor environment in polluted cities. We depend on our bodies to filter air. This requires that the air not be too polluted and that our body's filter system is properly functioning.

According to the Environmental Protection Agency (EPA), air quality ranks first as an environmental cancer risk and is in the top five of all health risks. Thus it seems, that good air quality is essential for health and well-being. While pollutant levels from individual sources may not pose an immediate health risk by themselves, there can be a serious risk from cumulative effects.

Reference: <http://www.epa.gov/ebtpages/air.html>

#### **Discovery**



In enclosed spaces, the breathing of humans causes carbon dioxide levels to increase and oxygen levels to decrease. Sensitive brain cells are the first to be affected by a lack of oxygen and an excess of carbon dioxide. At a level of 20% oxygen and 0.07% carbon dioxide, the first ill effects can already be noticed, including exhaustion, lack of performance, headaches and an increased breathing rate. Breathing will become more and more difficult until suffocation occurs at 15% oxygen and 5.4% carbon dioxide. [See other documents for mold, radon, pesticides, carbon monoxide, asbestos, and lead.]

The ability of volatile organic chemicals (VOCs) to cause health effects varies greatly – from those that are highly toxic, to those with no known health effect. Sources of VOCs include carpet, vinyl flooring, cleaning products, finishes, sealants, drywall, paper towels, anti-static towels (Bounce), carpet cleaner, and disinfectants.

Inspection of potential sources or using more sophisticated instruments for particulate counts and air sampling. Testing for VOCs is done by identifying sources and chemical sampling, or in extreme cases bulk sampling.

#### **Fixing the Problem**



A healthy living climate begins with a toxin-free home. If you do not use toxins in the first place, you need not suffer from their negative health effects later. Store compounds out of the living space, in fact throw away old or unneeded chemicals. Buy limited quantities, but only buy safe paints and sealers (no VOC's). Keep exposure to a minimum by making sure there is more than adequate ventilation when using chemicals. [See other document for information about Air Cleaners (Purifiers).]

- Removal by air filtration and well-maintained filters – use a 3M Filtrete 1250 or better filter.
- Use hard surface floors, not carpets
- Housekeeping (most vacuums trap only about 30% of the dust)
- Positive air pressure and a tight building envelope
- If opening a few windows does not create sufficient ventilation, consider whole-house ventilation.