Healthy Green Buildings

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Neighborhood commercial development at a residential scale can add amenities and reduce automobile use. Neighborhood designs that make walking safe and convenient contribute to better public health.
Modern construction systems make it possible to construct buildings that are nearly airtight. Lower heating and cooling cost is the beneficial goal of energy efficient construction.

Unfortunately, airtight buildings can have serious indoor air quality problems.
Thirty years ago “sick building syndrome” was unknown.

Today’s tight buildings allow pollutants to build up and become much more concentrated.

Many buildings have indoor air quality that is many times more polluted than the outdoor air in many of our most polluted cities.
Older buildings that allowed air infiltration cost more to heat and cool but generally had better indoor air quality.
Today’s energy efficient, tight building envelopes allow an accumulation of...

✓ Volatile Organic Compounds
✓ Carbon Monoxide
✓ Biological Pollutants
✓ Radon
Volatile Organic Compounds (VOC’s)…

- Formaldehyde
- Pesticides
- Solvents
- Cleaning Agents

Symptoms

- Conjunctival irritation
- Nose, throat discomfort
- Headache
- Allergic skin reaction
- Dyspnea (shortness of breath)
- Nausea,
- Vomiting
- Nosebleed (formaldehyde)
- Fatigue
- Dizziness
Common VOC Sources

- Paint
- Adhesives
- Carpet
- Household Cleaning Products
- MDF (Particle Board)
Radon

Radon is a colorless and odorless radioactive gas. Radon is a naturally occurring by-product of the radioactive decay of radium which is, in turn, a decay product of Uranium 238.

Radon is the nation’s second leading cause of lung cancer. Lung cancer rates among smokers exposed to radon are especially high.
Radon enters buildings through the floors and foundations. Poorly vented buildings may allow an unhealthy accumulation of radon gas.

Radon accumulation can be greatly reduced in new construction by using sub-slab membranes and venting. In existing construction an active sub-slab venting system may be necessary.
Carbon Monoxide

Carbon monoxide is an odorless and colorless gas. It is a by-product of combustion. Carbon monoxide is an asphyxiant and exposure can be fatal.

Recently there have been cases showing that low level, long term exposures to CO can cause cognitive disorders. Short term exposure can cause headaches, fatigue and impaired judgement.
Biological Pollutants
- Mold
- Animal Dander
- Dust Mites
- Other

Symptoms
- Recognized infectious disease
- Exacerbation of asthma
- Rhinitis
- Conjunctival inflammation
- Recurrent fever
- Malaise
- Dyspnea
- Chest tightness
- Cough
Accumulation of Mold and Other Biological Pollutants

- Poor ventilation
- Improper construction
- Leaking plumbing
Avoiding Problems

- Proper Ventilation
- Choice of Construction Materials
- Moisture Control
- Correct Vapor Barrier Placement
- Correct Flashing and Window Wrap
- Proper Drainage
Check on Construction Material Hazards

Use the Manufacturer’s Safety Data Sheet (MSDS) to determine hazardous contents of building products such as adhesives.
Tight, Energy Efficient Buildings Must Have a Mechanical Ventilation System

A Heat Recovery Ventilation (HVR) includes an air-to-air heat exchange that brings in fresh air without a great loss of heated or cooled air.