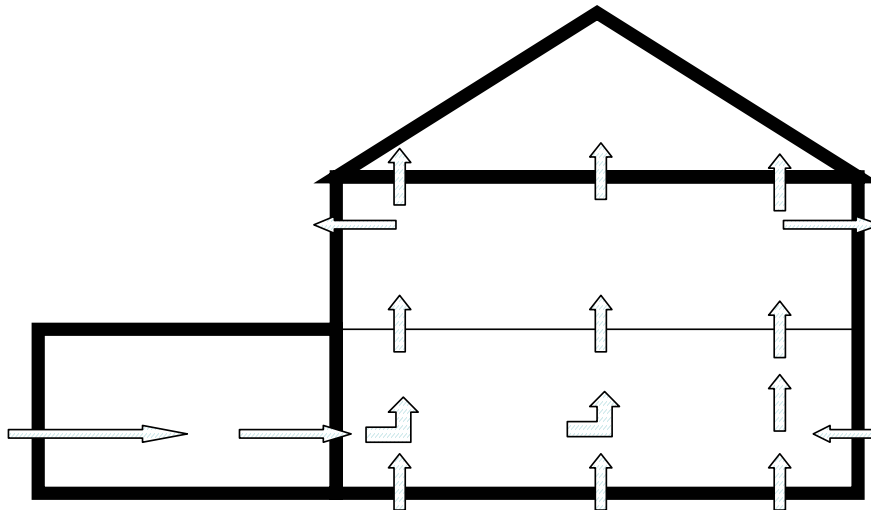


## Pressure Management

Since hot air rises, air typically enters the home on lower levels and exits higher up (Figure 1). Keeping this in mind can help address IAQ and energy efficiency issues in your home. Moist air carrying mold spores, odors, VOCs and other contaminants is drawn into the living area of the home from the basement, crawlspace and/or attached garage. Many of these contaminants can adversely affect the health of the building occupants.

**Air exits high** (gaps, cracks, windows, etc.)



**Air enters low** (garages, windows, crawlspaces, basements, gaps, cracks, etc.)

**Attached Garages** – We tend to store many toxins in garages. Gasoline, solvents, paints, vehicles, and other items live there. Outside air moves into the garage and then into the house via doors, cracks, electrical boxes and outlets, furnace ducting, and other holes. This air contains garage toxins, and the amount of air traveling through the garage can be substantial. Alaska homes with attached garages have higher concentrations of benzene and carbon monoxide than homes with detached garages.

A few pressure control solutions include:

- Sealing penetrations (electrical, mechanical, plumbing, ducting) through garage/living space walls with caulk or spray foam
- Installing a tight seal around garage/living space door
- Depressurize garage with a fan blowing air out of the garage. This fan can be continuously, intermittently, or manually operated. If you wish to install a fan, contact an energy rater who can help you carefully plan to avoid backdrafting problems, and to determine the appropriate size fan.

**Crawlspaces** – The crawlspace is often one source of air in the home. Also, crawlspaces can be a source of moisture and other contaminants from the soil. To minimize the movement of soil moisture and contaminants into the crawlspace you should:

- Seal crawlspace floor with 6 mil poly sheeting (available at hardware stores). To be effective, make sure to
  - \* Overlap joints at least 12” and seal with caulk/tape (Tremco™ and vapor barrier tape). Concrete walls/footings may require attaching battens to create a "sandwich".
  - \* Lap sheeting 8 - 12” up onto the wall and caulk/tape
  - \* Seal around penetrations and structural supports.

### **Air Movement From Crawlspace**

To minimize the amount of crawlspace air moving into the living space you can

- Seal crawlspace access with gasket material
- Depressurize the crawlspace by installing an inline fan ducted to the outdoors (consultation with an energy rater or ventilation expert is suggested).

# Indoor Air Quality Improvement for Home Owners

## II – Moisture, Ventilation & Pressure

Here in Part II, we provide some general tips concerning combustion appliances, and moisture, ventilation and pressure management. These issues often overlap, and are difficult to categorize, but play important roles in residential IAQ.

### Moisture Management

Moisture matters. **Water-related contamination is the most common source of poor IAQ in homes.** High relative humidity leads to biological contamination (mold, mites, etc.) and increased off-gassing of VOCs from materials (especially those made with urea-formaldehyde), while low humidity can lead to personal discomfort (dry eyes, nose, etc.).

To minimize moisture-related IAQ problems:

- Repair plumbing leaks and other sources of water damage immediately
- Dry or remove water damaged materials immediately
- Maintain relative humidity 30 - 55%
- Avoid cold spots along walls, ceilings, etc.
- Install and use appropriately-sized kitchen range and bathroom fans (see next page)

### Ventilation

Install (AND USE!) appropriately-sized exhaust fans in the bathroom and kitchen. **These fans must exhaust to the outside of the building (not just into the attic!).** You may want to consult a ventilation specialist or energy rater when considering installation of a ventilation system. Proper sizing and use of the following can improve IAQ:

- **Bathroom exhaust** - Install a humidistat to control the bathroom exhaust fan. This device will automatically turn on and off to maintain proper humidity.
- **Kitchen exhaust** - Although there are exceptions, kitchen range hoods should be sized to approximately 50 cfm (cubic feet per minute) per lineal foot of range. For most home ranges, that means moving about 100 cfm of air.
- **HRV system** - A whole house ventilation system can be considered. These should be installed in new, tight, energy efficient homes. Retrofitting in existing homes presents some challenges, but can be done. Consult a ventilation specialist or energy rater in your area.

### Combustion Appliances

Combustion appliances include furnaces, boilers, and water heaters. In most homes, these appliances combine home air, fuel, and an igniter to generate fire used for heating air or water. The exhaust moves upward into an unsealed chimney.

**Using home air and an unsealed chimney contributes to poor IAQ and is unacceptable in today's, higher efficiency homes.**

**Sealed combustion appliances** are vented to the outside for air intake and exhaust. They are widely available, very efficient, and should be chosen when replacement appliances are needed.

**IMPORTANT: Whenever you install exhaust fans and other ventilation components, seek the advice of a ventilation specialist or energy rater (a list of energy raters in your area can be found at [www.absn.com](http://www.absn.com)). Failure to do so may result in poor IAQ, and possibly dangerous conditions.**

This document is designed to provide accurate and authoritative information in regard to the subject matter covered. It is provided with the understanding that the ABSN is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert service is required, the services of a competent professional person should be sought.