



ABOUT YOUR APARTMENT

SOLVING ODOUR TRANSFER PROBLEMS IN YOUR APARTMENT

AE 1

One of the most common problems experienced by the occupants of apartment buildings is the transfer of objectionable odours from one apartment to another. Tobacco smoke and cooking odours top the list of complaints. Other complaints are often heard concerning the transfer of odours, noise, light and sometimes pests, under apartment entry doors. The smell of car exhaust from underground parking garages can also be problematic.

Regardless of whether an apartment is rented or owned, there are steps you can take to solve, or at least improve, odour conditions in your apartment. However, before you take any actions that might affect your unit or other areas of the building, you should consult with the building's management and obtain their approval.

Understanding Air Movement in Your Building

For odours to transfer between apartments, two conditions must exist. First, there must be a *hole*, or pathway, for the air to move through and, second, there must be a *driving force* to push the air through the hole. The following sections will help you to better understand where the holes are and what forces act on your building. This, in turn, will enable you to determine the source of the odour problem in your apartment and what you might do about it.

The “pathways”

Despite appearances, apartment buildings can have relatively leaky interior ceiling, floor and wall partitions that allow air to move through the building. Odour transfer between apartments would not otherwise be possible. There may be leakage pathways through the walls and floors separating you from your neighbours beside, above and below your apartment at the following locations:

- Under the entry door from the corridor
- Electrical outlets and switches
- Wiring penetrations
- Plumbing penetrations
- Ducts
- Joints between the walls and floors that define your apartment's boundaries, and,
- Dropped ceilings

In the common areas of the building, stairwells, elevator shafts and garbage chutes serve as passageways for air movement throughout the building.

The “driving forces”

Figure 1 shows how air tends to move in apartment buildings in the winter months under the influence of the three primary driving forces: stack effect, wind effect and mechanical ventilation.

In the winter, air tends to move upward through your building driven by a force known as “*stack effect*” (see note A on Figure 1). Stack effect causes air to be drawn in from outside at the lower levels of the building, rise up through the floor levels and then leak out of the building at the upper floors. At the same time, wind will cause air to leak into the apartments on the windward side of the building, and flow across the common corridors to the apartments on the leeward side of the building. This is known as “*wind effect*” (B on Figure 1).

Ventilation systems can also cause the transfer of air to and out of your apartment. Most apartment buildings constructed since the mid-1960s have corridor ventilation systems that deliver outdoor air to the common corridors on each floor. This is done to ventilate the corridors, to contain odours in apartments and to provide make-up air for in-suite range hoods, bathroom fans and clothes dryers. Corridor air systems are operated either intermittently—usually on a regular schedule— or continuously.

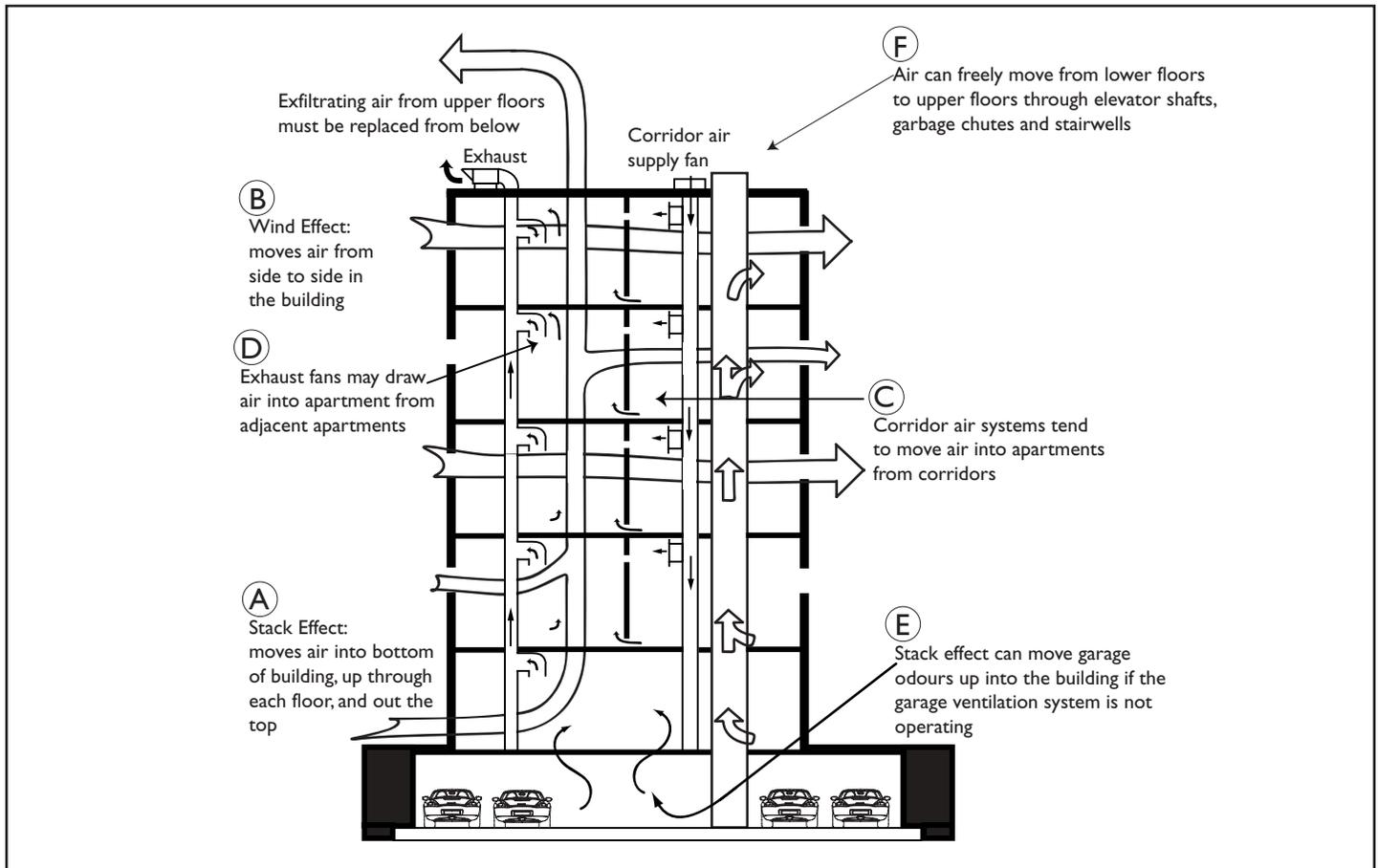


Figure 1 : Air movement direction in apartment buildings in winter

Corridor air ventilation systems tend to push air from the common corridors into adjacent apartments through the gaps that exist around apartment doors (C on Figure 1). Sometimes this gap also lets in objectionable odours, light and noise. CMHC research has found that corridor air ventilation systems will not necessarily improve air quality within individual apartments. Much of the air delivered to the corridors escapes the building through the elevator shafts, garbage chute and stairwells. Sometimes during the winter months, the corridor air system can be overpowered by strong stack and wind forces and may not effectively ventilate the corridor areas or prevent the spread of odours.

Apartments also usually have exhaust systems to ventilate the bathrooms and kitchens. The exhaust fans are

either in the apartment or are located in a central location elsewhere in the building. The operation of bathroom and kitchen exhaust fans may effectively ventilate your bathroom and kitchen but their operation can draw unwanted air from other areas of the building into your apartment (D on Figure 1). Kitchen and bathroom fans can sometimes be noisy and ineffective.

Parking garages have ventilation systems that vent automobile exhaust outdoors. These systems can operate continuously, however, for energy conservation, they can be operated by controllers that turn the system off except when concentrations of car exhaust emissions exceed pre-set limits. When the systems are not running, sometimes stack effect can move exhaust odours from the garage up into the building (E on Figure 1).

Finally, elevator shafts, stairwells, wiring conduits, duct enclosures, plumbing chases and garbage chutes that run from floor to floor allow air, driven by stack effect, to move from lower levels to upper levels (See F on Figure 1).

Odour Transfer: What to Do About It

Helpful suggestions for reducing odour transfer from other areas of the building to your apartment are offered below. **It must be emphasized that you should discuss any measures you choose to try with the building's management in advance of taking action and obtain their approval.** The suggestions are divided between what you could do in your own apartment and what you could do outside it with the support of the property management.

Be aware that many of the measures provided below have a trial and error element to them—and are identified as such. The causes of odour transfer to your apartment, and the solutions, will be dependent on where your apartment is located in the building, the building's construction type, how the building is operated and maintained and other such factors. This guide cannot cover all the different scenarios. Thus, you will need to try certain measures to see if they improve the situation, make no difference, or make things worse. Fortunately, the trial and error measures are easily reversible and will cause no long-term problems in your unit.

Warning: The following suggestions DO NOT apply to apartments that have combustion appliances such as wood-burning fireplaces or natural gas fireplaces, hot water heaters and furnaces. The following suggestions can adversely affect the operation of combustion appliances leading to conditions that can threaten your health and, in extreme conditions, cause death. If your apartment has combustion appliances, it is recommended that you consult with a qualified wood burning or natural gas appliance installer prior to taking any actions to reduce odour transfer.

Within Your Unit:

I. Ensure the odor source is not in your apartment

If the odour is coming from your apartment, it is something that you can deal with. CMHC's *Clean Air Guide* has many ideas on how to improve the quality of your indoor environment. Ordering information is provided at the end of this publication.

2. Seal potential leakage pathways between your unit and other areas as follows:

- a. Seal the gap around the corridor door to your apartment with weatherstripping. Note: This is a trial and error measure. In most buildings, corridor air systems force air from the corridor into your apartment. This can cause odour transfer problems. Install the weatherstripping and wait to see if this reduces odour transfer. After sealing the corridor door, watch to see if your apartment becomes stuffy or if odours and humidity linger in bathrooms or kitchen areas. Also watch for the appearance of condensation on your windows. Should any one, or all, of these problems occur after you have sealed your door, you may have to operate your exhaust fans more frequently. If this does not help, you may have to remove the weatherstripping to improve ventilation.
- b. Seal plumbing penetrations in the walls and floors under sinks in kitchen and bathrooms, and behind toilet fixtures. Check in closets and utility closets for other pipe, duct and wiring penetrations and seal around these as well. Use low-odour, water-based caulking or spray-in foam to seal penetrations.
- c. Install air-sealing gaskets behind the cover plates of light switches and electrical receptacles. Air-sealing gaskets can be found at most hardware stores.
- d. For in-suite bathroom exhaust fans, remove the grille and caulk or seal with foil duct tape the gap between bathroom fans and the surrounding ceiling or wall areas. The sealed joint will be hidden when you replace the grille. If you only have an exhaust grille in your bathroom that is connected to a central

exhaust system, sometimes the grille can be removed and the exhaust duct can be sealed to the surrounding ceiling or wall. Otherwise, gaps around the grille can be sealed with paintable caulking.

- e. Caulk the bathtub and its surrounding enclosure to adjacent wall and ceiling areas with silicone caulking.
- f. Remove baseboards and caulk the floor-wall joint around the perimeter of your apartment on both inside and outside walls. Note that this measure is a last resort that is difficult to do, is highly disruptive, and may, or may not, make a difference. The measure is recommended if renovations are planned in the apartment as it can be easily done when other work is underway or when flooring is being replaced.

3. Seal indoor-outdoor air leakage paths in your apartment

Air leaking through outside walls can cause air from neighbouring apartments and the common corridor to be drawn into your unit. Limiting air movement through exterior walls will not only prevent this from happening but will also reduce drafts, reduce heating costs and limit the amount of outdoor noise entering your apartment. Remember to discuss with your building's management what you intend to do before taking any action.

- a. Ensure window and door gaskets are intact or in good condition — otherwise replace them. This is usually the building owner's or condominium's responsibility. Worn or flattened gaskets, windows that rattle in the wind, the presence of drafts or the movement of drapes and blinds are signs that your windows are leaky.

- b. Caulk the wall-floor joint behind baseboards (similar to step 2 f. above)—this can be difficult to do but may be worthwhile if renovations are being considered.
- c. Seal joints around through-wall or window-mount air conditioning units with caulking or spray-in foam. Be careful not to block any pipes that drain condensation from the unit to outdoors.
- d. Seal wiring penetrations behind electric baseboard heaters. This will require the services of a contractor to disconnect the power and remove baseboard units.
- e. Install air-sealing gaskets behind the cover plates for electrical outlets and switches.

4. Ventilate your unit with existing fans

Use the bathroom fan and kitchen fan to ventilate your unit. **Note:** This is a trial and error measure. Operating your exhaust fans can help dilute odours that enter your apartment. Kitchen fans tend to be noisy so try using the bathroom fans only at first. Ensure the fans are working—they should be able to hold a piece of tissue paper to their grilles when operating. If they are unable to do this, or little airflow is detectable, the exhaust fan, duct system or outside hood may require cleaning. Sometimes the age, condition or quality of the fan will require that it be replaced.

Be aware that operation of exhaust fans in your unit may draw more air from neighbouring apartments or the common corridor into your unit, making the problem worse, not better. Sealing between your unit and other areas of the building, as previously recommended, should help prevent this from happening. However, if exhaust fan operation does not improve conditions in your apartment, or seems

to make matters worse, discontinue their use except as normally required.

In consultation with the building management

1. Try to identify and eliminate the source of the odour

Cooking and tobacco smoke odours can often be easily traced back to other apartments or common areas. Objectionable odours originating from other apartments may be resolved, with the help of the property manager, by coming to an agreement with the occupants to stop, or limit, the odour-causing activity.

The presence of car exhaust odours can be a sign that the parking garage or the parking garage vestibule ventilation systems are not working properly. The intake grille for the building's corridor air supply could be too close to street level or the outlet for the parking garage exhaust system.

Garbage odours may come from garbage chutes, garbage chute access rooms on each floor level and the compactor/dumpster room at the base of the chute. Garbage odours may be resolved by ensuring that the gaskets on garbage room doors and the chute hatchways are in good condition and the doors and hatches seal tightly when closed. Keeping the garbage rooms, chute and compactor clean and ensuring the compactor room is well ventilated can also help.

2. Ensure the building ventilation systems are operating correctly

Confirm with building management that the building's corridor air supply system is operational—particularly at the times when the odours of concern are being produced.

If the building has a central exhaust fan for the kitchens and bathrooms, ensure that it is working properly as well.

3. Ensure the areas or apartments where the odours are being produced have bathroom and kitchen fans that work

If you cannot stop the odours from being produced, as is often the case with smoking and cooking, try to arrange for more diligent or continuous use of in-suite exhaust fans (if installed) in the apartment where the odours are being produced. This will help to contain odours. The property manager will have to ensure that the apartment's exhaust fans work and are not so noisy that they will not be used. Increased fan use can be achieved through the installation of timers or occupancy sensors that can activate the in-suite fans as required.

4. Investigate the possibility of having the apartment where the odour is being produced sealed as previously mentioned

It may be possible, with the support of the property manager, to have the odour producing apartment's corridor door sealed with new weatherstripping. The other in-suite sealing measures will be too intrusive to be imposed on others. **Note:** This is a trial and error measure as the weatherstripping may adversely affect the indoor environment of the apartment.

5. Investigate the possibility of pressurizing your apartment

You can pressurize your apartment by introducing outdoor air directly into your apartment with a small ventilation unit. This will not only provide you with all the fresh air you need, but can also pressurize your apartment and prevent air leaking in from neighbouring apartments or

common areas. It should be noted that this is one of the more expensive and intrusive options, as a ventilation unit will have to be purchased and installed. A hole will have to be made through the exterior wall or a portion of an existing window area for the outdoor air duct.

The ventilation unit will require space in your apartment and it could be relatively noisy to operate unless you take care to find a fan with a sound rating below 1 sone. Consideration will also have to be given to heating the outdoor air in the winter, or introducing it to your apartment in such a way that does not cause comfort problems.

Note: Overly pressurizing an apartment can force warm, moist indoor air into the exterior building envelope. This can cause problems with the structure, insulation and cladding systems. Additionally, windows and balcony doors may experience problems as frost may form on them. Also, pressurizing your apartment may force your odours into your neighbours' apartments—something *they* may find objectionable.

Despite these concerns, the installation of a ventilation unit can be very effective in preventing odours from entering your apartment and improving indoor air quality. This step will require the expertise of a qualified ventilation contractor to properly determine the capacity of the unit (i.e. how much air will it have to bring into your apartment), and the installation details required for safe, and effective operation.

There is a trial and error element to this measure. Should you install a ventilation system to pressurize your apartment, you and the property management must watch for warning signs such as the appearance of efflorescence (irregular white stains) on brick walls, the formation of icicles below weephole soffits or other penetrations in the cladding, the appearance of siding stain or paint problems, the deterioration of paint and drywall around windows, and the presence of musty smells. If any or all of these problems occur after the installation of a pressurizing fan in your apartment, discontinue its use until an investigation of the problems can be conducted and the source of the problem identified.

In summary...

Understanding how and why air transfer occurs will help you resolve odour problems in your unit. Sometimes, working with the building management and the other occupants in the building will help resolve the problem with little cost or effort. Other times, measures, such as those suggested in this guide, may be necessary. The highly varied nature of apartment buildings means that a trial and error approach must be taken so that, ultimately, the problem is resolved.

For further information on dealing with indoor air quality problems in your apartment, such as CMHC's *Clean Air Guide*, contact CMHC at 1 800 268-2648 or visit our website at www.cmhc.ca.

For problems where it may be appropriate to have an indoor air quality expert visit your apartment, contact CMHC for a list of professionals who have completed CMHC's Residential Indoor Air Quality Investigator Training Program.

To find more **About Your Apartment** fact sheets plus a wide variety of information products, visit our Website at www.cmhc.ca. You can also reach us by telephone at 1 800 668-2642 or by fax at 1 800 245-9274.

Priced Publications

The Clean Air Guide: How to Identify and Correct Indoor Air Problems in Your Home Order No. 61082

Free Publications

About Your Apartment *fact sheets*

Reducing Noise in Your Apartment Order No. 63904

About Your House *fact sheets*

The Condominium Owner's Guide to Mold Order No. 62341

A Tenant's Guide to Mold Order No. 63902

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