

Improve the Indoor Air Quality in Your Building



香港特別行政區政府
環境保護署



Indoor Air Quality
Information Centre
室內空氣質素資訊中心



Improve the Indoor Air Quality in Your Building

This booklet is intended to provide information to help people who work in office buildings or public places to learn about the factors that contribute to indoor air quality and comfort problems and the roles of property managers and occupants in maintaining a good indoor environment. Because good indoor air quality depends on the actions of everyone in the building, a partnership and close coordination between property management and occupants is the best way to maintain a healthy and pleasant indoor environment.



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Why is indoor air quality important?

On average, we spend more than 70% of our time at homes, in offices and other indoor environment. Polluted indoor environment may give you headache, itchy eyes, respiratory difficulties, skin irritation, nausea and fatigue. Those with existing respiratory or heart disease are more susceptible to the effects of indoor air pollution. Improved indoor air quality can result in higher productivity, fewer lost work days and better business.

What are the factors that contribute to indoor air quality?

Indoor air quality is a constantly changing interaction of complex factors that affect the types, levels, and importance of pollutants in indoor environments. These factors include: sources of pollutants; design, maintenance and operation of building ventilation systems; temperature and humidity; and occupant perceptions and susceptibilities. In addition, there are many other factors that affect comfort or perception of indoor air quality.



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What are the sources of the common indoor air pollutants?

Chemical pollutants

Sources of chemical pollutants include tobacco smoke, ozone from photocopiers, and emissions from other products used in the building (e.g. office equipment; furniture, wall and floor coverings; and cleaning and consumer products).

Particles

Particles are solid or liquid substances which are light enough to be suspended in the air. Particles of dust, dirt, or other substances may be drawn into the building from outside and can also be produced by activities that occur in buildings, like sanding wood, printing, copying, operating equipment, and smoking.

Biological contaminants

Excessive concentrations of bacteria, viruses, fungi (including molds), may result from inadequate maintenance and housekeeping, water spills, inadequate humidity control, condensation, or may be brought into the building by occupants, infiltration, or ventilation air.

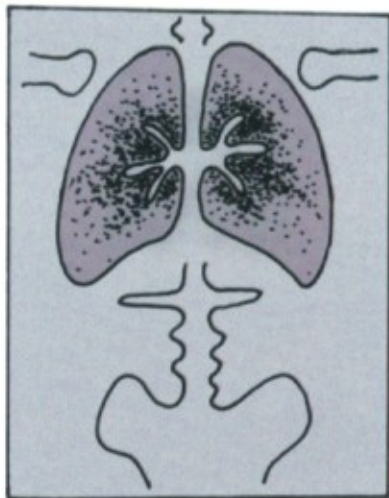




What are the health effects of indoor air pollutants?

Many different factors influence how indoor air pollutants affect occupants. Some pollutants, like radon, are of concern because exposure to high levels of the pollutant over long periods of time increases risk of lung cancer. Some pollutants can cause both short and long term health problems. Prolonged exposure to environmental tobacco smoke can cause lung cancer, and short term exposures can result in irritation and significant respiratory problems for some people, particularly young children.

People can react very differently when exposed to the same contaminants at similar concentrations. For example, some people can develop severe allergic reactions to biological contaminants while other people remain unaffected. Similarly, exposure to very low levels of chemicals may be irritating to some people but not others. For people with asthma or other respiratory diseases, exposure to irritants like environmental tobacco smoke or gases or particles from various indoor sources may cause more severe reactions than the same exposure to others.





How can indoor air quality be improved?

Controlling indoor air quality involves integrating three main strategies. They are:

- (a) manage the sources of pollutants by implement
 - removing them from the building (e.g. *implement a no-smoking policy*)
 - isolating them from people (e.g. *relocate photocopiers away from general working area*)
 - controlling the timing of their use (e.g. *re-schedule pest control work to holidays or at night when no one is working in the office*)
- (b) dilute pollutants and remove them from the building through ventilation.
- (c) use filtration to remove the air pollutants.



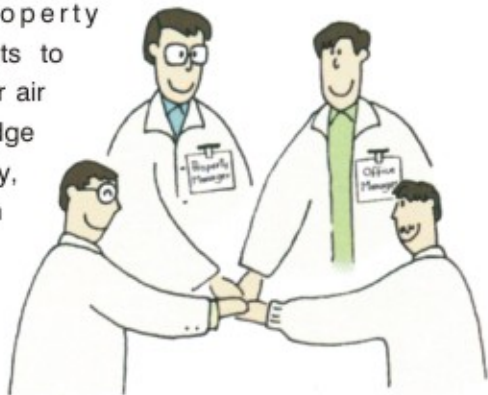


Improve the Indoor Air Quality in Your Building

Why should you share the responsibility to improve indoor air quality?

There are many factors that contribute to poor indoor air quality. This may originate from inadequate design, maintenance and operation of mechanical ventilation and air conditioning (MVAC) system. Some may be solely in the control of the building management, such as maintenance of the MVAC system and the amount of outside air being mechanically brought into the building. Others are largely in the control of building tenants and occupants, such as materials used in renovations and products and furnishings brought into or used in the building by occupants. Some, like cleanliness and general housekeeping of the building, require the cooperation of both the building management as well as all of the individuals who work in the building. For these reasons, improving indoor air quality is a shared responsibility that everyone should contribute.

Although the factors that affect the quality of the indoor environment are numerous, most indoor environmental problems can be prevented or corrected easily and inexpensively through the application of common sense. Success depends on cooperative actions taken by property management and occupants to improve and maintain indoor air quality. With good knowledge about indoor air quality, tenants and occupants are in a good position to help property managers maintain a comfortable and healthy building environment.





What can you do to improve the indoor air quality in your building?

All of the occupants of a building can have a great influence on indoor air quality. Everyday activities like heating food in a microwave or using the photocopier can generate odours and pollutants. By being aware of indoor air issues, occupants can help prevent problems. Here are something you can do:

- Do not block air vents or ducts to avoid unbalancing the MVAC system or affecting the ventilation of a neighbouring office. Notify building management if your space is too hot, too cold, stuffy or draughty.
- Do not smoke and advise others to do the same. If really necessary, smoke in designated areas only.



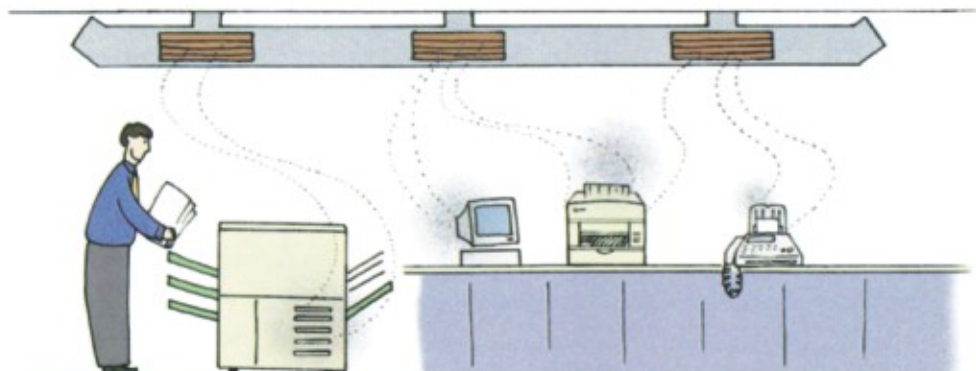
- Clean up all water spills promptly and report water leaks right away to minimise the growth of microorganisms such as molds or fungi.
- Dispose of garbage in appropriate containers that are emptied daily to prevent odours and biological contamination.
- Store perishable food products in fridge to avoid generating unpleasant odours.
- Notify property manager immediately if you suspect an indoor air quality problem and other rubbish-related nuisance. This helps management determine the cause of the problem quickly so that a timely solution can be reached.



What can the office manager do to improve indoor air quality?

If you manage an office or a public place, things that you can do to improve indoor air quality include:

- Cooperate and maintain a good working relationship with building management on indoor environmental issues.
- Make sure supply air vents and return air ducts are not blocked by furniture or equipment. Place computers and heat-generating equipment away from MVAC sensors to avoid inaccurate temperature control.
- Implement a no-smoking policy in the place under your control.
- Provide adequate or separate ventilation to pollutants-generating office equipment such as copiers, printers and fax machines.
- Take into consideration the potential chemical emissions from products and any associated respiratory hazards in your purchasing decision.





Improve the Indoor Air Quality in Your Building

- Work with the property manager to ensure use of only necessary and appropriate pest control practices, and non-chemical methods where possible.
- Properly isolate the area to be renovated from other spaces and the MVAC systems, and scheduling these activities for evenings and holidays if possible, to minimise potential occupant problems.
- Try to arrange for wrappings to be removed from partitions, carpet rolls, and other new materials before they are brought into the space. The materials should be aired out in a clean, dry location outside the building for a few days before installation. This can significantly reduce chemical emissions and odours inside the building.





What can property manager do to promote good indoor air quality?

In maintaining a healthy and comfortable indoor environment, things that property manager can do include:

- Appoint an indoor air quality manager, who serves as the contact for indoor environmental issues. The IAQ manager engaged to carry out the assessment of any indoor air quality problems should be a competent person who is adequately experienced and to provide supervision for the management of indoor air quality programme.
- Address any existing and potential indoor air quality problems.
- Arrange a scheduled cleaning and maintenance programme for the MVAC system.
- Make sure fresh air intake is not blocked and is not located in any place where the air is likely to be polluted.
- Educate building staff about indoor air quality management by providing training opportunities.
- Respond quickly to leaks, floods, and other accidents that occur in buildings to prevent indoor air quality problems from developing.
- Manage properly potential pollutant sources such as:
 - smoking
 - renovation materials and furnishings
 - housekeeping and pest control products.
- Communicate with tenants and occupants about their roles in maintaining good indoor air quality.
- Establish clear procedures for responding to indoor air-related complaints.
- Keep a record of reported health complaints to aid in solving indoor air-related problems. This will help in making the correct diagnosis and delivering effective treatment.



What can you do if you think building has an indoor air quality problem?

If you are experiencing health or comfort problems that you suspect to be caused by indoor air pollution, you can:

- Inform the office manager / property manager of your concerns.
- Report your problems to the company health and safety officer, if appropriate.
- Cooperate with management during any indoor air quality investigation to help identify and solve problems.





Improve the Indoor Air Quality in Your Building

For more information, please contact:

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如想得到更多資料，請聯絡：

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圖文傳真：27886181

電郵：enquiry@iaq.gov.hk

網址：<http://www.iaq.gov.hk>





如認為自己的樓宇存有室內空氣質素問題，可以怎樣做？

如你的健康狀況出現問題或感到不適，且懷疑是由室內空氣污染造成，你可以：

- 將有關問題通知辦公室經理／物業經理。
- 按適當情況，將你的問題向公司的健康及安全主任報告。
- 在進行室內空氣質素調查期間，與管理人員合作，協助找出及解決有關問題。





物業經理可如何促進維持良好的室內空氣質素？

要維持一個健康舒適的室內環境，物業經理可以做的工作包括：

- 委任一個室內空氣質素經理，就有關室內環境問題負責聯繫的工作。室內空氣質素經理須對所有室內空氣質素問題作出評估，並且監督室內空氣質素計劃的管理事宜。因此合資格的人選須具備豐富經驗。
- 處理所有現存的及潛在的室內空氣質素問題。
- 為機械通風及空調系統編制清洗及維修保養的計劃。
- 確保鮮風入口沒有被阻擋及切勿設置在空氣可能受污染的地方。
- 提供訓練機會以教導樓宇職員有關室內空氣質素的管理。
當樓宇內發生漏水、水浸或其他事故時，應盡快採取相應行動，以
- 免室內空氣質素的問題惡化。
- 妥善處理潛在的污染物源頭，例如：
 - 吸煙；
 - 裝修翻新物料及傢具；
 - 內務管理及防蟲用品；與租戶和樓宇佔用人士溝通，向他們解釋在維持良好室內空氣質素方面所擔當的角色。
- 定立明確程序以回應有關室內空氣質素的投訴。
記錄有關影響健康的投訴，以協助解決室內空氣的問題；這樣有助正確的判斷及作出有效的對策。



改善樓宇的室內空氣質素

- 與物業經理合作，確保只進行必要及適當的防蟲工作，並盡量採用非化學的方法。
- 把擬進行裝修翻新的地方適當地與其他空間及機械通風和空調系統分隔，以及盡可能把這些工作編排在假日及晚間進行，以盡量減少對室內人士的影響。
- 盡量安排將隔牆、捲裝地氈及其他新物料的包裝在搬入室內之前拆除，將這些物料存放在樓宇外一處清潔乾爽的地方，讓風吹數天，然後才安裝。這樣可大幅減低樓宇內化學品的散發及異味。

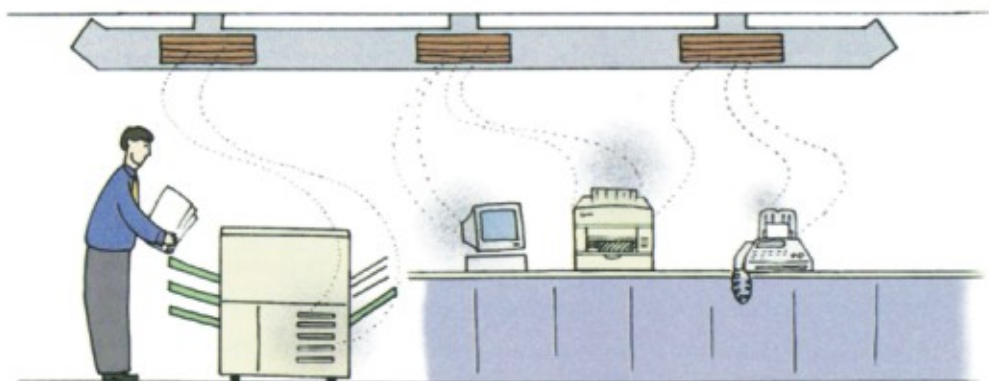




辦公室經理可如何改善室內空氣質素？

如你負責管理一個辦公室或公眾場所，改善室內空氣質素的方法包括：

- 與樓宇管理層就室內環境問題合作，並維持良好工作關係。
- 確保通風口及回流空氣管不被傢俬或設備阻塞。將電腦及發熱設備放在遠離機械通風及空調感應器的位置，以免引致溫度控制失準。
- 切實執行不准吸煙的政策。
- 為產生污染物的辦公室設備，如影印機、打印機和傳真機等，安裝足夠或獨立的通風裝置。
- 決定購買一些產品時，仔細考慮其可能散發的化學排放物，以及對呼吸系統可造成的危害。





你可如何改善自己樓宇的室內空氣質素？

樓宇內的每位使用人，均對室內空氣質素有莫大影響。日常生活如使用微波爐加熱食物或使用影印機，都能產生氣味和污染物。多留意有關室內的空氣質素事宜，可幫助防止問題產生。下列是其中一些例子：

- 不要阻塞通風口或排氣管，以免擾亂機械通風和空調系統的送風平衡或影響毗鄰辦公室的通風。如發覺自己所處的地方過熱、過冷、不通風或通風過甚，應通知樓宇管理層。
- 自己不要吸煙及勸喻他人同樣不要吸煙。如確切需要，只在指定地方吸煙。



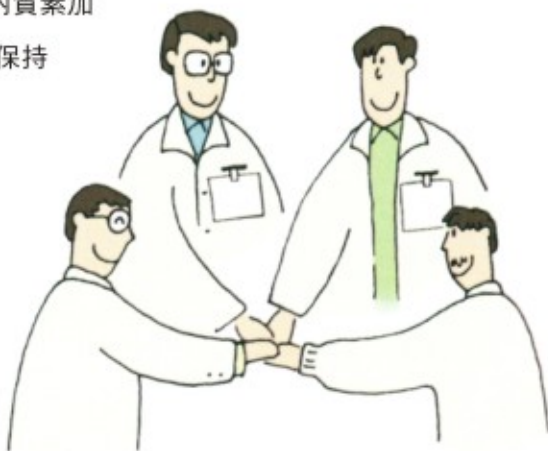
- 迅速清理及報告有關漏水事宜，以減低黴菌或真菌等微生物的滋生。
- 將垃圾妥善棄置在合適的容器內，並每日清倒，以免散發異味及受生物污染物污染。
- 易腐爛的食品應存放在雪櫃內，以免產生難聞的氣味。
- 如懷疑存有室內空氣質素問題或其他有關垃圾的滋擾，立即通知物業經理；這樣有助管理人員盡快確定問題的起因，並找出即時的解決方法。



為何你應分擔改善室內空氣質素的責任？

導致室內空氣質素惡劣的原因很多。可以是由於機械通風及空調系統的設計、維修和操作欠妥。有些情況可能完全是樓宇管理層的範疇，例如機械通風及空調系統的維修及抽風量的多少。其他因素則大致上取決於樓宇租戶和使用人，例如裝修翻新時使用的物料，以及帶進樓宇或在樓宇內所使用的物品和傢具。另外，樓宇的清潔和一般管理，則需要樓宇管理層及在樓宇內工作的人士互相合作。鑑於上述原因，每人均應分擔改善室內空氣質素的責任。雖然影響室內環境質素的因素繁多，但只要我們運用普通常識，大部分室內環境問題不難預防或糾正，而且並不昂貴。能否取得成功，則視乎物業管理層和使用人士在改善和維持室內空氣質素方面的合作。

樓宇租戶和使用人對室內質素加深認識，有助物業經理保持樓宇環境舒適健康。





如何改善室內空氣質素？

改善室內空氣質素，可從下列三方面著手：

(a) 控制污染物源頭

- 消除樓宇的污染源，例如切實執行不准吸煙政策
- 把污染源隔離，例如把影印機設置在遠離一般工作的地方
- 控制使用時間，例如只在假日或晚間沒有人辦公的時間才進行防蟲工作

(b) 把污染物稀釋，然後透過通風設備抽離樓宇

(c) 使用隔濾裝備清除空氣中的污染物

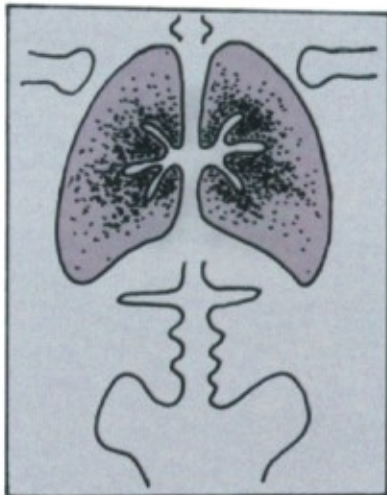
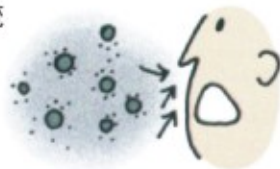




室內空氣污染物對健康有何影響？

多種不同因素可影響室內空氣污染物對樓宇內人士所起的作用。有些污染物，如氫氣特別惹人關注，因為長時間接觸高濃度的氫氣，會增加患上肺癌的機會。暴露在其他高濃度的污染物下，如一氧化碳，數分鐘便可致命。有些污染物則可造成短期和長期的健康問題。長期接觸二手煙可引致肺癌，短期接觸則可以使某些人，特別是兒童，感到不適及患上嚴重的呼吸系統毛病。不同人接觸相近濃度的同一種污染物，可以有不同的反應。例如，有些人對生物污染物會產生劇烈的過敏反應，但有些人則不會受影響。同樣地，接觸低濃度的化學品，可令某些人感到不適，但對某些人則不會造

成影響。患有哮喘或其他呼吸系統疾病的人，接觸一些刺激物如二手煙或來自多種室內源頭的氣體或微粒，可比其他人有較強烈的反應。





甚麼是常見的室內空氣污染物源頭？

化學污染物

化學污染物的源頭包括二手煙、影印機產生的臭氧，及使用於樓宇內的其他物品的排放物（例如：辦公室設備、傢俬、牆壁和地板、清潔用品等）。

微粒

微粒是懸浮於空氣中的固體或液體物質。塵屑、污垢或其他物質的微粒均可從戶外帶進樓宇內，或由樓宇內的某些活動而產生，例如磨木、印刷或影印文件、操作某種設備及吸煙等。

生物污染物

室內充溢著高水平的細菌、過濾性病毒、真菌（包括黴菌），是可能由於樓宇維修保養欠妥、漏水、濕度控制不當、凝結作用等因素造成，也可能由進入樓宇內的人士帶入，或經由滲入或抽入室內的空氣所散播。





為何室內空氣質素如此重要？

我們平均有七成以上的時間留在家中、辦公室或其他室內環境。受污染的室內環境可令人感到頭痛、眼睛痕癢、呼吸困難、皮膚過敏、嘔吐及疲勞。患有呼吸系統或有心臟疾病的人，會較容易受到室內空氣污染物的影響。改善室內空氣質素，可提高員工的生產力，亦可減低員工因病請假所損失的工作日子，公司業績也會隨之上升。

甚麼因素影響室內空氣質素？

室內空氣質素受多項複雜因素不斷轉變的相互作用所影響；這些因素可影響室內環境中污染物的種類、水平和嚴重程度。這些因素包括：污染物源頭、樓宇通風系統的維修和運作、溫度和濕度、室內人士對污染物的感覺和敏感程度。此外，更有多種其他因素可影響我們對室內空氣質素的感覺。



改善樓宇的室內空氣質素

本小冊子旨在提供資料，幫助在辦公室樓宇或公眾場所工作的人士，認識可影響室內空氣質素和引致身體不適的因素，以及物業經理和樓宇佔用人人在維持一個良好室內環境方面所擔當的角色。由於良好的室內空氣質素，有賴樓宇內每一個人共同努力，因此物業經理和樓宇佔用人建立夥伴關係並緊密合作，是維持室內環境健康宜人的最佳方法。



改善樓宇的 室內空氣質素



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