

The logo for BOHS (British Occupational Hygiene Society) features the letters 'BOHS' in a bold, blue, sans-serif font. The letter 'O' is stylized with a white circle inside it.

British Occupational
Hygiene Society

The Chartered
Society for Worker
Health Protection

COVID-19 and Ventilation Frequently Asked Questions

1) Does ventilation matter that much if you have other protection like face masks and social distancing?

Airborne transmission, via small particles from an infected person, can be an important transmission route for COVID-19. These particles can travel much further than 2 metres through the air, and so social distancing is not totally effective in protecting against these. Good ventilation can reduce the amount of these airborne particles in an indoor environment, and so reduce the transmission risk via the airborne route. Although face coverings can help in reducing the airborne risk, they are not 100% effective. Social distancing remains the most effective means of reducing infection in the workplace.

2) Can you use a portable air conditioner to improve ventilation?

It may be that a specialist air conditioning unit that treats or filters the air may reduce risks, but bear in mind a unit will need to clean a lot of air to have an impact in a large space. Also keep in mind that many portable air conditioners do not filter small particles from the air and if used incorrectly may increase transmission risks by helping the virus to spread further through the air.

3) Does hot or cold temperature make a difference to COVID-19 infections?

Temperature may have an effect on the body's response to infection, on air circulation, and on how long the virus can actually survive in the air, and on surfaces. There is some evidence that cold temperatures can promote transmission. But the relationship is complex and involves other factors such as humidity. The environmental temperature would not be a major determinant of transmission risk. Good ventilation is still important to control airborne transmission risk.

4) Is an open window as good as using air conditioning?

A lot of air conditioning systems just recirculate air within a building without “cleaning” it. This won't help prevent the airborne spread of COVID-19. If this is the sort of air conditioning system you have then it is best to open windows rather than using your air conditioning. If you have a ventilation system which brings in a lot of fresh air and vents out potentially infected air, then this can be potentially as useful or better than windows, depending on how strong it is. You will want to check to see whether your air conditioning system actually does this. If this is the case, then be careful of opening windows as well, since this can disrupt the air conditioning. If in doubt, consult a competent specialist to specifically protect the building occupiers from COVID-19

5) Will leaving our air conditioning on all day and night reduce the risk of COVID-19 infections?

If air conditioning brings in fresh air from outside, or is fitted with filters which remove small airborne particles, then running the system outside of the normal occupancy times for a space, both before occupancy and afterwards, will help to control risk. Whether it is necessary to run the system all day and night will depend on factors such as airflows, space volume and occupancy levels. What is important is that the system is run for long enough to effectively purge any contamination from the air within the space.

6) Do air purifiers work against COVID-19?

Some technology is evidenced to reduce the amount of infectious material in the atmosphere. These include HEPA filters and UV sterilisation systems. However, the effectiveness of these can vary, and other factors, such as the rate of flow, the number of devices installed (taking into account the population density in the area) and whether the system impacts “stale air areas” are important in determining whether they are going to make a significant difference. Before going to the expense of buying such a unit, you should consult an independent ventilation specialist. There may be cheaper and more effective alternatives, such as opening windows or adjusting your existing ventilation system.

7) Will a standard powered toilet extraction system be enough to make our toilets safe?

Not on its own. When employed as part of a suite of exposure controls, which ensure social distancing is maintained, occupancy levels are controlled and good hand and surface hygiene are being maintained, the standard extraction arrangement in toilets will help to reduce transmission risk. Closing the toilet lid before flushing does help somewhat.

8) Will a carbon dioxide (CO2) meter help detect poor ventilation?

CO2 metering can assist in mapping ventilation rates. But this needs to be done with care, with the right monitors at times of normal occupancy as people are the main producers of CO2. In order to use this tool effectively, competence is required to establish a suitable measurement regime, and to interpret results and decide on the need for remedial action. You may benefit from engaging a competent occupational hygienist to advise on this if you are unsure.

9) If we have good ventilation (open windows etc) can we dispense with other protections like face masks?

No. The principal aim of good ventilation is to control the risk of airborne transmission. It is part of a suite of exposure controls which, taken together, can reduce the risk of transmission by all routes. Social distancing, the use of face coverings, effective environmental cleaning and good hand hygiene are all required alongside ventilation to achieve effective control.

10) Health regulations for our factory mean that we can't open windows and we need to keep our premises cold – what can we do to prevent against COVID-19?

Specialist workspaces require specialist ventilation solutions. If your factory is installed with a mechanical ventilation system capable of introducing clean, filtered external air, then that should be employed to maximum effect, and the recirculation of air within the building space should be minimised. If you don't have such a system in your factory, then you should look to improve ventilation by natural means and employ things like fly screens to prevent the ingress of contamination (although they will reduce air flow slightly). You should also keep in mind that effective ventilation is only part of the risk control strategy and social distancing, the use of face coverings, effective environmental cleaning and good hand hygiene are also to achieve effective control. And keep in mind that transmission risk in such workplaces is not limited to the production area. Transmission can also occur in shared areas, such as canteens, washing and changing facilities and locker rooms, and it should be possible to effectively ventilate these areas without breaching health regulations. In cold areas, consideration of RPE such as FFP3 may be a relevant consideration for your risk assessment, where social distancing is not possible.

11) We work in repair shop which has the bay doors open at all times, surely this will be enough ventilation?

Open bay doors will provide some ventilation, but that does not ensure that all areas are adequately ventilated, if there is not a through draft. As far as possible, remove any restrictions to free airflow around the workspace. Also other offices, cubicles and facilities need to be taken into account, as well as the main working area. If in doubt, the use of CO2 monitoring, discussed above, may provide quantitative evidence on the efficiency of your ventilation in this situation.

12) We have a 24hr call centre which has to be operated on site. It's in a BREAMM building and we have part time and full time workers rotating shifts (in effect hot desking). Will using our ventilation system be enough?

Fresh air from outside is needed for effective ventilation and this may require the overriding of controls to enable that to happen through windows if the mechanical ventilation system is not capable of delivering sufficient clean air to match occupancy levels. It may be possible to further supplement ventilation in this setting by opening any trickle vents which may be present, and leaving open internal and external doors, although this has to be balanced with security and fire safety considerations. Fire doors should not be left open unless they are fitted with an automated override system which will close them in the event of the fire alarm being activated. You should be aiming to limit building occupancy to remove the need for hot desking wherever possible. You should also keep in mind that effective ventilation is only part of the risk control strategy and social distancing, the use of face coverings, effective environmental cleaning (especially where hot desking cannot be avoided) and good hand hygiene are also to achieve effective control.

13) Does humidity matter?

Humidity may have an effect on how long the virus can actually survive in the air, and on surfaces. But the relationship is complex, and humidity alone would not be a major determinant of transmission risk. Maintaining a relative humidity of more than 40% may have some effect on reducing transmission. Good ventilation is still important to control airborne transmission risk.

14) Is it better or worse to recirculate air? Some of our air conditioning is recirculation.

Recirculating air is a risk, if the air is from a place where there are people. In the short term, it may be better than no ventilation to recirculate air from a large unoccupied space to a smaller occupied one, but this is a temporary solution. It is preferable to introduce fresh outside air, either via a mechanical system, which offers more control, or via natural means where this is not possible.

15) Can I still use a heat recovery system?

Heat recovery systems which recirculate indoor air can create a risk of more COVID-19 infections. Some mechanical ventilation systems are fitted with heat exchange systems which recover energy from exhaust air and use this to heat incoming air. Properly installed and maintained, these represent no risk.

16) How can I tell if there are “stale” air areas?

Stale air areas (where the air remains unaffected by ventilation) can be found in various locations where there are obstructions to free airflow. This may include privacy screens or large items of work equipment. It very much depends on the ventilation in place and the building. The use of some simple tools such as smoke visualisation and CO₂ meters can sometimes help, as can close and thoughtful observation of the work area. As always, if you are unsure you should consult a competent specialist, such as an occupational hygienist, to ensure your risk controls are adequate.

17) Is there a “formula” of open window space needed to volume of space to be ventilated that I can use as a “rule of thumb”?

Because the shape and size of buildings and the locations of windows varies so much, its not possible to say this. Ventilation rates through open windows will be dependant on the temperature difference between indoors and outdoors, and also on outdoor wind speeds. In general, windows need to be opened less in winter to achieve the same ventilation rates as they would in Summer due to these factors. Draughts and other thermal nuisances from open windows, especially in the colder months, can be minimised by opening windows at higher levels if possible. This allows for cooler air to be introduced at ceiling height which will then mix with the room air and migrate down into the lower layers of the room where the occupants are located.

18) Will changing my heating settings improve ventilation through convection?

Convection can help mix and move air, but this is not likely to make a significant impact.

19) Is it better to have more people in a well-ventilated space or to have fewer people spread through my building which has not so good places in terms of ventilation?

Effective control depends on controlling the risk by all possible transmission routes using a suite of exposure controls. Social distancing is still the best defence against COVID-19, specifically protecting against direct person to person contact. High occupancy rates are seldom going to be mitigated against adequately by ventilation if there is inadequate social distancing, and increased ventilation should not be used to relax social distancing requirements unless there are no other alternatives. If you are unsure you should consult a competent specialist, such as an occupational hygienist, to ensure your risk controls are adequate.

20) Do I need to do special cleaning for my ventilation systems?

Ventilation systems can theoretically hold small amounts of infectious material. Normal precautions and detergents should be effective in addressing this risk.

21) Will local exhaust ventilation (LEV) on our plant and machinery assist with ventilation from the point of view of COVID-19 protection?

LEV increases the inflow of fresh air from outside and so is likely to have a positive effect. Whether it is sufficient on its own will depend on the airflows, the size of the indoor space, and occupancy levels. It is also important to consider the position of external air discharge points, and the provision of make up air into the space. If you are unsure you should consult a competent specialist, such as an occupational hygienist, to ensure your system design is appropriate.

Additional information on ventilation relevant to the control of COVID risk can be found in the following documents:

CIBSE COVID-19 Ventilation Guidance CIBSE - [Emerging from Lockdown](#)

SAGE Environmental and Modelling Group Paper 'EMG Role of ventilation in controlling SARS-CoV-2 transmission, 30 September 2020' [EMG: Role of ventilation in controlling SARS-CoV-2 transmission, 30 September 2020 - GOV.UK \(www.gov.uk\)](#)

REHVA COVID-19 guidance document, August 3, 2020. 'How to operate HVAC and other building service systems to prevent the spread of the coronavirus (SARS-CoV-2) disease (COVID-19) in workplaces' [REHVA COVID-19 guidance document V3 03082020.pdf](#)

ACGIH 'White Paper on Ventilation for Industrial Settings during the COVID-19 Pandemic'
[ACGIH White Paper on Ventilation for Industrial Settings During Covid-19 2020 08.pdf \(uwsp.edu\)](#)

World Health Organization '[Roadmap to improve and ensure good indoor ventilation in the context of COVID-19](#)'