



Improving ventilation during COVID-19 pandemic

Introduction

This guidance update, primarily aimed at schools, provides some practical advice and “top tips” to help you consider potential airborne transmission factors and look to improve ventilation measures where possible. It has been developed jointly with Trade Union Health and Safety Representatives and Cumbria County Council services including Public Health, Health and Safety, Property, and Cumbria Fire and Rescue Service.

Infection prevention and control during the COVID-19 pandemic has required that those in control of premises, whether as workplaces, schools or other public settings, assess the risks and implement a range of strategies to reduce the likelihood of viral transmission,

As vaccination and testing programmes increase across the county and nationally, this will provide even more protection and help to lower transmission risk.

Ventilation/transmission routes

Good ventilation remains an important factor, as this reduces the concentration of virus in the air and reduces the risks from **airborne transmission**. However, the HSE and health bodies acknowledge that this has little or no impact on **droplet/contact transmission** routes for which other control measures must be in place.

Worldwide research is still being carried out, but it is clear that most COVID-19 and other viral infections spread through **close contact**, so airborne transmission is not the primary route of transmission.

- Droplet/contact transmission is when viruses travel on relatively large respiratory droplets. These travel only short distances and mostly, without control, will fall to settle on nearby surfaces (e.g. through sneezing, coughing, speaking/exhaling) and spread through close contact from an infected person to a non-infected person.

Key control measures are:

- **social distancing**
- **site layout alterations**
- **hand and respiratory hygiene**

- **enhanced cleaning**
 - **well-managed disposal of wastes**
 - **wearing of face coverings and PPE**
- **Airborne transmission** is infection spread through exposure to those virus-containing, smaller respiratory droplets (commonly referred to as aerosol) and particles that can remain suspended in the air, meaning they can travel longer distances (usually greater than 2 metres) and last for a longer time (typically hours). All sorts of factors can influence this, such as room size, airflow, occupancy but also temperatures and humidity. In colder winter months viruses tend to survive longer so the risk naturally decreases as temperatures rise seasonally.

Improving ventilation – practical advice

You must continue to focus primarily on those controls which limit **droplet/close contact transmission**. In terms of ventilation our buildings, layouts, occupants, class/group sizes and activities all will differ, and this does make it difficult when you might have concerns over whether your ventilation is adequate. However, evidence from the SARS-COV-2 study suggests that it is more of a risk in **poorly ventilated areas**.

The SARS study also shows that certain activities generate higher levels of aerosol (singing, loud speech (shouting), aerobic activity) and these are likely to pose the greatest risk. In some spaces even enhancing ventilation may not fully mitigate this risk, so the best control measure currently is to avoid these activities, especially in areas that cannot be well ventilated.

Identifying poorly ventilated areas

Your first step is to identify poorly ventilated areas and look at how you can improve ventilation or reduce the risk by other measures such as avoiding use of these areas where possible.

It may be possible for some settings to use alternative, better ventilated areas in school or even conduct some activities in the open air (if conditions allow). You could increase fresh air to areas by identifying and introducing nearby sources of fresh air or introducing mechanical ventilation systems. In exceptional circumstances you may consider using other local venues off-site, but this must follow a COVID-safe and risk assessed approach, for which you should get further advice where required. You may already have identified locations that you might use locally, for instance as part of your business continuity plans. The Health and Safety Team can assist with queries where required in relation to the considerations you would need to look at.

We will now look at some practical advice:

Increasing natural ventilation (fresh air) – the best option!

- If you can, increase natural ventilation in as many areas as possible, even in mechanically ventilated buildings (without compromising safeguarding/security)

and let fresh outdoor air in. This will improve air flow and allow changes of air. Research shows that being in a room with fresh air can reduce the risk of infection from airborne particles by over 70%. You will need to consider balancing this with heating to maintain reasonable temperatures.

- Be proactive and try to ventilate early. Windows and room doors (see fire door advice) should be opened for 10-15 mins before a classroom is occupied and between classes and in breaktimes.
- You can either open windows for short bursts of 10 to 15 minutes every hour or so, regularly throughout the day, or leave windows open a small amount (around 3cm) continuously. Even a small amount will allow air change.
- When temperatures outside are warmer and conditions windier this will also help. Ensure that in windier conditions any external doors which are opened to allow increased, short term ventilation, are securely held to avoid injury.
- **Wedging open fire doors** – the National Fire Chiefs Council does not support the wedging open of fire doors to stop people having to touch handles to improve ventilation. Fire doors must only be held open by automatic releasing hold open devices which are designed and installed for this purpose. You should ensure you know which doors in your premises are designated as fire doors and consider other control measures such as frequent hand washing and cleaning to reduce droplet/contact transmission.
- **Toilets** – in toilet areas without mechanical extraction, open windows to allow air movement, but doors should remain closed.
- **Where toilet lids are fitted** - instruct building occupants to flush toilets with the lid closed.

Mechanical ventilation and extraction

- **Mechanical ventilation/local exhaust ventilation (LEV) air conditioning systems** - mechanical ventilation brings fresh air into a building and can include air conditioning and/or heating. Systems that provide both heating and air conditioning are known as heating and ventilation air conditioning (HVAC).

To help reduce the risk:

- Continue using most types of mechanical ventilation as normal and set them to fresh air intake and switch off recirculating air modes.
- Switch ventilation on at nominal speed at least 2 hours before, and at lower speed 2 hours after people use work areas.
- At nights and weekends do not switch ventilation off but keep systems running at a lower speed.
- Make sure mechanical systems/ducts/heat recovery equipment are inspected, maintained, filters replaced, defects addressed, and regularly cleaned in line with manufacturers' instructions.
- **Toilets with mechanical extraction** – keep doors closed and extraction operating as normal 24/7.

Recirculating air – turn off recirculation and use fresh air supply

- Mechanical systems supplying individual rooms should be allowed to operate with recirculation modes switched to supply 100% outdoor air where possible.

- If you use a centralised ventilation system that circulates air to different rooms, it is recommended that you turn off recirculation and use a fresh air supply.
- Recirculation units for heating and cooling that do not draw in a supply of fresh air can remain in operation provided there is a supply of outdoor air, for example windows and doors left open.
- Recirculation units (including air conditioning) can mask poor ventilation as they just make an area more comfortable.

Fans and air cleaning units

- In collective spaces, i.e. when several people are present in the space, the use of fans for air circulation/cooling is not advised, particularly in small volume, closed or partially open spaces with minimal outside air exchange.
- Desk or ceiling fans should only be used provided the area is well ventilated.
- The use of fans is advised where there is only one person in a room.
- If fans are used, you must take steps to minimise air from fans blowing from one person directly at another to reduce the potential spread of any airborne viruses.

Testing/air cleaning and filtration units

- Local air cleaning and filtration units could be used to reduce airborne transmission where it is not possible to maintain adequate ventilation.
- Filtration systems, high-efficiency HEPA filters, and ultraviolet-based devices are the most suitable types to use. They would have to be the correct size for the area in which they are being used and would require advice from a competent HVAC engineer. See CIBSE guidance publications referenced by SAGE <https://www.cibse.org/coronavirus-covid-19/emerging-from-lockdown#1>

Don't forget ventilation in vehicles

- Switch ventilation systems on while people are in the vehicle and set to drawing fresh air in, and not recirculating air.
- To improve ventilation, windows can also be opened (partially if it's cold). Heating should also be left on to keep the vehicle warm.
- For vehicles that carry different passengers, such as taxis, clear the air between different passengers so the vehicle is aired before anyone else gets in.
- Opening doors where it is safe to do so will help to change air quickly. Opening windows fully for a few minutes can also help to clear the air in the vehicle.

The Department for Transport guidance [Coronavirus \(COVID-19\): taxis and PHVs](#) has information on ventilation and making these vehicles COVID-secure. HSE has advice on [social distancing in vehicles](#) during the pandemic.