Schools autumn term ventilation planning strategy

Current guidance from Public Health England (PHE) states that Covid-19 is assumed to be primarily transmitted through respiratory droplets from coughing and sneezing, which come into contact with others directly or via contaminated surfaces. There is emerging evidence for the role of aerosols in Covid-19 transmission. Aerosols are small droplets and droplet nuclei which remain suspended in the air for longer than large droplets.

The government's Chief Scientific Advisor has acknowledged that airborne transmission is a route, particularly in poorly ventilated spaces. As a result, organisations including CIBSE, ASHRAE, REHVA and BESA are advising that workplaces boost ventilation so indoor air is sufficiently diluted to eliminate the potential for airborne viral transmission. The most important precautions schools should take to reduce spread are detailed in the DFE: Schools Covid-19 operational guidance .

Healthy building strategies that improve air quality and clean surfaces should be incorporated as part of a layered defence against COVID-19. For improving indoor air quality, we recommend prioritizing control strategies – ventilation, filtration, supplemental air cleaning – and verifying system performance regularly.

The following controls remain unchanged and are essential to ensure schools remain safe against COVID-19:

- adequate ventilation – HSE video
- sufficient cleaning
- good hand hygiene

Recommended actions to improve ventilation:

Ventilation is an important factor in preventing the virus that causes COVID-19 from spreading indoors. Below are steps to consider which can improve indoor ventilation. These steps should be considered in consultation with the schools heating, ventilation and air conditioning (HVAC) professional/contractor.

Key points

- Bring in as much outdoor air as possible. Natural ventilation is the most reliable and efficient, opening windows and doors if possible and safe to do so.
- For mechanical systems, disable all recirculation and heat recovery systems and increase the percentage of outdoor air to 100%.
- Increase total airflow supply to occupied spaces, if possible.
- Disable demand-control ventilation controls that reduce air supply based on temperature or occupancy.
- Improve central air filtration:

Increase air filtration to as high as possible without significantly diminishing design airflow.

Inspect filter housing and racks to ensure appropriate filter fit and check for ways to minimize filter bypass.

- Consider running the HVAC system at maximum outside airflow for 2 hours before and after spaces are occupied, in accordance with manufactory recommendations.
- Ensure exhaust fans in restroom facilities are functional and operating at full capacity when the building is occupied. If possible, run the exhaust fans for at least 2 hours before and after occupancy.
- Identifying poorly ventilated occupied areas or areas that feel stuffy or smell bad and install CO2 monitors. If there is a build-up of CO2 in an area it can indicate that ventilation needs improving. Although CO2 levels are not a direct measure of possible exposure to COVID-19, checking levels using a monitor can help identify poorly ventilated areas. Further guidance on the use of CO2 monitors can be found on the HSE website.

Natural ventilation

Open external doors to boost ventilation, external doors may be used to increase ventilation so long as care is taken over security. Propping open internal doors may be appropriate where it delivers a significant increase in air movement and ventilation rate. It is important to note that fire doors should not be propped open unless fitted with approved automatic closers so that they function as fire doors in the event of an alarm or fire (contact the LA for further guidance).

Opening windows

It is recommended to actively use openable windows and vents much more than normal as long as security is considered, and the open windows do not cause a hazard to anyone moving outside. Even just cracking open a window or door helps increase outdoor airflow, which helps reduce the potential concentration of virus particles in the air. If possible, windows should be open at least 15 minutes prior to room occupation. As the remains warm, opening windows is a typical behavioural response, however it is important to ensure that windows are open even if it is cooler outside.

If it is windy, cold or raining then it may not be practical to fully open the windows/vents, however they should be open as far as reasonably possible without causing discomfort.

During cooler weather, it may be necessary to have the room heating on more than normal. This will incur energy penalties; however, these are deemed acceptable as the increased ventilation will help remove any airborne virus particles from the building.

Opening windows can result in draughts that can cause occupant discomfort. Where possible discomfort should be mitigated by ensuring building users are not located directly in a draught for long periods, for example moving desks/room furniture. Relaxing dress codes so that warmer fleeces can be worn is advisable. If there are both high level and low-level openable windows in a room then it is recommended to open the high level windows during cooler weather in the first instance, as incoming air will be warmed as it flows down into the room thereby reducing cold draughts. To maximise airflow, both high and low windows should be opened. This does not just increase opening area but creates a more efficient flow, thereby increasing the dilution of pollutants.

Recirculating air

It is better not to recirculate air from one space to another.

Avoid recirculation/ transfer of air from one room to another unless there is no other way of providing a sufficient ventilation rate to all occupied rooms.

Recirculation of air within a single room is only acceptable when it is combined with a supply of outside air.

Recirculation units (including air conditioning) can mask poor ventilation as they only make an area feel more comfortable.

Ducted air conditioning systems typically use a mechanical ventilation system. Outside air is first ‘conditioned’ before being moved along ductwork and into a room. These systems can include warming of the air in winter or cooling in summer and can also adjust the humidity of the air.

Some systems that are commonly known as ‘air conditioning’ or ‘air conditioning units’ only condition the air in a room; they warm or cool the air in a room and recirculate it but are not part of a wider ventilation system. These are often referred to as ‘comfort cooling’ or ‘comfort heating’. It is important to understand that these systems are not delivering outside air and are therefore not diluting any airborne pathogens.

Recirculation units for heating and cooling that do not draw in a supply of fresh air can remain in operation as long as there is a supply of outdoor air. This could mean leaving windows and doors open.

CO2 monitors

The Department for Education recently announced that they will supply mobile CO2 monitors to all state-funded education settings from September 2021. The majority of c.300,000 monitors will become available over the autumn term, with special schools and alternative provision prioritised to receive their full allocation from September given their higher-than-average numbers of vulnerable pupils.

Guidance

- Ventilation on indoor spaces to spread the spread of COVID-19 (GOV.UK)
- The health and safety executive provides advice on ventilation and air conditioning during the coronavirus (COVID-19) pandemic
- CIBSE COVID-19 emerging from lockdown safely re-occupying buildings

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