Ventilation in Schools During Cold Weather

1) Why is Ventilation Important?

Ventilation with fresh outdoor air is one of the ways to reduce the risk of transmission of Coronavirus indoors.

Ventilation is only part of the control measures that schools should be implementing and must be considered as part of the overall risk assessment and mitigation.

The priority for schools is to ensure that a healthy balance is established between classrooms with a reasonable temperature where effective learning can take place and increasing ventilation which could help to reduce the transmission of Coronavirus. The aim for additional ventilation should not impact on the pupils learning experience.

2) Is there a legal minimum temperature that classrooms must be?

The school's legal responsibility is to set out in the School Premises (England) Regulations 2012 and it is to provide accommodation that so far as is reasonably practicable that the health, safety and welfare of pupils are ensured.

https://www.legislation.gov.uk/uksi/2012/1943/contents/made

The Health and Safety Executive have issued guidance as an 'Approved Code of Practice' which if gives practical advice on how to comply with the law. This guidance states that the temperature should provide reasonable comfort without the need for special clothing and should normally be at least 16 degrees Celsius, at all times and from one hour from opening at the start of school day.

https://www.hse.gov.uk/temperature/law.htm

https://www.hse.gov.uk/pubns/priced/l24.pdf

3) What actions can schools take to increase ventilation during the cold weather?

Each school building will have specific heating and ventilation systems and also the direction that the windows face can also significantly affect temperatures e.g. north or south facing. This means that each building and room will need to be considered individually.

Where the heating and ventilation are automated systems these should already have been adjusted to provide the maximum amount of fresh air possible.

The opening and closing of windows and doors can negatively affect the performance of some of these automated systems particularly in newer buildings and schools should contact their property advisor or facilities management provider for advice.

Some schools will have CO2 monitors, and these can be used as measure of how effective the ventilation is working. A lower level of CO2 will indicate that the air is changing more frequently and therefore reducing the risk of infection transmission. Further information on portable CO2 monitors is included in section 9.

All schools will have already put in place some simple measures including:

- Opening windows and external doors

- Propping open doors (unless they are fire doors or would be a safeguarding risk)

Schools should continue with these measures wherever possible.

Recommendation:

Where continuing with these measures results in the temperature dropping to an unreasonable level then there are a number of actions schools can take including:

- **Partially closing windows and external doors – further information is provided later in this guidance as to the most effective way to do this**
- **Where schools have manually controlled heaters then these should be turned up to maximum**
- **Where schools have buildings with automated systems they should contact their property advisor or facilities management provider**
- **Where there are specific problems schools should contact their property advisor or facilities management provider to discuss**
- **At all times, recognised trade union safety reps, teaching staff and support staff should be consulted about all Covid, heating and other generic Health and Safety considerations**

4) What is the best way to maximise fresh air through opening windows and external doors?

When rooms are not being used for a period of time then it is advantageous to open as many windows and doors as widely as possible, for example this could be done for rooms that are not being used during the lunch break.

Schools will need to consider when rooms will be used and how far in advance windows will need to be closed or partially closed for the room to reach an acceptable temperature.

In rooms that are being used often and have opening windows or external doors it is better to partially open narrowly as many windows and external doors as possible rather than opening one or a limited number very wide. Opening more windows and external doors narrowly will allow fresh outdoor air in but reduce drafts.

Schools should also consider whether windows and external doors can be opened across corridors to provide airflow through the school. Further advice should be sought from the school's property advisor or facilities management provider.

Note that fire doors should never be propped or held open and must be kept shut as usually required.

Windows and doors that are opened should not hinder or falsely activate any security systems particularly out of hours. Additionally, windows should not be left open unnecessarily and should be closed at the end of the school day. In the unlikely event of a fire occurring, open windows provide an oxygen source that will help to sustain and grow a fire.

Recommendation:

- **Schools should open more windows and external doors narrowly to maximise the amount of fresh outdoor air and reduce drafts. Schools should close windows last thing at night and open windows as early as possible before lessons start, ideally between 1 to 2 hours before using.**

- **If possible windows and doors should be opened widely if rooms are not going to be used for a period of time.**
- **Schools should discuss the how to maximise airflow through the school with their property advisor or facilities management provider.**

5) **Should schools consider using fans or temporary heaters?**

The use of fans to move air around can be useful but only where there is a good supply of fresh outdoor air. Schools should also consider that temporary 'plug-in' fans have only a limited effect and can be noisy and be disruptive to the teaching environment, additionally the fans themselves generate some heat which can add to temperatures being excessive in the warmer months. They also potentially have the effect of lowering the temperature for those staff and pupils sitting closer to them.

Temporary air extraction fans are also available to buy and hire however these need to have an outlet to the outside usually by being connected to a large hose or ducting which will need to be routed through to an open window or external door. As with temporary fans they can be noisy.

Temporary electric heaters consume a significant amount of electricity and if many are in use can overload the electric capacity of buildings. Gas powered heaters are also available however they can be noisy and require regular replenishing with gas bottles and are unlikely to be suitable in a school environment. Additionally, the fumes can be disruptive to normal school days especially with any staff member or pupil that has any respiratory condition.

If being considered schools will need to identify and assess the risks associated with these types of heaters as they can be hot to touch and also result in additional risks of fire. Schools may also need to contact their insurers before using.

Before considering the use of any temporary fans, ventilation or heating equipment schools should consult with their property advisor or facilities management provider.

Recommendation:

- **At this time the Council does not recommend the use of temporary fans, ventilation or heating equipment. If a school has a particular issue, then it should contact its property advisors or facilities management providers to discuss.**
- **If the school does decide to use temporary cooling or heating, this should be discussed with their property advisor or facilities management provider and documented in a risk assessment and consulted with staff in the area and recognised trade union safety reps.**

6) **Should schools move desks within classrooms?**

Schools could consider moving desks within classrooms to mitigate any that are directly affected by drafts from open windows. When considering any changes schools should continue to comply with the relevant guidance on desk layouts e.g. maintaining seating plans and assessing and any risks.

Recommendation:

- **Where desk layouts are being reviewed these should continue to meet the requirements of the relevant guidance and any new risks assessed.**

7) Should schools require pupils to wear coats in classrooms?

Classrooms should be at a temperature where effective learning can take place without the need for pupils and teachers having to make significant changes to their behaviours. The wearing of coats will have a negative impact on effective learning taking place.

Recommendation:

- **Classrooms should be kept at a reasonable temperature where the wearing of coats is not needed.**
- **Schools should consider any specific health and medical conditions of individual pupils and staff, take these into account in risk assessments and make reasonable adjustments as necessary**

8) Should schools consider using Air Cleaning machines?

Currently there is limited evidence that machines marketed as 'air cleaning' or 'air purification' have any impact on reducing the transmission of Coronavirus.

There are three types of machines:

- Filters – these use a HEPA 'High Efficiency Particulate Air' filter that traps the particles that are carried in the air that passes through them. The filters may trap particles that carry coronavirus and can contribute to reducing the risk of transmission however this will not eliminate the risk. The filters in these devices need to be changed at regular intervals. These machines use an internal fan and can also be noisy.
- Ultra violet light – these use an ultra violet "UV" light bulb which air passes over. The light bulbs do not emit enough energy and the air passes through the device too quickly to have any effect. There is no evidence that UV light bulbs at the power included in these machines have any impact on reducing Coronavirus transmission.
- Ozone producing or Ionizing – these use an electrical charge which reacts with the oxygen in the air to produce ozone. There is no evidence that these machines have any effect on reducing Coronavirus transmission. Ozone is a toxic gas which is harmful to health and even in relatively small amounts can cause respiratory problems. Ozone can also react with other chemicals in the area and surfaces to create harmful secondary chemicals**.** Soft furnishings may act as a 'sink' for the airborne chemicals and emit them for a period of time.

The manufacturers and sellers of these machines are making various claims as to their effectiveness however these are not backed up by evidence.

Recommendation:

- **The use of HEPA filter machines may be helpful in areas where ventilation is poor and that space still needs to be used. This should be as a last resort where space still needs to be used and increasing ventilation with fresh outdoor air is not practical. These machines are not an alternative or substitute for increasing ventilation. All these devices rely on having a stream of air that can pass through them and where they are positioned and operated will have a**

significant impact on their effectiveness. If a school has a particular issue, then it should contact their property advisors or facilities management providers to discuss.

- **Ultra violet machines should not be used as they are ineffective.**
- **Ozone and Ionising machines should not be used as they produce ozone that can be harmful to health.**

9) Should schools consider using CO2 monitors?

The DfE have announced that all schools will be provided with portable CO2 monitors starting from September 2021.

https://www.gov.uk/government/news/all-schools-to-receive-carbon-dioxide-monitors

The level of Carbon Dioxide in a room is not a direct measure of the risk of Coronavirus transmission however CO2 monitors can provide an indication of areas where ventilation is poor. Schools can then use this information to consider how ventilation could be improved or how they could manage or change the use of a particular space.

Using the monitors for single or 'snapshot' readings is not effective as the level of CO2 will vary during the day and with different activities. How the monitors are used and the levels at which actions should be taken should be part of the overall risk assessment and mitigation plan.

The location of monitors is critical to providing accurate readings and schools should contact their property advisor or facilities management provider to discuss before installing and using.

Recommendation:

- **Where schools have a particular concern with an area with poor ventilation then the use of CO2 monitoring would be advantageous.**
- **When monitoring CO2 if the recorded levels are above 800 parts per million, then schools should develop a plan of what is needed to decrease CO2 levels to ensure that maximum ventilation is achieved or to limit the use of the particular space.**
- **Schools should contact their property advisor or facilities management provider to discuss before installing and using CO2 monitors as the location is critical in ensuring an accurate measure of ventilation is achieved.**

Other Useful information

HSE Air conditioning and ventilation during the coronavirus pandemic:

https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation/index.htm

Chartered Institute of Building Services Engineers Guidance on Ventilation and Air Cleaning

https://www.cibse.org/coronavirus-covid-19/emerging-from-lockdown

SAGE-EMG - Role of Ventilation in Controlling SARS-CoV-2 Transmission

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/928720/S0789_EMG_Role_of_Ventilation_in_Controlling_SARS-CoV-2_Transmission.pdf

NASUWT Covid-19 Guidance

https://www.nasuwt.org.uk/advice/health-safety/coronavirus-guidance/full-reopening-of-schools/ventilation-and-covid-19.html