

‘How to’ Use air cleaning units in education and care settings



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1. Introduction

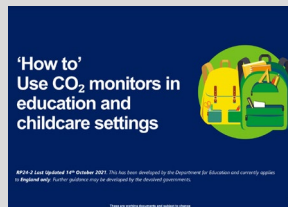
This guidance sets out what to consider before deciding to use an air cleaning unit, and how to use them in your setting.

Good ventilation can help reduce the risk of spreading airborne diseases, like the flu or COVID-19, and create a safer environment for staff and students.

Where an area of poor ventilation has been identified that cannot be resolved through simple measures such as opening doors and windows, you should explore what remedial works may be required to improve ventilation on a more permanent basis. Where it is not possible to maintain adequate ventilation, it may be appropriate to consider the use of an air cleaning unit while the underlying ventilation issue is addressed.

Settings will need to make the final decision on whether an air cleaning unit is suitable for their setting. They must consider suitability in line with their own risk assessments and consider the individual needs of their pupils in deciding whether a unit would be suitable e.g. consideration for any children with hearing impairments.

This guide should be read in conjunction with:



'How to' use CO₂ monitors: for information on taking CO₂ readings to assess ventilation levels

2. What is an air cleaning unit (ACU)?

This guidance applies to ACUs funded by the DfE.

HEPA filtration units are one of several types of air cleaning devices; they filter pollen, dust, and microorganisms, including particles containing COVID-19 or flu viruses, removing much of it from the air. They do this by taking in air with the help of a fan and passing it through a very fine filter. Most of the particles and aerosols are caught by the filter and the cleaned air is then returned to the room.

Some filtration units contain internal (unexposed) UV-C light to help clean the filter. This is contained *within* the unit, with no UV leakage, and therefore does not pose any additional health and safety requirements for the handling of the unit.

While consistently high CO₂ readings may indicate the need for an air cleaning unit, it is important to note that an air cleaner does not reduce CO₂ levels or improve humidity in the air. They are not a substitute for ventilation and should not be used as a solution for poor ventilation in the long-term.

Advantages of air cleaning units











- Reduces the risk of transmission of airborne diseases, including COVID-19
- Effective at removing other particulates in the air, improving indoor air quality
- Provides benefits for those with asthma and allergies
- Provides an additional mitigation in poorly ventilated spaces, while the underlying issue is addressed
- Straight forward installation and maintenance
- No technical expertise required for daily use or maintenance
- Portable units can be used flexibly depending on need

Disadvantages of air cleaning units

- Does not reduce CO₂ levels or humidity
- Not a substitute for ventilation; the underlying issue should still be addressed
- Ongoing costs, including for maintenance
- Require ongoing (non-specialist) maintenance including filter changes and cleaning
- Noise levels
- Require a mains power supply, trailing cables
- Take up floor space

3. Installing and operating an ACU

Before using an air cleaning unit, you should familiarise yourself with the manufacturer instructions that accompany the unit. Instructions will vary, however there are some basic guidelines to consider. Further guidance on air cleaning technologies and ventilation can be found [here](#).

-  **Check people know how to use it.** You should ensure that people managing the ACU, or using the room in which it is placed, understand how to operate it and what to do if they encounter a problem. All users should be familiar with the manufacturer's instructions.
-  **Position the unit.** Place the ACU away from walls, windows and doors and position between occupants as centrally as possible. Always place and use the unit on a dry, stable and level surface. If using multiple units, do not place the units in the same area of the room – try to distribute them evenly.
-  **Secure the filters.** Ensure the two filters (coarse filter and the fine HEPA filter) are tightly in place, if not already.
-  **Plug it in and switch it on.** Plug the device into a wall socket, ensuring the trailing cable is not a trip hazard.
-  **Set the timer.** The units will be provided with an in-built timer or a mains plug timer. This should be set to ensure the unit operates throughout the occupied school day to avoid unnecessary energy usage and associated costs.
-  **Monitor the unit.** While turned on, ensure there is no warning display highlighting low air flow or a clogged filter. When used in a dusty room, filters may get clogged faster than normal.
-  **Managing noise.** Please consult the manufacturer's instructions for confirmation of which setting the unit should operate at. ACUs may be operated at a lower setting to reduce the noise level. This may be required where the noise presents a distraction or adversely affects those with hearing or other sensory difficulties. It is for education settings to decide whether this is appropriate to meet their individual needs. Where the settings have been adjusted, the unit should be switched back to the manufacturer's recommended setting during break times or other periods when the space is not being used by those for whom the additional noise presents a distraction. All users of the unit should be familiar with the manufacturer's instructions and be aware that any changes to the recommended setting may affect the efficacy of the unit.
-  **Maintenance.** Requirements will vary depending on the unit you have chosen. You should ensure that anybody undertaking maintenance tasks is familiar with the manufacturer's instructions before carrying out those tasks.
-  **Disposal of clogged filters.** When prompted to change the clogged filter, treat the old filters as you would waste, and wear a pair of disposable gloves and a mask. Seal the filter in a plastic bag and dispose of it as general waste.
-  **Replacing filters.** When inserting a new filter, ensure you follow the manufacturer's instructions and place the filters correctly within the device to make sure all air passes through the filters.

4. Using your DfE-funded ACU: Q&A

? Question: How many ACUs do you need to place in a room?

The number of ACUs recommended per room is dependent on the number of people in the space. The greater the number of students and staff occupying a space, the greater the number of ACUs will be needed to achieve the required CADR (clean air delivery rate), which is described in the technical specifications of each unit: [Dyson](#) and [Camfil](#).

Combinations of different ACU models

Less than 10 students and staff	Between 10 and 19 students and staff	20 or more students and staff
<ul style="list-style-type: none">• 1 Camfil unit• 2 Dyson units (on setting 6)	<ul style="list-style-type: none">• 2 Camfil units• 1 Camfil <u>and</u> 2 Dyson units (on setting 6)• 5 Dyson units (on setting 5)	<ul style="list-style-type: none">• 3 Camfil units• 2 Camfil <u>and</u> 3 Dyson units (on setting 4)• 5 Dyson units (on setting 10)

Camfil units should be used on setting 5.

? Question: The air cleaning unit is too noisy, what can we do to manage this?

It is possible to turn the flow rate down to reduce noise, and this may be necessary while classes are being taught. Where the flow rate is reduced while the room is in use, it is recommended that it is turned up again during break times. All users of the unit should be familiar with the manufacturer's instructions and be aware that any changes to the recommended setting may affect the efficacy of the unit.

? Question: How often will we need to change the filter?

You should expect there to be a requirement for regular maintenance, including regular cleaning and the need to purchase replacement filters for some devices. The frequency of required maintenance and the cost of replacement filters will vary depending on level of use, and the specification of the device. The unit will notify you when a filter change is required. Please consult the manufacturer's guidance for further details - [Dyson TP09](#) and [Camfil City M](#).

? Question: How do we dispose of used filters?

Maintenance requirements will vary depending on the unit you have chosen. You should ensure that anybody undertaking maintenance tasks is familiar with the manufacturer's instructions before carrying out those tasks. When prompted to change the clogged filter, treat the old filters as you would waste, and wear a pair of disposable gloves and a mask. Seal the filter in a plastic bag and dispose of it as general waste.

5. Routes to purchasing an ACU

Up to February 2023 DfE provided funded ACUs to eligible settings that identified teaching and childcare spaces with poor ventilation. **However, applications for DfE-funded ACUs have now closed.**

ACUs are available for purchase via the [Find a Framework website](#). ACUs recommended by the DfE and are known as HEPA (high efficiency particulate air) filtration units. **Note:** ACUs available via Find a Framework may vary in specification – please find the DfE’s recommended technical specification [here](#).

Find a Framework

The DfE's Find a Framework website provides a route for settings to purchase units at a suitable specification and competitive price. Registration is not required.



Find a DfE approved framework for your school

BETA This is a new service – your [feedback](#) will help us to improve it.

Your recommendation

Air cleaning units for education and childcare settings

Based on your answers, we think you should use the Crown Commercial Service (CCS) framework.

This is part of the Building Materials and Equipment framework.

What it offers

All air cleaning units available through this framework are HEPA (high efficiency particulate air) filtration units that meet a suitable standard of specification for use in education settings. (You will need to assess whether an air cleaning unit is suitable for your individual setting).

Benefits

- available for all state-funded primary and secondary schools, further education colleges and early years settings
- units can be purchased directly from suppliers

Related content

[Buying for schools guidance](#)

6. Selecting an ACU

This is a summary of some of the important factors to consider before deciding to use an ACU. These considerations must take in to account your risk assessment and ventilation strategy.

Technical specifications

The effectiveness of ACUs will depend on the underlying technology and design of the device. Air cleaning units provided by the DfE are HEPA filtration units that have met an approved technical specification. ACUs available via Find a Framework may vary in specification. The DfE's recommended technical specification can be found [here](#).

Size of room and occupancy

The size of the ACU should be linked to the number of occupants in the space. Typically a smaller unit is best suited to rooms with fewer occupants. Likewise larger units are better suited to a greater number of occupants to achieve the required filtration or clean air delivery rate. If a larger unit is not suited to your space, 2 or 3 smaller units may be more suitable. Please find further information on slide 9 related to the number of units required per room based on your chosen unit's clean air delivery rate (CADR).

Activity

Consider the activity that is likely to take place in the room. Some activities are more likely to increase aerosols in the air.

Placement

Proper placement of an ACU is essential to ensure they operate effectively. Air cleaning units should not be situated where walls, furniture, curtains, or other obstructions might impede airflow. If using a single unit, it should be placed between occupants, as centrally as possible. If using more than one unit, they should be evenly distributed in the space to achieve maximum benefit. It is important to check that you will be able to meet the manufacturer's recommendations for installation to ensure that it can be properly and safely placed. Many units are mains powered and in your risk assessment you should consider how to mitigate against trips or falls from trailing cables.

Person-to-person transmission

ACUs lower the risk of airborne transmission and are generally designed to operate in the background, not in close proximity to a person's breathing zone where droplet-based transmission occurs. Air cleaning units are therefore not appropriate for mitigating short range person-to-person transmission of respiratory diseases.

Maintenance

There will be a requirement for regular maintenance, including regular cleaning and the need to purchase replacement filters for some units. The frequency of required maintenance and the cost of replacement filters will vary depending on level of use, and the specification of the unit. Please consult the manufacturer's technical specification of your chosen unit for product specific maintenance requirements.

Additional impacts to consider

ACUs may impact the temperature, creating a draft which some room users may find uncomfortable. The fans within the air cleaning units also produce a noise that may be a distraction to pupils or adversely affect those with hearing or other sensory difficulties. Most air cleaning units can be operated at a lower power level or flow rate to reduce the noise level, however this can affect the efficacy of the unit. Please consult the manufacturer's technical specification of your chosen unit, for product specific details.

7. Purchasing an ACU – Q&A



Question: We have identified poor ventilation but do not know whether an ACU would be suitable, how do we decide?

ACUs can help reduce airborne contaminants in a poorly ventilated space. They may be used while remedial work is undertaken to address the underlying ventilation issue. They are not a substitute for ventilation and should never be used as a reason to reduce ventilation or as a solution to poor ventilation in the long-term



Question: How do we determine the number of units we need?

The clean air delivery rate (CADR) is a metric which considers the amount of airflow and the particle (including airborne viruses and bacteria) removal efficiency. You can compare the CADR of different units i.e., the volume of air cleaned in a fixed amount of time:

Occupancy:	Up to 8 people	Up to 16 people	Up to 32 people
Suggested CADR:	180 [m ³ /hr]	360 [m ³ /hr]	720 [m ³ /hr]

The decision on selecting an appropriate air cleaning unit for your setting, and the number of units for a room, should take into consideration the suggested CADR and the sound power levels, which should be described in the technical specifications of each unit.



Question: We are finding it difficult to decide which ACU would best meet our needs, where can we go for further advice?

The DfE’s recommended technical specification for air cleaning units can be found [here](#). Please consult the manufacturer’s technical specification for your chosen unit for detailed product specific information. Guidance about air cleaning technologies, including a relative exposure index calculator, can be found in the Chartered Institution of Building Services Engineers (CIBSE) [ventilation guidance](#). Links to further ventilation guidance are available [here](#).



Question: We do not think an ACU would be suitable. What should we do if ventilation cannot be improved?

It is the responsibility of settings to decide whether an ACU would be suitable taking into account their risk assessment. In making that decision, factors such as the size, occupancy and purpose of the room where you have identified poor ventilation should be considered.

8. Further guidance and contact details

Further guidance

Comprehensive advice on how to improve ventilation in your setting is available from UKHSA, HSE, and CIBSE.

Please consult:

- The UK Health Security Agency's (UKHSA's) guidance on using [ventilation to reduce the spread of respiratory infections, including COVID-19](#)
- The Health and Safety Executive's (HSE's) [guidance on how to improve ventilation in the workplace](#)
- The Chartered Institution of Building Services Engineers (CIBSE) [guidance on emerging from lockdown and 'COVID-19: Ventilation'](#)
- The Royal Academy of Engineering's (RAE's) [interactive infographic on why clean air is vital to health and how to manage ventilation](#)
- The CoSchools [webpage offering tools to help create healthier schools](#)

Contact us

For any further questions, you can contact the DfE here: [Contact the Department for Education - Contact type - DfE Online Forms](#)

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