

Guidance for improving ventilation in the workplace

Overview and introduction

To help keep everyone safe this winter, encouraging and improving ventilation forms part of the wider approach to help reduce the spread of:

- COVID-19
- flu
- other seasonal viruses

This guidance is for workplaces across Jersey to encourage good ventilation to help improve the health and wellbeing of Islanders.

Ventilation is the provision of fresh, clean air to a room or building.

Infectious diseases like COVID-19 can spread through the inhalation of airborne particles and aerosols and by improving ventilation we can help to reduce transmission.

Research shows changing the air in a room multiple times an hour with filtered or clean outdoor air can reduce the risk of COVID-19 and other airborne respiratory diseases.

Types of ventilation

Natural ventilation

Natural ventilation can be improved by opening windows, air vents and doors.

Airing rooms

This can improve poor ventilation as a temporary measure by opening doors and windows to maximise ventilation. If it is too cold for people, bring in air when they are on a break, as just 10 minutes an hour can help increase the amount of fresh air.

Mechanical ventilation

Mechanical ventilation brings fresh air into a building from outside using ducts and fans. This may be costly, requires energy to operate and should be properly maintained.

Recirculated air

Recirculated air should be filtered to remove particulates and should have fresh air added to it before being reintroduced into the workplace.

Air filtration

Air filtration uses high-quality air filters like high efficiency particulate air (HEPA) to remove virus particles from indoor air. Filtration is helpful to supplement ventilation or to use if adequate ventilation is not possible. This is a useful supplement to vulnerable sites.

Air disinfection

Inactivating an airborne virus through ultraviolet germicidal irradiation systems, for example, can add another layer of protection in indoor spaces and can be useful in crowded areas with poor airflow, in healthcare settings with vulnerable populations or in indoor crowded spaces.

Why we need good ventilation

Good ventilation:

- reduces air contaminants
- expels carbon dioxide (CO₂)
- draws in fresh air
- helps control temperature and humidity
- can reduce the spread of respiratory infections

Improved ventilation can also help reduce condensation. Condensation can lead to mould and damp conditions which then can cause other health issues such as allergies and respiratory problems.

Good ventilation can help get rid of moisture, smoke, cooking odours, and other pollutants.

Good ventilation is associated with:

- improved health
- better concentration and decision making
- lower rates of absence from work
- better quality of sleep

Poor indoor air quality effects can include headaches, dizziness, and fatigue. It can also contribute to longer-term health problems such as asthma, heart disease and cancer.

Infectious diseases like COVID-19 can spread through the inhalation of airborne particles and aerosols. Poor ventilation in confined indoor spaces is associated with the increased transmission of respiratory tract infections such as COVID-19, influenza, tuberculosis, and rhinovirus infection (cause of the common cold).

Improving ventilation to lower the transmission of COVID-19 and other respiratory infections

There is evidence that the transmission of COVID-19 is mainly via aerial transmission, particularly in indoor buildings with poor ventilation.

Filtration and air cleaning devices such as high efficiency particulate air (HEPA) and UV (Ultraviolet), filter pollutants and contaminants from the air. These are helpful where natural ventilation is limited, for example, rooms without windows or when ambient temperatures are affected.

Good ventilation, along with other measures to control infection such as vaccination, symptom awareness, and additional measures in vulnerable settings where advised can help reduce COVID-19 transmission. These additional measures may also be applicable to other infections.

Utilising effective measures to improve ventilation forms part of a wider strategy helping to reduce the harm from COVID-19 in our community.

Ventilation and the law

In the workplace, ventilation can be used to control airborne contaminants and removes contaminants such as fumes and dusts for a healthy and safe working environment.

Part 2 of the Health and Safety at Work (Jersey) Law, 1989, requires employers to provide and maintain a working environment which is safe, without risks to health, and has adequate facilities and arrangements to ensure the welfare of the employees.

Workplaces should be adequately ventilated so that stale, hot or humid air is replaced at a reasonable rate by fresh or purified air. Windows or other openings normally provide sufficient ventilation, but where necessary mechanical ventilation systems should be installed and maintained.

For further information see [Health and Safety in the Workplace](#).

For ventilation guidance in the Technical Guidance Document (requirements of Part 5 of Schedule 2 to the building bye-laws (Jersey) 2007 as amended) see [part 5: means of ventilation](#).

Ventilation and energy costs

Both heating and ventilation can use increased amounts of energy, but there may be ways to even up energy costs to gain the health benefits of good ventilation. These may include looking at:

- energy recovery ventilation systems which transfer the temperature and humidity from exhausted conditioned air to incoming fresh air, which can conserve energy
- demand-controlled ventilation have CO2 sensors to calculate optimal airflow and adjust the ventilation
- variable-speed compressors can control airflow and temperature with less energy

Ventilated workplaces are more comfortable, healthier, and more productive places to work, therefore businesses should balance reducing energy use and emissions with the need to provide workplaces that are appropriately ventilated for their purpose.

The cost of not ventilating appropriately can have a negative impact on operating costs by impairing employee performance, as the cost of running and staffing the business is usually the most significant. Over a ventilation system life of 10 to 15 years, a 1 percent reduction in productivity could significantly exceed any savings made on the design and installation costs of the system. For further details see [top tips for ventilation in buildings on CIBSE](#).

Poorly ventilated workspaces may have higher sickness absence due to the potential for more cases of respiratory infections. It is important to ensure that buildings are ventilated to provide a healthy environment for people.

For further information see [saving energy in the workplace on Jersey Electricity](#).

Key guidance for improving ventilation

Understand your building and make a plan to improve ventilation

A number of factors and considerations need to be taken into account when determining the appropriate measures for each individual building:

- current public health guidance
- size and location of the building
- number of people occupying the space

- who the occupants are
- outdoor air quality
- climate and weather conditions
- available Heating, Ventilation, and Air Conditioning (HVAC) equipment

Maximise ventilation

- opening windows and doors to increase the air flow when weather permits. In colder weather, open higher, top opening windows, or open windows for just short bursts to bring in fresh air. Do not prop open fire doors. Hold open devices may enable fire doors to be opened safely
- reduce the number of occupants in a room if possible
- use fans to increase the effectiveness of opened windows, creating directional airflow, 'always on' low noise fans can further improve air flow in damp rooms. This is not applicable in high-risk settings such as hospitals and care homes
- open trickle vents and do not block air vents
- check exhaust fans are functional, in toilets and kitchens for example. Consider leaving them on longer or installing an 'always on' fan
- avoid recirculation and transfer of air from one room to another where possible
- avoid the use of rooms which cannot be ventilated and use outdoor spaces where possible

Planning and information sharing

- inspect ventilation systems based on the manufacturers guidance
- review COVID-19 workplace risk assessments. Find general guidance on [risk assessments](#)
- ensure regular maintenance of systems and equipment
- ensure employees have information regarding why ventilation is important, instructions for use for any vents and systems and know the agreed routine for opening and closing doors and windows
- ensure that fire safety, security and health and safety leads are well briefed in order to coordinate consistent messages to employees around guidance and procedures for good ventilation

Supplementary measures

- consider CO2 monitors. If used properly, CO2 monitors can help you understand whether the ventilation is adequate or needs improving
- consider fitting Heating, Ventilation, and Air Conditioning (HVAC) or high-efficiency particulate air (HEPA) systems
- some workplaces may wish to consider the use of Ultraviolet Germicidal Irradiation (UVGI) which uses ultraviolet energy to kill viral, bacterial, and fungal organisms. These could be useful in more high-risk indoor settings

Find a more detailed approach in Appendix 1.

Appendix 1: A 4 stage plan for improving indoor air quality

The 4 stages below have been adapted from [clean air in buildings challenge on EPA](#)

Stage 1

Create an action plan for clean air in your building:

- understand where there may be poorly ventilated spaces. Ensure that you know how clean outdoor air is brought into the building and distributed
- determine how much clean air is required. Implement indoor air quality assessments and look at carbon dioxide (CO₂) monitors as needed. If used properly, CO₂ monitors can help you understand whether the ventilation is adequate or needs improving. Non-dispersive infrared (NDIR) CO₂ monitors are reasonable in price to purchase. (CO₂ monitors may only be effective in certain workspaces)
- where fitted, work with a Heating, Ventilation, and Air Conditioning (HVAC) competent person to assess and inspect systems for ventilation, filtration, and air cleaning. Confirm through testing they are functioning as designed
- ventilation systems, plant and equipment only work efficiently and as designed with a suitable programme of pre-planned maintenance
- ensure a plan is in place for regular inspections and maintenance (based on the manufacturers guidance)
- support the people who operate or help with building ventilation and air distribution systems by providing education and training
- reduce the number of individuals within a room or building, this could be via home working where this is practical

Stage 2

Optimise fresh air ventilation:

- implement the action plan based on the assessment and equipment available within your building. Ensure outdoor air is clean or adequately filtered as it is brought into the building
- ensure that extractor fans in bathrooms are fully functioning and run during occupied hours
- increase volumes of clean outdoor air at times of higher risk
- use natural ventilation, open windows and doors to enable cross ventilation to optimise natural airflow subject to the weather and occupant safety. In colder weather, open higher, top opening windows, or open windows for just short bursts to bring in fresh air. Do not prop open fire doors. Hold open devices can enable fire doors to be held open safely however must be instructed and installed by a competent person, it is not always possible to install a hold open device on every door set
- consider moving to a better space in the building if there are ventilation issues or damp

Stage 3

Enhance air filtration and cleaning (for buildings with mechanical ventilation):

- where fitted, run HVAC systems during all occupied hours to ensure clean air enters and is distributed throughout the building. Adjust HVAC settings while considering thermal comfort, weather conditions, outdoor air quality and energy use. Consider running HVAC systems to refresh air 1 to 2 hours prior and post occupancy

- check HVAC systems have the highest available high-efficiency particulate air (HEPA) filters, that your system can accommodate. HEPA filters, when used within HVAC systems can remove more than 99 percent of particle matter when air passes through it
- ensure filters are appropriately sized for the system
- close off any gaps around air filters to minimise air flow around the filter rather than through it
- filters should be changed regularly
- 6 air changes per hour is a good standard
- use portable air cleaners where air flow and central filtration are insufficient (appropriate size for the space)
- consider an upper-room Ultraviolet Germicidal Irradiation (UVGI) system to clean the air if appropriate to your setting

Stage 4

Engage your staff and community with the action plan

- communicate and educate effectively to your building occupants to increase awareness and ensure participation in improving indoor air quality
- demonstrate the importance of individual actions to ensure optimal use of the systems in place to maximise good ventilation and improving indoor air quality. This can help reduce the spread of viruses like COVID-19
- promote the health benefits, including reducing the spread of respiratory infections, such as COVID-19, influenza, tuberculosis, and rhinovirus. It can also help better concentration and a better quality of sleep and lower rates of absence from work

Resources and references

[Health and Safety in the Workplace](#)

[Island Public Estate Strategy 2021 to 2035](#)

[Carbon Neutral Roadmap](#)

[Ventilation to reduce the spread of respiratory infections, including COVID-19 on GOV.UK](#)

[Covid-19 Guidance: Ventilation on CIBSE](#)

[Emerging from Lockdown on CIBSE](#)

[Ventilation in Buildings - Top Tips on CIBSE](#)

[COVID-19: Air cleaning technologies on CIBSE](#)

[Clean Air in Buildings Challenge on EPA](#)

[Indoor Air Quality on EPA](#)

[Heating, ventilation and air-conditioning systems in the context of COVID-19: first update on europa](#)

[Ventilation in the workplace on HSE](#)

[Health Building Note 00-01: General design guidance for healthcare buildings on NHS](#)

[Ventilation and Air Conditioning on Sheffield City Council](#)

[BREEAM Indoor air quality Ventilation on Designing Buildings](#)

[CO2 Monitoring and COVID-19 – Some Basics on BOHS](#)

[COVID-19 and Ventilation Frequently Asked Questions on BOHS](#)

[EMG: Role of ventilation in controlling SARS-CoV-2 transmission, 30 September 2020 on GOV.UK](#)

[Ventilation, indoor air quality and learning in schools on AIVC](#)

[Portable air purification: Review of impacts on indoor air quality and health on ScienceDirect](#)

[Indoor asthma triggers at home on Asthma and Lung UK](#)

[The inside story: Health effects of indoor air quality on children and young people on RCPCH](#)