

Ventilation in the workplace – HSE Summary

Overview

Employers must make sure there is adequate ventilation in enclosed areas of their workplace.

Ventilation is the process of bringing in fresh air from outside and removing indoor air, which may:

- be stale
- be hot and humid because of work machinery and processes
- contain pollutants and other impurities

Why ventilation is important

Not only is it the law to provide sufficient fresh air, but studies have shown that good ventilation is associated with:

- improved health
- better concentration
- higher levels of satisfaction with an environment
- lower rates of absence from work
- better quality of sleep
- reduced exposure to a wide range of air pollutants

Methods of ventilation

The method of ventilation will depend on the building, and you will need to decide which options work best for your workplace.

Natural ventilation relies on doors, windows and other openings such as trickle vents, air bricks or grilles to provide air.

Mechanical ventilation uses fans to move air into and out of rooms. In small spaces and buildings these may be in the room, but larger buildings may use a network of ducts and

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fans to blow clean air into rooms and/or extract the stale air.

Many buildings have a mixture of natural and mechanical ventilation, with either (or both) systems in different spaces.

What the law says

Under regulation 6 of the [Workplace Health, Safety and Welfare Regulations](#), employers must 'ensure that every enclosed workplace is ventilated by a sufficient quantity of fresh or purified air'.

Assessing the risk of poor ventilation

As part of your legal duty to provide sufficient fresh air, your [workplace risk assessment](#) should identify poorly ventilated work areas:

- look for areas where there is no natural ventilation (open windows, doors, or vents) or mechanical ventilation (fans or ducts bringing air in from outside)
- identify areas that feel stuffy or smell bad
- consider using a CO2 monitor to identify poor ventilation

It may help to list areas in your workplace or use floor plans to record how areas are ventilated. Remember to include changing rooms and areas used for breaks, such as canteens.

Understanding when to take action

The ventilation rate

The ventilation rate refers to the volume of air that is provided to a room over a period of time. What is necessary for adequate general ventilation will depend on several factors such as the amount of floor space per occupant, and the work activity.

HSE's [Approved Code of Practice and guidance \(PDF\)](#) states that 'The fresh-air supply rate should not normally fall below 5 to 8 litres per second, per occupant.' A value of 10 litres per second per person is recommended in some building guides as a suitable value for most commercial buildings.

In some workplaces, like draughty workshops, it is obvious there is enough air. In other, more enclosed settings, it can be difficult to estimate the flow rate of air in a space,

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particularly for natural ventilation, but a useful way to do it when you think you may have a problem is by using [CO2 monitors](#).

Desk or ceiling fans

You should not rely purely on desk or ceiling fans in poorly ventilated areas. They won't improve fresh air.

Talk with your workers

Talking with your workers will help you assess the risk and put in effective measures to improve ventilation.

Questions to ask them

- How do we bring fresh air (ventilation) into our workplace?
- Think about natural ventilation through windows, doors and vents you can open fully or partially
- If we use mechanical ventilation, is it set correctly, and do we maintain it?
- How can we improve ventilation?
- Think about areas that feel stuffy or smell bad – open windows, air vents and doors (not fire doors)
- If we have recirculating systems, do we bring in some fresh air?
- Are temperatures in the workplace comfortable?
- Discussing the outcome of your risk assessment and the measures identified will also help them understand how they can play their part in improving ventilation at work.

How to improve ventilation

Practical ways to improve your ventilation include:

- increasing natural ventilation by opening doors, windows and vents
- ensuring that mechanical systems which recirculate air, including air-conditioning systems, have been designed with fresh air inlets and that they are kept open to avoid the air becoming unhealthy

You may need a combination of natural and mechanical ventilation.

How to improve natural ventilation

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You can improve natural ventilation by fully or partly opening windows, air vents and doors. But do not prop fire doors open.

You should be able to open any windows and keep vents or trickle vents open that let in fresh air. If any windows have been painted shut, they should be reopened. If they cannot be opened, ventilation in that area will be less effective.

Airing rooms

If ventilation is poor, airing rooms can improve it as a temporary measure while awaiting longer-term changes. Opening all the doors and windows as fully as possible maximises ventilation in a room.

If it's too cold for the people in the room you can do this when they leave for a break. Even 10 minutes an hour can help increase the amount of fresh air, depending on the size of the room.

How to improve mechanical ventilation

Mechanical ventilation brings fresh air into a building from outside using ducts and fans. Providing it is working correctly, it has the advantage of providing fresh air consistently. However, it may be more costly, requires energy to operate the system and needs to be properly maintained.

It's important to make sure that clean outdoor air is actually supplied, rather than assuming outdoor air is clean. If you expect the air coming in to be heavily contaminated with particulates such as heavy traffic or smoke, then it should be filtered.

You should speak to the people who manage the day-to-day operations of your workplace's mechanical ventilation systems to:

- understand how they operate
- make sure they're supplying fresh air into an area and how much
- make sure they're maintained in line with manufacturers' instructions

You may need a ventilation engineer to check your system is providing adequate ventilation.

Use of recirculated air

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

HSE's [Approved Code of Practice](#) states 'In the case of mechanical ventilation systems which recirculate air, including air-conditioning systems, recirculated air should be

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adequately filtered to remove impurities. To avoid air becoming unhealthy, purified air should have some fresh air added to it before being recirculated. Systems should therefore be designed with fresh-air inlets, which should be kept open.'

If your ventilation is still poor

If your ventilation is still inadequate, for example if [CO2 readings remain above recommended levels](#) or the room continues to feel stuffy, you could consider:

- changing how workspaces are used, for example restricting the length of time people spend in them or the number of people using them at a single time
- installing a mechanical ventilation system (upon advice from a ventilation engineer), if there is no mechanical ventilation already or if the existing system does not provide fresh or purified air

Keeping a comfortable temperature

Businesses must ensure workplace temperatures are reasonable. HSE has guidance on [maintaining a comfortable temperature at work](#).

Workers should not be exposed to uncomfortable draughts. For mechanical ventilation systems, it may be necessary to control the direction or speed of airflow. Workstations should be moved or screened if necessary.

If your space is naturally ventilated, there are simple steps you can take to make sure your workplace has enough fresh air without opening windows wide and making it too cold:

- partially opening windows and doors can still provide adequate ventilation
- opening higher-level windows will create fewer draughts
- using trickle vents rather than opening windows

You can also consider regularly airing rooms that rely on natural ventilation, by opening windows and doors in between use.

Desk or ceiling fans

You should not rely purely on desk or ceiling fans in poorly ventilated areas. They won't improve ventilation. However, if your workplace is adequately ventilated, you can use fans to help workers feel cooler.