

# Ventilation of Enclosed Spaces on Construction Sites

In the current climate there is an increased awareness of the dangers posed by poor air quality particularly in view of the risk of transmission by droplets and vapour of the Covid-19 virus.

Due to the variety of situations on site and the risk of prescribing an inappropriate solution, official guidance has been couched in broad terms which are open to interpretation, this document is to assist site managers to determine which solution is most appropriate in their particular situation.

Traditionally ventilation rates have been based on a specified number of air-changes per hour with respect to the use of a building, these are usually a range giving scope for adjustment based on the relative size of the building in comparison to the work activities taking place. More recent guidance has been based around the needs of the personnel within the area and varies depending upon the desired air quality within the building, the volume of air per person, and to a lesser extent their physical activity.

Controlling airborne hazards by dilution is only suitable in situations where the contaminant is of low risk and is emitted at a reasonably predictable constant rate, hence there is very little guidance available either in air-change rates or volume flows per person that can be directly related to the situation that we find ourselves in currently. The World Health Organisation guidance for general wards and single rooms is a minimum of 6 air changes per hour and a minimum of 12 air changes per hour for isolation rooms.



## Things to Consider When Looking at a Temporary Ventilation Requirement:

- **The size, design, airtightness and location of the building.**  
Does it naturally ventilate?
- **The number of people in the building and how they are interacting;** are people in close proximity to one another or socially distanced? Do they spend long periods of time in one location?
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- **The number of people in the building and how they are interacting;** are people in close proximity to one another or socially distanced? Do they spend long periods of time in one location?
- **The work activities.** Strenuous physical work and those which involve communicating in noisy environments can result in more aspirated droplets. Can these activities be avoided by the use of alternative control methods? Ventilation is not a substitute for adequate local controls for activities which create dust or fume; these should continue to be assessed and controlled locally where possible.
- **Where can you get air from?** Is this clean or will you need to filter it to remove dust or odours before you can use it?
- **Where will the air discharge to?** Dilution and displacement will only be effective if the foul air can be moved away from the work area and there is no risk of it being drawn back into the building. You should also consider the location of other air intakes which may be affected by your works.
- **The avoidance of “dead” areas.** The ventilation system needs to ensure that there are no areas left unventilated. A key failure of locally recirculating units whether for dust or more general air quality is how poorly they capture contaminants outside of their immediate area, a system that supplies fresh air or extracts foul air will be significantly more effective for the same cost.
- **Filtration.** It is important to understand that not all HEPA filters are equal; the filters in low-cost dust filtration units are not necessarily suitable for the filtration of viruses and unless you have the assurance that the filter on a hired-in machine is replaced before every hire, there is no knowing what contamination may be on the filter when it arrives on site.



### Summary:

Ventilation of enclosed spaces is a challenge being faced in many areas of the industry currently. However, by balancing the risks posed by the work activity, the feasibility of socially distanced work, and the work environment in an objective way, a sensible and proportionate solution can usually be found