Safe re-occupation and use of buildings in a COVID-19 environment

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CIBSE COVID-19 - EMERGING FROM LOCKDOWN

Management responsibilities & legal duties

- In most jurisdictions there will be a legal responsibility under laws relating to workplace safety
- Management of the building owner is responsible for the safe reopening of the building
- In multi-tenanted buildings each tenant organisation has responsibilities for the part of the building that they occupy
- There should be a building safety manager who is clearly identified to all tenants and occupiers of the building

Key considerations

- Buildings unoccupied for a considerable time need to be risk assessed and building systems brought back into safe use
- Key safety checks may be needed for
  - gas appliances
  - water systems – legionella risks
  - electrical systems
  - F-gas refrigerant systems
  - lifts and escalators
- All likely to be covered by legal duties to inspect and maintain

Risk Assessment

- Who occupies the building?
- What is the occupancy – how many people, what do they do?
- What are the hours of occupation, when do people arrive and how do they move around the building?
- Are there activities which may lead to more vigorous breathing and increased aerosol and droplet emission?
- Is the building open to the public, or only to those who work for the occupying organisation?

Occupancy levels and hours

Building operators need to address:

- Social distancing requirements within the workplace;
- Space availability and working routines, including flexible or “staggered” working;
- Provision of welfare facilities for staff – toilets, changing areas, catering;
- Cleaning regimes to minimise risks from common touchpoints and to give staff reassurance of enhanced cleaning.

Think about the users – what do they need?

- User behaviour will have a significant influence on the effectiveness of any measures
- It is vital to explain how a building or space is intended to be used and ventilated and to explain to users how they can contribute to reducing the risks of occupying the space
- It is essential to listen to user feedback. Systems that work for users will be more effective than those that make users feel they need to modify to be comfortable

Tailor your measures to the spaces

- Different locations need different measures to increase ventilation and reduce risk, considering:
  - Activity being undertaken
  - Exposure times
  - Avoiding thermal discomfort
  - Ventilation system
  - The occupancy of the building or space

Managing common spaces

- Building entrance and exit protocols and technology;
- Possible requirement for temperature and visitor screening;
- Lift control programmes may need to be reviewed in order to support reduced occupancy of lift cars;
- Meeting areas may need to adopt restricted numbers with clear notices on assessed safe occupancy and changes to furniture where appropriate to support lower occupancy;
- Furniture plans provided to enable users and cleaning staff to keep furniture to agreed positions after a meeting or cleaning.

Maintenance Matters

- Maintain your routine maintenance activity
  - Clean and change filters as usual – taking appropriate precautions whilst doing so – out of hours, PPE, safe disposal
  - Clean ducts as normal, taking precautions
  - Carry out maintenance work that requires system shutdown out of normal hours – evenings or weekends

Ventilation: What are we trying to achieve?

Ventilation

- Safer ventilation of non-domestic buildings – 2m in UK
- Providing ventilation at a rate to reduce risk of aerosol transmission

Dilution

- reduce potential viral concentration in occupied spaces
- dilution is improved by increasing the air supply to a space

Reduce potential exposure

- depends on number of occupants in a space
- levels of exertion being undertaken

“There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.”

Donald Rumsfeld, February 2002

Unknown sources

- Traditional source control is based on knowing the location and rate of emissions of the material to be controlled
- In this pandemic we do not know where the source(s) will be located (and they will move around) and possibly behave in ways we don’t expect
- Where we have a source we are unlikely to know that they are a source – until after the event
- So all our guidance is currently precautionary

Ventilation for SARS-CoV-2

- Provision of high levels of ventilation in all occupied areas;
- To minimise the risk of airborne transmission it is important to maintain higher ventilation rates wherever possible
- Consider increasing ventilation rates in toilets and circulation spaces such as stairwells and corridors.
- Where natural ventilation is used try to open ventilators or windows as much as possible without causing discomfort;
- Balance recirculation with provision of outside air to increase dilution whilst maintaining thermal comfort

Target the poorly ventilated spaces

- Identify poorly ventilated spaces – they are the priority
- If its stuffy or smelly it is not well ventilated
- Its more important to increase ventilation in poorly ventilated multi occupant spaces
- Aim for adequate ventilation for the number of occupants
- If ventilation to a space cannot be improved, limit access or occupancy or both
- Remember the law of diminishing returns

The role of engineering

- Engineers have a key role to play in the pandemic
- Buildings need engineering expertise to assess ventilation requirements and reduce risks of SARS CoV 2 transmission
- Engineers important to reopening the economy at lower risk and to maintaining safe and healthy working environments
- Engineers can help users' understand building ventilation systems and how they can best be operated to reduce aerosol transmission of SARS- CoV-2

Summary and conclusions

- All buildings need a risk assessment before reopening
- Gas, electric, water, F-gas, lifts all need assessment
- Increased ventilation with outside air the primary means of mitigating risks of indoor aerosol transmission of SARS-CoV-2
- Recirculation increases the risk of transmission – need to balance ventilation and thermal comfort in winter
- Important to maintain handwashing and social distancing at all times
- Clear communication by management is essential

Further CIBSE guidance

- CIBSE ‘Emerging from Lockdown’ guidance available online at https://www.cibse.org/coronavirus-covid-19/emerging-from-lockdown
- Maintenance of buildings
  - Guide M, Maintenance management
- CIBSE ventilation guidance is found in
  - CIBSE Guide B2 – Ventilation and Ductwork
  - Guide A Section 1.8 – Environmental Design
- And further guidance in
  - AM10 – Natural Ventilation, AM13 – Mixed mode ventilation
- All to be found at https://www.cibse.org/knowledge

Thank you for listening

Any Questions?

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