

Subject: Risk of Covid-19 virus contamination from the plumbing system
To: World Plumbing Council
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Plumbing + Covid-19

A SARS epidemic struck Hong Kong and China in 2003 and killed a significant number of people. Sars-CoV-2 is the virus that causes Covid-19. A comprehensive detailed study was carried out by the Authorities in Hong Kong to determine how the disease was being transmitted from person to person. The study acknowledged that a major cause of transmission was that the virus was carried by moisture droplets in the air.

A detailed report prepared by a Mr S H Lee from the University of Hong Kong on the cluster in a high rise high rise residential building concluded that moist air containing the virus came from the plumbing system. In particular the moist air came from the floor waste traps where the water seals had evaporated thus allowing the moist air containing the virus to circulate in the habitable room.

<https://jech.bmj.com/content/57/9/652>

Authorities around the world responsible for the treatment of sewer drainage systems have detected the presence of Covid-19 in their sewage waste treatment systems. For this to occur the virus would have to be present in the waste water from a building's plumbing waste drainage system, as identified by Mr S H Lee.

A pathway of moisture laden air from the building plumbing drainage system into habitable rooms can occur when a fixture trap seal is lost

These can include:

- A dry floor waste installed without a waste fixture connected to the floor waste.
- Evaporation of water trap seal caused by non use of a discharge fixture connected to the floor waste.
- Siphonage cause by an imbalance of air in the plumbing piping system.

It is common for an exhaust system to be installed in a room where plumbing fixtures and floor wastes are located. Consequently, the exhaust system will pull air from the internal pipe drainage system when the trap seal is lost. As the Covid-19 virus will travel on droplets of water vapour in the air the occupants within the room can easily inhale the virus.

Recommendations

Building Owners

1. Should be alerted to the risk of Covid-19 virus infection caused by a faulty plumbing system,
2. Should Investigate to determine if there has been a loss of trap seals in the plumbing drainage system.
3. Should carry out preventative maintenance to prevent the transmission of the Covid-19 virus via a faulty plumbing system.

Acknowledgements and References:

Evidence based Public Health and Policy
The SARS epidemic in Hong Kong by S H Lee
J Epidemiol Community Health 2003;57:652-654