Airborne Infection Reduction through Building Operation and Design for SARS-CoV-2 (AIRBODS)

AIRBODS: A brief overview

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Project Aim

Our aim is to deliver guidance on the ventilation operation and future design of non-domestic buildings and to quantify the risk of, and reduce the transmission of SARS-CoV-2 in buildings,

using ...
Methods

- Experimental
- Computer Simulation
- Fieldwork

Design guidance
Work Packages

**Work Package 1:**
Experiments
(Hathway and Ciric):
Use class 2 environmentally controlled chambers to provide experimental data on the transport and distribution of aerosols.

*Courtesy: L. Ciric, UCL*
Work Packages

Work Package 2: Modelling
Task 2.1 (Fitzgerald, Stoesser):
Use analytical methods to develop an understanding of the physical processes involved in aerosol transport; in particular we will consider the correlation between temperature, relative humidity and the behaviour and evaporation of aerosols.

Work Package 2: Modelling
Task 2.2: Computational Fluid Dynamics (CFD) Modelling (Cook and Malki-Epshtein):
The work here will compare different CFD modelling techniques, e.g. URANS with LES, and inform a Relative Exposure Index. The work will also underpin design and operation guidance for practicing engineers wishing to use CFD for other scenarios and geometries.

Work Package 2: Modelling
Task 2.3 (Jones and Iddon):
Augment an existing Indoor Environment Relative Exposure Index model using the mathematical models generated in Task 2.1 and the outputs from the CFD simulations in Task 2.2.
Work Package 3: Field Studies
(Malki-Epshtein, Ciric):
Undertake field studies in a wide range of large and small space types. This will include measuring temperature, relative humidity, CO2 and air flow to be used as inputs to the RRI.
And back to the aim ...

Work Package 4: Design Guidance and Dissemination (Adamu, Woolf and Cook)

Use the lessons learnt from Work Packages 1, 2 and 3 to inform practical guidance on responses to SARS-CoV-2 for at least the building typologies investigated, and provide prediction tools and modelling advice.