Methods for air cleaning and protection of building occupants from airborne pathogens - DTU Orbit (11/10/2019)

Methods for air cleaning and protection of building occupants from airborne pathogens
This article aims to draw the attention of the scientific community towards the elevated risks of airborne transmission of diseases and the associated risks of epidemics or pandemics. The complexity of the problem and the need for multidisciplinary research is highlighted. The airborne route of transmission, i.e. the generation of pathogen laden droplets originating in the respiratory tract of an infected individual, the survivability of the pathogens, their dispersal indoors and their transfer to a healthy person are reviewed. The advantages and the drawbacks of air dilution, filtration, ultraviolet germicidal irradiation (UVGI), photocatalytic oxidation (PCO), plasmacluster ions and other technologies for air disinfection and purification from pathogens are analyzed with respect to currently used air distribution principles. The importance of indoor air characteristics, such as temperature, relative humidity and velocity for the efficiency of each method is analyzed, taking into consideration the nature of the pathogens themselves. The applicability of the methods to the different types of total volume air distribution used at present indoors, i.e. mixing, displacement and underfloor ventilation, as well as advanced air distribution techniques (such as personalized ventilation) is discussed.

General information
Publication status: Published
Organisations: Section for Indoor Environment, Department of Civil Engineering
Contributors: Bolashikov, Z. D., Melikov, A. K.
Pages: 1378-1385
Publication date: 2009
Peer-reviewed: Yes

Publication information
Journal: Building and Environment
Volume: 44
Issue number: 7
ISSN (Print): 0360-1323
Ratings:
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.025 SNIP 1.883
Web of Science (2009): Indexed yes
Original language: English
Keywords: pathogen, air cleaning, air distribution, airborne, survival, generation
DOIs: 10.1016/j.buildenv.2008.09.001
Source: orbit
Source ID: 234191
Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review