

**Presentation by the Government to the Working Group on the
Rationale Behind the Government’s Decision made in October 2020
on Air Change Per Hour (Fresh Air) at 6 or above**

The ensuing paragraphs sets out the gist of the presentation made by the Government to the Working Group on the rationale behind its decision on air change per hour (fresh air) (ACH) at 6 or above.

In the course of formulating the guidelines, the Government has briefed the Working Group on the development leading to the decision made in October 2020 (together with the justifications in support of the decision) for adopting “ACH at 6 or above or the installation of air purifiers that meet the specified specifications” as the threshold for the voluntary declaration scheme launched on 16 October 2020. The voluntary declaration scheme has been replaced by the mandatory registration scheme since 18 March 2021.

The use of “ACH at 6 or above or the installation of air purifiers that meet the specified specifications” was suggested by Professor Yuen Kwok-yung. In considering the advice, government departments conducted from August to September 2020 a literature review of the research materials available at the time –

- (a) There were discussions in the international community, other places and Hong Kong on the possibility of short range air-borne transmission of SARS-CoV-2 and the use of engineering control means (including ventilating measures) to assist the infection control cause. According to data available at that time and statements by various health authorities, COVID-19 is mainly transmitted by droplet and contact routes. Short range air-borne transmission can occur in certain circumstances in the healthcare setting (e.g. aerosol-generating procedures) or certain community settings (e.g. in certain indoor crowded space, during choir practice, in restaurants, fitness classes etc.)¹; and

¹ Examples:

- “Transmission of SARS-CoV-2: implications for infection prevention precautions” published by the World Health Organization (WHO) in July 2020 (<https://www.who.int/publications/i/item/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>)
- Dedicated website on COVID-19 of the Centers for Disease Control and Prevention of the United States at that time (<https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/overview/index.html>)
- Dedicated website on COVID-19 on the “Global Heat Health Information Network” of the WHO at that time (<https://www.who.int/news-room/q-a-detail/q-a-ventilation-and-air-conditioning-in-public-spaces-and-buildings-and-covid-19>)
<http://www.ghhin.org/heat-and-covid-19/ac-and-ventilation>)

- (b) As there was no gold standard on ventilating measures for catering premises for preventing SARS-COV-2 transmission at the time, government departments could only examine pertinent ventilation standards available for non-residential buildings or other scientific and clinical studies on ventilating measures² (the proposed standards ranging from 5.1 litres/second/person to 10 litres/second/person).

Clearly, it took time for sufficient data to be built up to substantiate a conclusive view on short range air-borne transmission of SARS-COV-2. Nonetheless, we could not rule out the fact that enhancing the ventilating measures could assist the infection control cause.

Consolidating the outcome of the literature review, based on the national standards of the People’s Republic of China and the guidelines on ventilation system design for public places (including food premises) formulated by the Chartered Institution of Building Services Engineers (in the UK), the fresh air provision for catering premises is recommended to be 8 to 10 litres/second/person (equivalent to 6.4 to 8 ACH with an assumed storey height of 3 metres). According to “Reducing the Risk of COVID-19 Using Engineering Controls – Guidance Document” (Version 4) published by the American Industrial Hygiene Association (AIHA) in September 2020, increasing ACH to 6 is an effective engineering control measure to reduce the relative risk of exposure to COVID-19 by 95% (ACH at 4.5 only offers a relative risk reduction of 90% whereas an ACH at 6 offers a relative risk reduction of 95%). In non-healthcare facilities where occupant density cannot be limited to fewer than one person per about 3 square metres (or there is a likelihood that infected persons being present), it is necessary to increase the air change rate to ACH at 6 or above.

After balancing all the relevant factors (including the effectiveness of the measures and the acceptability to the trade), the Government made an optimal choice and decided in October 2020 to adopt ACH at 6 or above in respect of the seating areas of dine-in catering premises³ as the threshold under the voluntary declaration scheme. This level is equivalent to 27 cubic metres/hour/person, which is higher than 17 cubic metres/hour/person stipulated under the Public Health and Municipal Services Ordinance (Cap. 132). To facilitate the public to grasp the idea, the Government has not opted to express the threshold in terms of the 7.5 litres/second/person description. For ease of reference, the various standards are presented in the summary table below -

² Examples:

- The American Society of Heating, Refrigeration and Air-Conditioning Engineers Standard 62.1 (5.15 litres/second/person for restaurant dining rooms (people + area rate))
- “Hygienic Indicators and Limits of Public Places” National Standard GB37488-2019 of the People’s Republic of China (30 square metres/second/person or 8.3 litres/second/person)
- Practical Notes ADM-2 by Building Department (10 litres/second/person for office buildings)
- The Chartered Institution of Building Services Engineers (in the UK) Guide A (10 litres/second/person for restaurants)

³ assuming a storey height of 3 metres and a footprint of 1.5 square metres per person

Standards/Regulations	m ³ /hr/person	L/s/person	ACH at 3m height Ceiling @ 1.5m ² /person	ACH at 2.3m height Ceiling @ 1.5m ² /person
Section 93(1) of and Second Schedule to the Public Health and Municipal Services Ordinance (Cap. 132) (for Restaurants)	17.0	4.7	3.8	4.9
ASHRAE Standard 62.1 The Standards for Ventilation and Indoor Air Quality (for Restaurants)	18.7	5.1	4.2	5.4
國家市場監督管理總局、中國國家標準化管理委員會 (國家標準) GB37488-2019 Hygiene indicators and limits for public places (for Public leisure places)	30.0	8.3	6.7	8.7
Buildings Department Practice Note ADM2 (for Offices)	36.0	10.0	8.0	10.4
Chartered Institution of Building Services Engineer (CIBSE) Guide A (for Restaurants)	36.0	10.0	8.0	10.4
Voluntary declaration scheme on air changes in licensed catering premises	27.0	7.5	6.0	6.0
Net increase	10.0	2.8	2.2	1.1