

6	IEQ	6.3 INDOOR AIR QUALITY
		IEQ 7 INDOOR SOURCES OF AIR POLLUTION
	EXCLUSIONS	Items a) & b) are excluded for buildings that are designed for natural ventilation or using de-centralised air-conditioning system and without interior decoration.
	OBJECTIVE	Demonstrate that airborne contaminants, predominantly from inside sources, do not give rise to unacceptable levels of indoor air pollution in normally occupied spaces.
	CREDITS ATTAINABLE	3
	PREREQUISITES	None.
	CREDIT REQUIREMENT	<p>a) Volatile organic compounds (VOCs)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for VOCs.</p> <p>b) Formaldehyde (HCHO)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for HCHO.</p> <p>c) Radon (Rn)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for Rn.</p>
	ASSESSMENT	<p>The Client shall provide a report prepared by a suitably qualified person detailing the criteria adopted for indoor air quality for each type of normally occupied area within the building development.</p> <p>Where the Client does not offer criteria, BEAM aligns with the HKSAR IAQ Certification Scheme [1]. The criteria for air-conditioned buildings shall be those defined under Good Class in Table 1 of the scheme. For other occupied areas and habitable rooms, the criteria can be that defined in the Scheme, in ASHRAE 62.1-2007 [2] or equivalent standard.</p> <p>Compliance shall be demonstrated by measurement. The report shall identify the measurement protocol. i.e., the measuring equipment used, duration of measurements, number and details of the sampling points, the measurement results, and overall conclusions from the measurements survey. The number of measurement points shall make reference to IAQ Certification Scheme.</p> <p>A sample at the lowest outdoor air intake location can help to identify the relative contribution of VOCs from indoor and outdoor. However, the common alpha track detector and gamma ray detector for Rn detection are not regarded as suitable for measurement. Scintillation cells and electronic monitors are more suitable for both grab sampling and continuous measurements.</p> <p>The objective of sampling is to ensure that the building will not suffer unduly from outside sources of pollution. The sampling protocol (number and locations of samples) shall follow as a minimum that given in Appendix 8.7. Any other protocol demonstrated to be of equal rigour appropriate to the nature of the premises surveyed would be acceptable.</p> <p>In the case of occupied/habitable rooms in air-conditioned/naturally ventilated buildings the measurement of indoor air pollutants shall take</p>

- 1 Indoor Air Quality Management Group. A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places. <http://www.iaq.gov.hk/cert/doc/CertGuide-eng.pdf>
- 2 American Society of Heating Refrigeration and Air Conditioning Engineers. ASHRAE Standard 62.1. Ventilation for Acceptable Indoor Air Quality, Atlanta 2007.

place whilst operating in the background ventilation mode, or where there is no specific provision for background ventilation, with all windows and doors closed.

Where it can be demonstrated that the identified pollutants are unlikely to exceed the limits prescribed, and as determined from an appropriate sample of measurements, relevant credit(s) shall be awarded.

BACKGROUND

This section deals with pollutants found in indoor air, which are mainly attributable to indoor sources. In the case of occupied/habitable rooms in air-conditioned/naturally ventilated buildings the concern is indoor air pollutant from indoor sources whilst operating in the background ventilation mode, i.e. all openings other than those provided for background ventilation are 'closed'.

VOCs includes hundreds of chemical compounds found in indoor environments from trace levels to levels that can cause various symptoms such as eye and throat irritations, respiratory problems, headaches, etc. Reactions can occur as a result of exposure to a single sensitizing dose or sequence of doses, even at low levels. VOCs may enter from outdoors, but are more likely to be emitted from building materials, finishes and furnishings, pesticides and cleaning products.

HCHO is a type of volatile organic compound which is separately identified due to its abundance in many building materials, adhesives, fabrics and carpets, etc. HCHO is a suspected human carcinogen, and in sufficiently high concentrations is known to cause eye, nose and respiratory irritation and sensitisations. Since formaldehyde is most likely to come from indoor sources, sampling should be carried out in at least one representative zone of each type of occupied area.

Rn is a colourless radioactive gas that exhibits no taste or smell. There is concern that exposure to elevated levels of Rn indoors increases the risk of lung cancer. Rn is mainly emitted from granite and marble which are major building materials in Hong Kong. The concentration of Rn may accumulate to an unaccepted level in an enclosed space without adequate ventilation. Choice of building materials and surface coverings can have significant impact on emission rates. Since outdoor Rn infiltration is minimal. Rn and its progenies are mainly generated indoors.

EU 9 Energy Efficient Appliances

EU 10 Testing and Commissioning

EU 12 Metering and Monitoring

Water Use

WU P1 Water Quality Survey

WU P2 Minimum Water Saving Performance

WU 1 Annual Water Use

WU 5 Water Efficient Appliances

Indoor Environmental Quality

IEQ P1 Minimum Ventilation Performance

IEQ 1 Security

IEQ 2 Plumbing and Drainage

IEQ 4 Waste Disposal Facilities

IEQ 5 Construction IAQ Management

IEQ 6 Outdoor Sources of Air Pollution

IEQ 7 Indoor Sources of Air Pollution

#81. IEQ P1, IEQ 6 and IEQ 7, For BEAM Plus New Buildings Version 1.2, please clarify the assessment criteria under the new Indoor Air Quality (IAQ) objectives (IAQ Objective 2019) under the Indoor Air Quality Certification Scheme for Offices and Public Places

The assessment criteria shall follow the Good Class of the IAQ Objectives and they are extracted below for reference. Please be reminded for nitrogen dioxide (NO₂) and formaldehyde (HCHO), limit for BOTH averaging time shall be complied.

IEQ P1 and IEQ 6

	Parameter	Averaging Time	IAQ Objectives
1.	Carbon monoxide (CO)	8-hour averaging time	7000µg/m ³ or 6.1ppmv
2a.	Nitrogen dioxide (NO ₂)	8-hour averaging time	150µg/m ³ or 80ppbv
2b.		1-hour averaging time	200µg/m ³ or 106ppbv
3.	Ozone (O ₃)	8-hour averaging time	120µg/m ³ or 61ppbv
4.	Respirable Suspended Particulates (RSP)	8-hour averaging time	100µg/m ³

IEQ 7

	Parameter	Averaging Time	IAQ Objectives
1.	Volatile organic compounds (VOCs)	8-hour averaging time	600µg/m ³ or 261ppbv
2a.	Formaldehyde (HCHO)	8-hour averaging time	100µg/m ³ or 81ppbv
2b.		30-minute averaging time	100µg/m ³ or 81ppbv
3.	Radon (Rn)	8-hour averaging time	167Bq/m ³

(Released on 11 September 2019)

#88. IEQ 6 & 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is HOKLAS accredited laboratory considered as acceptable to conduct the measurement of airborne contaminants?

No. The measurement must be conducted by IAQ Certificate Issuing Body (CIB) accredited under Hong Kong Accreditation Service (HKAS).

(Released on 29 November 2019)

#90. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the sampling points be selected for multi-storey residential development?

The sampling points shall include at least one representative sample from each of the high, middle and low-level zone. Moreover, different sampling points shall be selected for different types of premises.

(Released on 29 November 2019)

#91. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary to demonstrate that the measurement is taken at background mode?

No. The measurement should be conducted in accordance with the methodology as stated in IAQ Certification Scheme.

(Released on 29 November 2019)

IEQ 9 Increased Ventilation

IEQ 10 Background Ventilation

IEQ 11 Localised Ventilation

IEQ 12 Ventilation in Common Areas

IEQ 14 Thermal Comfort in Naturally Ventilated Premises

IEQ 15 Natural Lighting

IEQ 16 Interior Lighting in Normally Occupied Areas

IEQ 17 Interior Lighting in Areas Not Normally Occupied

IEQ 18 Room Acoustics

IEQ 19 Noise Isolation

IEQ 20 Background Noise

IEQ 21 Indoor Vibration

IEQ 22 Access for Persons with Disability

IEQ 23 Amenity Features



Circular Letter No.: 2019.161

Issue Date: 11 September 2019

Application: BEAM Plus NB Version 1.1 & 1.2

Effective Date: 11 September 2019

IEQ P1, 6 & 7 – Application of New IAQ Objectives for Minimum Ventilation Performance and Outdoor / Indoor Sources of Air Pollutants

1. The Environmental Protection Department (EPD) has launched the new Indoor Air Quality (IAQ) objectives (“IAQ Objective 2019”) under the Indoor Air Quality Certification Scheme for Offices and Public Places on 1 July 2019. The IAQ objective 2019 takes into account of local circumstances and the latest World Health Organization’s IAQ guideline¹.
2. To better align the credit assessment criteria for IEQ P1, IEQ 6 & 7 under BEAM Plus New Buildings (NB) against the IAQ Objective 2019, this Technical Circular Letter hereby announces the transitional arrangement as follow:
 - i. All projects registered after the effective date of this Technical Circular must adopt the criteria under IAQ Objective 2019; and
 - ii. For all project registered on or before the effective date, the project proponents can opt to adopt the criteria under previous IAQ objectives (“IAQ Objective 2003”)² or IAQ Objective 2019³ for the assessment. However, the Applicant must apply either one of the IAQ objectives throughout the project assessment (i.e. If the project proponent decides to use the IAQ Objective 2019, then all parameters under IEQ 6 & 7 must follow the IAQ Objective 2019 throughout); and;
 - iii. For all projects commence Final Assessment on or after 1 July 2024, including those fall under paragraph (2)(ii) above, the project proponent must adopt the criteria under IAQ Objective 2019.
3. For projects that were registered on or before the effective date but are unable to commence Final Assessment before 1 July 2024, the project shall adopt the criteria under IAQ Objective 2019 under normal circumstance. For special case project, the Applicant is encouraged to file a Credit Interpretation Request for clarification and the Technical Review Committee will consider on a case-by-case basis.

¹ Government announcement on new IAQ objectives under the Indoor Air Quality Certification Scheme for Offices and Public Places, <https://www.iaq.gov.hk/en/iaq-certification-scheme/newiaqo.aspx>

² A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places (2003), <https://www.iaq.gov.hk/media/8694/certguide-eng.pdf>

³ A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places (2019), https://www.iaq.gov.hk/media/65346/new-iaq-guide_eng.pdf

4. Approved PA Projects: For projects that have already completed PA and have certain measurement report approved, the Applicant may opt to adopt the same assessment criteria for FA or voluntarily comply with this Technical Circular. For the avoidance of doubt, the Applicant shall provide PA evidences (e.g. extract of the PA report, documents submitted for assessment in PA, etc) in subsequent assessments to support the intention of using the same assessment methodology as in PA.



Mr KM So
Chairperson of Standards Sub-committee



Circular Letter No.: 2020.168 (Revision 1)

Issue Date: 5 June 2020

Revision Date: 28 January 2022

Application: BEAM Plus NB Version 1.1 and 1.2

Effective Date: 28 January 2022

Updated Exclusion Clauses for IEQ Credits

1. **Technical Circular Letter No. 2016.134 dated 09 August 2016 will be withdrawn on the effective date.**
2. This Circular Letter clarifies the exclusion clause for the following credits:

Credits	New Exclusions
IEQ P1 IEQ 9	Residential premises, or Premises designed to utilise natural ventilation and without any fresh air provision ¹ .
IEQ 3	Residential premises, or Premises without any provision of air-conditioning equipment.
IEQ 5	Residential premises, or Premises without HVAC system.
IEQ 6	Residential premises, or Premises without any fresh air provision ¹ .
IEQ 7a IEQ 7b	Residential premises without any interior decoration, or Premises without any fresh air provision ¹ and interior decoration.
IEQ 10	Premises with fresh air provision ¹ .
IEQ 11b	Residential premises, or Premises without any future tenant (for example, single owner occupier premises).
IEQ 12	Premises without any enclosed common area in the main circulation route.
IEQ 13a	Normally occupied premises ² without any air-conditioning equipment installed and provided by the project proponent, or without any fresh air provision ¹ .
IEQ 13b	Normally occupied premises ² without any installation of air diffuser in the air-conditioning system.

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¹ Fresh air provision means any fresh air equipment such as PAU, AHU, FAU, FAP, FAF, etc.; and/or premises with fresh air louvers, etc.

² Normally occupied premises are enclosed spaces / areas where people normally stay there for more than 1 hour per person per day on average.

Credits	New Exclusions
IEQ 14a	Normally occupied premises ² with fresh air provision ¹ .
IEQ 14b	Normally occupied premises ² with fresh air provision ¹ , or without any air-conditioning equipment installed and provided by the project proponent.
IEQ 16	Residential premises, hotels, apartment and premises where lighting installation will be provided by future tenant such as Retail and F&B ³ .
IEQ 21	Not normally occupied premises ² .



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Chairperson of Standards Sub-committee

³ The clause “For premises to be fitted out by tenants, compliance shall be confirmed if the technical details and contractual arrangements with tenants in respect of lighting installation are deemed to meet the assessment criteria.” in BEAM Plus Manual IEQ 16 becomes not applicable.