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Enhanced indoor air quality strategies

Possible 2 points

Glossary

Intent

To promote occupants' comfort, well-being, and productivity by improving indoor air quality.

Requirements

Option 1. Enhanced IAQ strategies (1 point)

Comply with the following requirements, as applicable.

Mechanically ventilated spaces:
A. entryway systems;
B. interior cross-contamination prevention; and
C. filtration.

Naturally ventilated spaces:
A. entryway systems; and
D. natural ventilation design calculations.

Mixed-mode systems:
A. entryway systems;
B. interior cross-contamination prevention;
C. filtration;
D. natural ventilation design calculations; and
E. mixed-mode design calculations.

A. Entryway systems

Install permanent entryway systems at least 10 feet (3 meters) long in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrances. Acceptable entryway systems include permanently installed grates, grilles, slotted systems that allow for cleaning underneath, rollout mats, and any other materials manufactured as entryway systems with equivalent or better performance. Maintain all on a weekly basis.

B. Interior cross-contamination prevention

Sufficiently exhaust each space where hazardous gases or chemicals may be present or used (e.g., garages, housekeeping and laundry areas, copying and printing rooms), using the exhaust rates determined in EQ Prerequisite Minimum Indoor Air Quality Performance or a minimum of 0.50 cfm per square foot (2.54 l/s per square meter), to create negative pressure with respect to adjacent spaces when the doors to the room are closed. For each of these spaces, provide self-closing doors and deck-to-deck partitions or a hard-lid ceiling.

C. Filtration

Each ventilation system that supplies outdoor air to occupied spaces must have particle filters or air-cleaning devices that meet one of the following filtration media requirements:

- minimum efficiency reporting value (MERV) of 13 or higher, in accordance with ASHRAE Standard 52.2–2007; or
- Class F7 or higher as defined by CEN Standard EN 779–2002, Particulate Air Filters for General Ventilation, Determination of the Filtration Performance.

- [East Asia ACP: Filtration Media]

Replace all air filtration media after completion of construction and before occupancy.

The above filtration media requirements are required only for ventilation systems serving regularly occupied spaces.

D. Natural ventilation design calculations

Demonstrate that the system design for occupied spaces employs the appropriate strategies in Chartered Institution of Building Services Engineers (CIBSE) Applications Manual AM10, March 2005, Natural Ventilation in Non-Domestic Buildings, Section 2.4.

E. Mixed-mode design calculations

Demonstrate that the system design for occupied spaces complies with CIBSE Applications Manual 13–2000, Mixed Mode Ventilation.

Option 2. Additional enhanced IAQ strategies (1 point)

Comply with the following requirements, as applicable.

Mechanically ventilated spaces (select one):
A. exterior contamination prevention;
B. increased ventilation;
C. carbon dioxide monitoring; or
D. additional source control and monitoring.

Naturally ventilated spaces (select one):
A. exterior contamination prevention;

D. additional source control and monitoring; or
E. natural ventilation room by room calculations.

Mixed-mode systems (select one):
A. exterior contamination prevention;
B. increased ventilation;
D. additional source control and monitoring; or
E. natural ventilation room-by-room calculations.

A. Exterior contamination prevention

Design the project to minimize and control the entry of pollutants into the building. Ensure through the results of computational fluid dynamics modeling, Gaussian dispersion analyses, wind tunnel modeling, or tracer gas modeling that outdoor air contaminant concentrations at outdoor air intakes are below the thresholds listed in Table 1 (or local equivalent for projects outside the U.S., whichever is more stringent).

Table 1. Maximum concentrations of pollutants at outdoor air intakes

Pollutants	Maximum concentration	Standard
Those regulated by National Ambient Air Quality Standards (NAAQS)	Allowable annual average OR 8-hour or 24-hour average where an annual standard does not exist OR Rolling 3-month average	National Ambient Air Quality Standards (NAAQS)

B. Increased ventilation

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates as determined in EQ Prerequisite Minimum Indoor Air Quality Performance.

C. Carbon dioxide monitoring

Monitor CO_2 concentrations within all densely occupied spaces. CO_2 monitors must be between 3 and 6 feet (900 and 1 800 millimeters) above the floor. CO_2 monitors must have an audible or visual indicator or alert the building automation system if the sensed CO_2 concentration exceeds the setpoint by more than 10%. Calculate appropriate CO_2 setpoints using methods in ASHRAE 62.1–2010, Appendix C.

D. Additional source control and monitoring

For spaces where air contaminants are likely, evaluate potential sources of additional air contaminants besides CO_2. Develop and implement a materials-handling plan to reduce the likelihood of contaminant release. Install monitoring systems with sensors designed to detect the specific contaminants. An alarm must indicate any unusual or unsafe conditions.

E. Natural ventilation room-by-room calculations

Follow CIBSE AM10, Section 4, Design Calculations, to predict that room-by-room airflows will provide effective natural ventilation.

Alternative Compliance Paths (ACPs)

East Asia ACP: Filtration Media

Projects in East Asia may use filtration media classified as high efficiency (□□□□□□) or higher as defined by Chinese standard GB/T 14295-2008 (□□□□□).