

Ventilation of Indoor Smoking Areas for Public Entertainment Facilities

Note: Proper interpretation of this information requires the reader to have thorough knowledge of heating, ventilation, and air conditioning (HVAC) systems, and related engineering principles.

Ventilation of a designated smoking area (DSA) should limit the build-up of environmental tobacco smoke (ETS) in the room and prevent the transfer of ETS to non-smoking areas. To achieve this, you first need to know the maximum number of people permitted in the smoking room and the area of all openings from non-smoking areas to the smoking room.

A minimum ventilation rate of 35 cubic feet per minute (cfm) per person is required for a smoking room. To prevent the transfer of smoke there must be a sufficient flow of air from the non-smoking area into the smoking room. An airflow of at least 70 feet per minute (fpm) will satisfy this requirement. This is equivalent to 70 cfm per square foot (cfm/sq.ft.) of openings between the two areas. The total exhaust ventilation rate for the smoking room would be the greater of 35 cfm/person or 70 cfm/sq.ft. of openings.

The smoking room must have a separate non-recirculating exhaust ventilation system. Tempered replacement air must be provided to balance exhaust from the smoking room. Replacement air may be provided by a forced supply and/or passive transfer vent from non-smoking areas.

The Regulation contemplates the use of an air cleaning system. However, the Board is not aware of a system that can by itself meet the Regulation's air flow and exhaust requirements. An air cleaning system may be used to remove some tobacco smoke components, but filtered air must not be recirculated to non-smoking areas.

A worker cannot spend more than 20% of their work period in a smoking room during a 24 hour day. The room must be cleared of smoke before a worker may spend more time in the DSA. Four air changes, after smoking has stopped, are **needed** for smoke to be exhausted from a DSA.

In accordance with WCB policy, the WCB does not approve ventilation systems. The WCB Regulation and related ASHRAE standards require the ventilation system to be properly designed, operated and maintained. The performance of a ventilation system will be evaluated by the WCB based on the design, construction and operation when it is in actual use.

Note: the ventilation system must meet all other applicable building codes and municipal requirements.

An example of a layout and ventilation options for a smoking room is shown on page 2.



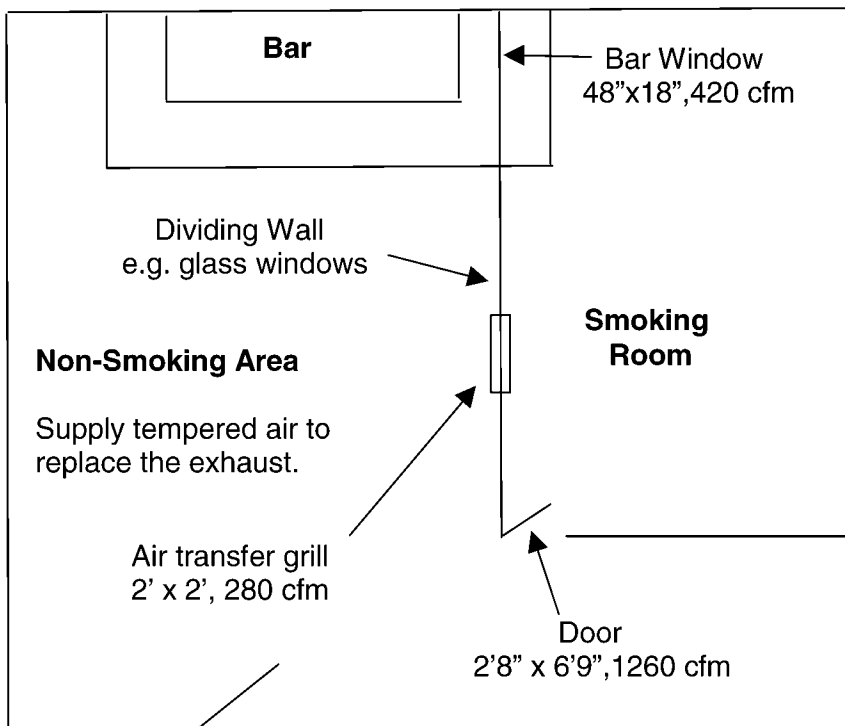
Designated Smoking Room Ventilation

(An Example)

Section 4.83 of the WCB *Occupational Health & Safety Regulation* allows for a designated smoking room. The room must have a separate, non-recirculating exhaust ventilation system that maintains adequate airflow from non-smoking to smoking areas. This diagram shows one example of a designated smoking room and illustrates some features of such a system. Arrange the ventilation system to exhaust either a or b below, whichever is greater:

- a. 35 cfm per occupant or,
- b. 70 cfm/sq.ft. of openings.

The performance of any ventilation solution will be evaluated based on the design, construction and operation of the system in actual use.



The diagram shows an example of a designated smoking room. In this example the smoking room holds 30 people, and there are 3 openings as shown.

The minimum exhaust ventilation from the smoking room would be the greater of:

- a) 30 people @ 35 cfm each = 1050 cfm
- b) Total for the openings;

Door (18 sq.ft.)	1260 cfm
Bar window (6 sq.ft.)	420 cfm
<u>Transfer grill (4 sq.ft.)</u>	<u>280 cfm</u>
Total	1960 cfm

In this example (b) is greater than (a), so a 1960 cfm exhaust fan would ensure compliance with section 4.83 (4)(d)(e)&(f) of the Regulation.

Note that an equivalent amount of air must be supplied to the smoking room.

Notes:

- (1) An air cleaning system may be used but it will not reduce the exhaust ventilation required. An air cleaning system must have a minimum 95% operating efficiency at 0.3 micrometre particle size.
- (2) The smoking room must be under negative pressure (i.e. air supply slightly less than exhaust).
- (3) A flow velocity of 70 ft/minute through openings will satisfy the requirement that air does not transfer from a designated smoking room to a non-smoking area.
- (4) A forced air supply and/or an air transfer grill may be used to supply air to the smoking room. The transfer grill should be sized to provide an air velocity within the range of 70 to 300 ft/minute.
- (5) After smoking has stopped, four (4) air changes are **needed** for smoke to clear from the smoking room. Example: A 420 sq.ft. smoking room with a 10 ft. ceiling. The time for 4 air changes equals, room volume 4200 cu.ft. / 1960 cfm = 2.14 minutes x 4 = 9 minutes.
- (6) This guideline is for professional use. Proper interpretation will require the reader to have a thorough knowledge of HVAC systems and engineering principles. Solutions are site specific and may vary significantly from this example.