

INTERNATIONAL MARITIME ORGANIZATION
4 ALBERT EMBANKMENT
LONDON SE1 7SR

Telephone: 020 7735 7611
Fax: 020 7587 3210
Telex: 23588 IMOLDN G



IMO

E

Ref. T4/4.01

MSC/Circ.1034
28 May 2002

**GUIDELINES FOR SMOKE CONTROL AND VENTILATION SYSTEMS FOR
INTERNAL ASSEMBLY STATIONS AND ATRIUMS ON NEW
PASSENGER SHIPS**

- 1 The Maritime Safety Committee, at its seventy-fifth session (15 to 24 May 2002), taking into account the hazards to life posed by smoke generated during a fire and its effect on the safe and orderly evacuation of a passenger ship, approved the Guidelines for smoke control and ventilation systems for internal assembly stations and atriums on new passenger ships, as set out in the annex.
- 2 Member Governments are invited to bring the annexed Guidelines to the attention of passenger ship designers, owners, operators, shipbuilders and other parties concerned.
- 3 Member Governments are also invited to submit to the Sub-Committee on Fire Protection information on experience gained in the implementation of the Guidelines.

ANNEX**GUIDELINES FOR SMOKE CONTROL AND VENTILATION SYSTEMS FOR
INTERNAL ASSEMBLY STATIONS AND ATRIUMS ON NEW
PASSENGER SHIPS****1 Purpose**

1.1 The purpose of the smoke control and ventilation systems depends on the type of space being considered.

1.2 For internal assembly stations, the smoke control and ventilation systems should be capable of preventing the entry of smoke from surrounding spaces in order to permit the assembling of passengers.

1.3 For atriums, the smoke control and ventilation systems should be capable, in the spaces served by such systems, of maintaining visibility in order to assist in safe escape and to allow fire-fighters to operate.

2 Basic requirements

2.1 The volumes of enclosed spaces such as lockers, pantries, shops, offices and restaurants, which are contained within the boundaries of atriums should be taken into consideration when determining the capacity of the ventilation system serving an atrium.

2.2 Considering the different purposes of the aforementioned systems in relation to the spaces served, as addressed in section 1, the use of atriums as internal assembly stations should not be permitted.

2.3 Each internal assembly station and atrium should be served by a separate ventilation system that is independent of ventilation systems serving other spaces.

2.4 Ducts should be arranged so that the performance criteria addressed in sections 3 and 4 can be met at any point of the served space, including any enclosed space as described in paragraph 2.1.

2.5 The application of these guidelines does not stipulate the installation of additional fans other than those normally dedicated to the space considered, if such fans are of sufficient size to meet the required capacity.

2.6 The emergency stop control for ventilation systems for each internal assembly station and atrium should be independent from any other emergency stop controls. The emergency stop control for the ventilation system should also have priority over any other automatic or manual controls for the activation or re-activation of the ventilation. After resetting the emergency stop signal, the manual and automatic (if provided) control of the ventilation system should be available again.

3 Atriums

3.1 The smoke extraction system should have a minimum capacity as required by SOLAS regulation II-2/8.5*.

* Refer to the revised SOLAS chapter II-2 adopted by resolution MSC.99(73).

3.2 The smoke extraction system should be capable of maintaining a negative pressure within the atriums with respect to the pressure that may be found under normal operating conditions in the surrounding spaces.

3.3 The smoke extraction system should be capable of manual and automatic operation. The control panel should be located in the central control station.

3.4 The automatic activation of the smoke extraction system, by means of the smoke detectors, may be delayed for up to 2 min from the activation of the first detector, if not acknowledged. This 2 minute delay is intended to allow for crew verification of the smoke detector alarm.

4 Internal assembly stations

4.1 The smoke control and ventilation systems should be capable of maintaining positive pressure within the space served with respect to the pressure that may be found under normal operating conditions in the surrounding spaces.

4.2 The smoke control and ventilation systems should be manually operated only. The control panel should be located in the central control station.

5 Installation tests

5.1 After installation, the smoke control and ventilation systems should be tested to verify that their performance meets the criteria set out in these guidelines.

5.2 Except for the personnel directly involved, other personnel should be prohibited from entering the spaces under consideration for the duration of the tests.

5.3 *Atriums*

5.3.1 Two separate tests should be carried out as described below.

5.3.2 The first test should verify that the smoke control and ventilation systems are capable of starting automatically upon activation of the smoke detection system. The following should be taken into account:

- .1 it should be ensured that the fans and related dampers are placed in automatic operation;
- .2 a smoke detector in the space should be activated;
- .3 it should be verified that the fans start automatically;
- .4 it should be verified that the dampers are in the correct position; and
- .5 it should be verified that those doors, which are automatically operated by the detection system, are closed.

5.3.3 The second test should verify that the space is sufficiently free of smoke in 10 min or less. The following should be taken into account:

- .1 it should be ensured that the fans are placed in manual operation;
- .2 it should be ensured that the doors, which are automatically operated by the detection system, are closed manually;
- .3 the space should be filled with smoke using smoke generating machines or equivalent;
- .4 it should be verified that the smoke has been spread at all levels of the space and that the visibility is reduced to approximately 1 m;
- .5 it should be demonstrated that within 10 min of the starting of the smoke control system the entire space is sufficiently free of smoke so that on each level, an exit sign adjacent to an exit door can be observed from a position or positions approximately equidistant from all exit doors; and
- .6 it should be demonstrated that the system is capable of maintaining a negative pressure in relation to the surrounding spaces. It should be verified that the negative pressure does not impair the operation of escape doors.

5.4 *Internal assembly stations*

5.4.1 The test to be performed for internal assembly stations should take into account the following:

- .1 it should be ensured that the fans are placed in manual operation;
- .2 main entrance doors should be kept open;
- .3 the ventilation system of the surrounding spaces should be operated under normal conditions;
- .4 smoke generating machines or equivalent should be located outside the space, close to the main entrance doors; and
- .5 it should be demonstrated that the system is capable of preventing smoke from entering the space and maintaining a positive pressure in relation to the surrounding spaces. It should be verified that the positive pressure does not impair the operation of escape doors.

6 **Instructions on use and maintenance**

Installation plans, operating manuals and maintenance instructions should be readily available on board.