

Legislation - Statutory Requirements

The *Health and safety Commission (HSC), Workplace Health Safety and Welfare Regulations*, deals with mandatory requirements relating to the provision, general maintenance and hygiene maintenance of general ventilation systems to which every employer have a responsibility.

Quotes relevant to the contents of this ventilation hygiene survey from these regulations are as follows:

Maintenance of Workplace, and of equipment, devices and systems

Regulation 5

1) The workplace and the equipment, devices and systems to which this regulation applies shall be maintained (including cleaned as appropriate) in an efficient state, in efficient working order and in good repair.

2) Where appropriate, the equipment, devices and systems to which this regulation applies shall be subject to a suitable system of maintenance.

3) The equipment, devices and systems to which this regulation applies are: -

(a) equipment and devices a fault in which is liable to result in failure to comply with any of these regulations; and

(b) mechanical ventilation systems provided pursuant to regulation 6 (whether or not they include equipment or devices within sub-paragraph (a) of this paragraph.

Approved Code of Practice

20) The workplace, and the equipment and devices mentioned within these regulations, should be maintained in an efficient state, in efficient working order and in good repair. 'Efficient' in this context means efficient from the view of health, safety and welfare (not productivity or economy).

22) Regulation 5(2) requires a system of maintenance where appropriate, for certain equipment and devices and for ventilation systems. A suitable system of maintenance involves ensuring that:

- a) regular maintenance (including, as necessary, inspection, testing, adjustment, lubrication and cleaning) is carried out at suitable intervals;
- b) any potentially dangerous defects are remedied, and that access to defective equipment is prevented in the meantime;
- c) regular maintenance and remedial work is carried out properly; and
- d) a suitable record is kept to ensure that the system is properly implemented and to assist in validating maintenance programmes.

Ventilation

Regulation 6

1) Effective and suitable provision shall be made to ensure that every enclosed workplace is ventilated by a sufficient quantity of fresh or purified air.

2) Any plant used for the purpose of paragraph (1) shall include an effective device to give visible or audible warning of any failure of the plant where necessary for reasons of health and safety.

3) This regulation shall not apply to any enclosed workplace or part of a workplace which is subject to the provision of:-

a) Section 30 of the Factories Act 1961;

b) Regulations 49 to 52 of the Shipbuilding and Ship-repairing Regulations 1960;

c) Regulation 21 of the Construction (General Provisions) Regulations 1961;

d) Regulation 18 of the Docks Regulations 1988.

Approved Code of Practice

29) The air, which is introduced, should, as far as possible, be free of any impurity, which is likely to be offensive or cause ill health. Air, which is taken from the outside, can normally be considered to be 'fresh', but air inlets for ventilation systems should not be sited where they may draw excessively contaminated air (for example close to a flue, and exhaust ventilation system outlet, or an area in which vehicles manoeuvre). Where necessary the inlet air should be filtered to remove particulates.

32) In the case of mechanical ventilation systems which recirculate air, including air-conditioning systems, recirculated air should be adequately filtered to remove impurities. To avoid air becoming unhealthy, purified air should have some fresh air added to it before being recirculated. Systems should therefore be designed with fresh air inlets, which should be kept open.

33) mechanical ventilation systems (including air conditioning systems) should be regularly and properly cleaned, tested and maintained to ensure that they are kept clean and free from anything, which may contaminate the air.

Guidance note

The fresh air supply rate should not normally fall below 5 to 8 litres per second, per occupant. Factors to be considered include the floor area per person, the processes and equipment involved, and whether the work is strenuous.



The independent solution

HVCA Guide to Good Practice. Cleanliness of Ventilation systems TR/17 Second Edition 2002

This guide establishes for the first time cleanliness verification levels for both new and existing ductwork.

Cleanliness Levels:

System Type	Surface contamination limits	Test method
Extract	180 microns <i>6g/m² (Trigger) 0.075g/m² (AFTER CLEAN)</i>	D.T.T. (Dust thickness level) <i>V.T. (Deposit weight)</i>
Recirculation	60 microns <i>1g/m² (Trigger) 0.075g/m² (AFTER CLEAN)</i>	D.T.T. (Dust thickness level) <i>V.T. (Deposit weight)</i>
Supply	60 microns <i>1g/m² (Trigger) 0.075g/m² (AFTER CLEAN)</i>	D.T.T. (Dust thickness level) <i>V.T. (Deposit weight)</i>
Kitchen Extract	200 microns	Grease thickness level

These levels are action levels which if present will require the particular system to be cleaned.

The levels for kitchen extract have recently been reviewed and are now issued within **TR/17 Second Edition 2002** if a kitchen grease extract has a build up of grease greater than 200 microns as a mean across a system complete cleaning is required.



The independent solution

HEALTH TECHNICAL MEMORANDA (HTM)

- 2050 Risk management in the NHS estate
- 2025 Ventilation in healthcare premises
 - § Management policy
 - § Design considerations
 - § Validation and verification
 - § Operational management

2025 Ventilation in healthcare premises

- Ventilation is provided in healthcare premises for the comfort of the occupants
- Its function is to closely control the environment and air movement of space that it serves
- To reduce the hazard to patients and staff from airborne contaminants such as dust & harmful micro-organisms
- Ventilation system themselves present little danger but they have the potential to transmit hazards
- **All ventilation systems should be subjected to an inspection, service and maintenance scheme at least every half-year**
- An annual review of the operation of the plant should be undertaken
- Air conditioning and ventilation plant and its ductwork should be **inspected** at the access point(s) **annually** to see that it is clean and to monitor its general condition. **After several years in service, even in the case of a correctly filtered plant, there may be signs of dirt accumulation and consideration should be given to cleaning the system**
- Maintenance schemes should consist of the following:
 - § a visual inspection to determine the condition of the plant
 - § cleaning of all parts of the system that handle unfiltered air. This should include air intakes and extract grills
 - § disinfection of all sections that are known to become damp in normal use.

HEALTH TECHNICAL MEMORANDA (HTM) continued

- **Bacteriological Sampling - General Ventilation Systems**

5.32 Bacteriological sampling will not normally be required for either general or local exhaust ventilation (LEV) systems unless otherwise specified.

Operating Rooms

5.33 The level of airborne bacteria introduced by the supply air can be checked by closing all doors and leaving the operating room empty with the ventilation system running for one hour, after which a bacterial sampler mounted on the operating table should be activated remotely. Aerobic cultures or non-selective medium should not exceed 35 bacterial and/or fungal particles per cubic metre of ventilating air.

5.34 The results should be examined to establish the broad category of organisms present. A high preponderance of fungal organisms may be an indication of inadequate filtration for the particular installation.

Precise guidance is inappropriate for the above on local circumstances and will depend on local circumstances.

5.35 A check of airborne bacteria during a surgical operation should be carried out as soon as possible after handover. Unless there are unusually high numbers of personnel or activity in the room, the number of airborne bacteria and/or fungi CFU's averaged over any five minute period, should not exceed 180 per cubic metre. The nominated infection control officer or consultant microbiologist if not the same person should carry out this work.