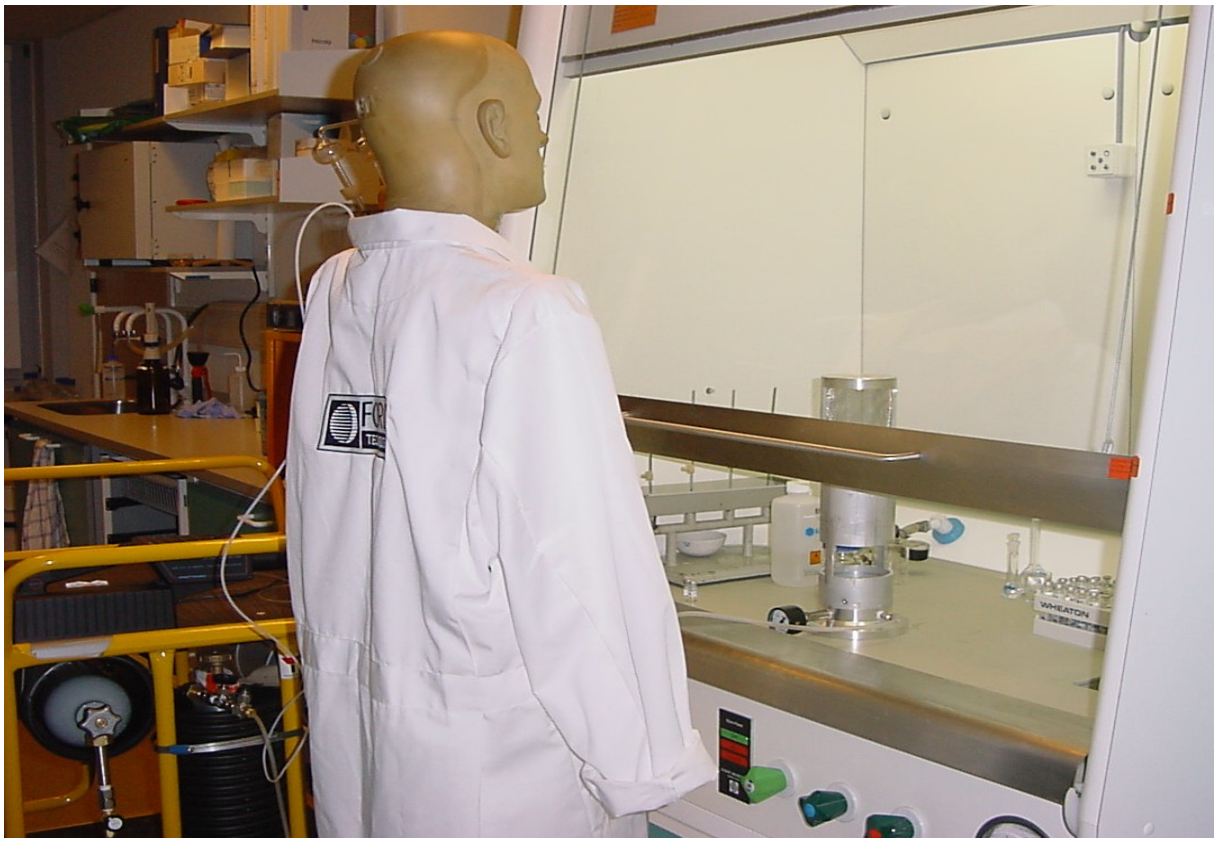
- **Trace gas measurements**
- **Measurement of air velocity**
- **Leak checks with smoke**

Testing of Fume Cupboards, LAF Benches and Exhaust Facilities



Fume cupboard measurement set-up

Fume cupboards and LAF benches must efficiently retain substances in order to provide operators a given degree of certainty that they will not be exposed to health risks.

In certain situations they may also be intended to prevent cross contamination out of regard for the peripheral processes and products.

DS 457

The Danish Working Environment Service stipulates that fume cupboard efficiency must be measured in accordance with DS 457, which specifies measuring based on a trace gas method.

Under DS 457 the capacity of fume cupboards to retain harmful substances must be tested at their place of installation before being commissioned.

If fume cupboards are later to be used for other work, it must be assessed whether the cupboards are efficient enough for this work or whether new trace gas measurements must be carried out.

In general, companies are recommended to have routine trace gas measurement checks performed every 1 to 3 years depending on the use being made of the cupboards.

Formerly air velocity measurements where often used for checking cupboard efficiency. Air velocity may be an excellent indicator of a fume cupboard's functioning but it fails to provide a qualitative picture of the degree of protection.

On the other hand, trace gas measurement provides qualitative classification of the cupboard's degree of protection expressed as a safety factor.

The safety factor indicates the concentration (specified as a fraction of the limit value) at which there is a risk of inhaling contaminants for short periods of time (less than 2 seconds).

FORCE Technology offers trace gas measurements in the form of:

- Standard tests cf. DS 457
- Customized measurements.

Trace gas measurements can also be carried out along with a number of other measurements and tests, such as:

- Air velocity measurements
- Smoke tests
- Flow monitor checks
- Room pressure checks
  (balance between extraction and injection).

Dummy with measuring probe in mouth

Trace gas analyzer

Consultancy and documentation

In major plants where cupboards are used for a variety of purposes FORCE Technology recommends specifying the scope to which individual cupboards should be checked based on a brief examination of the facilities. The scope of the check is described in a register that may, if necessary, be approved by any relevant departments, e.g. the health and safety department.

The register should contain the predetermined criteria for acceptable functioning. FORCE Technology advises on the establishment of these acceptance criteria based on information concerning the substances and equipment to be used.

A brief report is drawn up following the completion of tests and measurements summarizing the results. FORCE Technology's testing equipment is traceably calibrated with the result that measurements can be used for qualification of equipments and rooms.

Trace gas source

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