LOCAL VENTILATION SYSTEMS

Enclosing hoods

Enclosing hood is one of the three local ventilation system types. It is surrounding the process or point where the contaminant is generated. The contaminant is thus partially or totally enclosed at its source. The enclosure can be partial (e.g. fume cupboard with sashes) or fully enclosed (e.g. glove box*). The amount of exhaust air that is needed for any enclosing hood will depend on the total area of all the openings into the enclosure and on the velocity of the entering air.

*Glove boxes and glove bags are addressed in separate e-cards.

Types of enclosing hoods

- **Fume Cupboard:** Any form of permanent encapsulation or encasing of the source of which maximally one side is open with a well-designed local exhaust ventilation system.
- **Horizontal laminar flow booth:** In a horizontal laminar flow booth, contaminated air is extracted through holes situated at the rear of the booth which creates a horizontal laminar air flow. The air is filtered prior to being discharged to the atmosphere. The booth contains the source and has maximally one side open.
- **Downward laminar flow booth:** In a laminar flow booth, a curtain of descending laminar air flow is created between the ceiling and the rear of the booth where exhaust grills are located in the lower section. The booth contains the source and has maximally one side open. This is addressed in a dedicated e-card.
- **Other enclosing hood:** Any form of permanent encapsulation or encasing of the source of which maximally the front side is open with a proper local exhaust ventilation system.

Effectiveness

Mean: 84%

70% — 95%

Resources

Controlling airborne contaminants at work: a guide to local exhaust ventilation (LEV), Third edition. Norwich: TSO, 2017.

Controlling airborne contaminants in the workplace, technical guide no.7, BOHS,1987

Best Practices

1. Make the enclosure large and deep enough to contain the source and the contaminant cloud
2. Design the face velocity to be sufficient to contain the contaminant cloud and provide a display of adequate airflow on the hood duct to measure and display static pressure
3. Anticipate any fall in performance
4. Minimize obstruction inside the hood and mitigate the wake effect
5. Design the enclosure and work methods based on good ergonomic principles and provide lighting inside the enclosure
6. Place equipment away from walls or openings (door, window...) so as not to disturb the airflow
7. Anticipate maintenance and cleaning
8. Train workers

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