IOM Sampler

A Gold Standard for Personal Inhalable Particulate Sampling

- Meets U.S. and international standards
  - ACGIH sampling criteria for inhalable particulate
  - ISO/EN health-related fractions of bioaerosols
  - Preferred sampler for HSE Method MDHS 14/4
  - NIOSH Method 5700 for particulate formaldehyde
  - Australian standard for inhalable particulate
  - Complies with MDHS 25/3 for organic isocyanates (stainless steel model only)
  - Complies with MDHS 6/3 for lead (with accessory head)
  - OSHA-equivalent method for particulates not otherwise regulated (PNOR)

- Economical and reusable
  - Plastic model weighs less than 2 ounces (55 grams)

- Efficient particulate sampling up to 100 μm
  - Removable 25-mm cassette system eliminates filter handling
  - Cassette and filter are weighed as a single unit to include all collected particles in analysis

- Stainless steel cassette available for chemical analysis
  - Autoclavable for bioaerosol sampling

‡ Reference: OSHA letter November 8, 2011; contact SKC for a copy

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The IOM Sampler, developed by J. H. Vincent and D. Mark at the Institute of Occupational Medicine (IOM) in Scotland, meets the ACGIH sampling criteria for inhalable particulate mass. The IOM Personal Inhalable Sampler is a sampling head that houses a reusable 25-mm filter cassette with specified filter for the collection of inhalable airborne particles. When attached to a personal sampling pump operating at 2 L/min and clipped near a worker’s breathing zone, the IOM effectively traps particles up to 100 μm in aerodynamic diameter and closely simulates how airborne workplace particles are inhaled through the nose and mouth. Because both the cassette and the filter are weighed as a single unit before and after sampling, all particles collected (even larger ones) are included in the analysis. The cassette can be cleaned, reloaded with a new filter, and reused. The IOM is one of the most effective inhalable particulate samplers available.

IOM Accessories

- Calibration adapter
  - Easy to use; simple and accurate calibration

- Cassette
  - Conductive plastic or stainless steel

- Transport clip and cover
  - Protect loaded filter cassette without IOM body during transportation

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IOM MultiDust Sampling
Using the IOM Inhalable Sampler with a MultiDust foam disc and filter transforms the IOM into a versatile personal dust sampler, able to sample inhalable and respirable fractions individually or simultaneously. By inserting a MultiDust polyurethane foam (PUF) disc of specific porosity into the inlet of the IOM cassette, respirable particles can be collected on the filter at the back of the cassette. The sample collected on the foam can be weighed with the filter for determination of the inhalable fraction. Analysis is gravimetric. Only IOMs manufactured after June 2000 are suitable for MultiDust sampling.

Size-selective Bioaerosol Sampling
Previously used only for sampling chemical particles, the IOM Sampler with MultiDust foam disc has been tested by the HSE’s Health and Safety Laboratory (UK), which has determined it to be an effective size-selective sampler for bioaerosols.

It has been shown that the IOM Sampler, loaded with a user-sterilized polycarbonate filter and MultiDust polyurethane foam disc, is not only an efficient collector of inhalable and respirable fractions of bioaerosols, but it also better maintains survivability of microorganisms when compared to filter-only sampling. This has been attributed to the MultiDust foam’s large surface area and open cell structure, which diffuses airflow to reduce microbial dehydration. Analysis is by growth culture or microscopy.

A study, using culture assay, epifluorescence microscopy, and microscopy analyses, has determined that the IOM Sampler loaded with a polycarbonate filter provides efficient sampling for personal exposure assessment of multiple bioaerosols, particularly bacteria.

* The MultiDust foam disc must be washed and sterilized with UV light and the polycarbonate filter autoclaved before sampling. For optimum results, handle all components of the sampler and media with sterile gloves and forceps before and after sampling.

References
ACGIH Technical Committee on Air Sampling Procedures: Particle Size-selective Sampling in the Workplace, ACGIH, Cincinnati, Ohio, 1984

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