

Air Sampling Supplies:

FPID:

- ◆ 0.1um PC Cassette will provide the best results.
- ◆ 0.45um MCE Cassette may limit the particles analyzed to those larger than 3 microns due to the texture of the filter.
- ◆ Air-O-Cell Cassettes and other impingement samplers are not suited for this analysis.

CPID:

- ◆ 0.45um mixed cellulose ester (MCE) Cassettes will provide the best results.
- ◆ Air-O-Cell Cassettes may limit the type of particles that can be identified due to the gelatin collection media.

Dust & Bulk Sampling Supplies:

- ◆ Grab-Bags and Micro-vacuuming are the best techniques for dust sampling.
- ◆ 1x1" Alcohol Wipes are the best "wipe" media when a wipe is necessary. However, some fine particles may be lost in the fabric/paper or dissolved by the alcohol.
- ◆ Forensic Adhesive Lifts are the best "tape-like" media when an adhesive lift is necessary. However, particles smaller than 10 microns may not be identifiable. Avoid tape which has heavy adhesives, especially packing and duct tape.



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LOCATIONS



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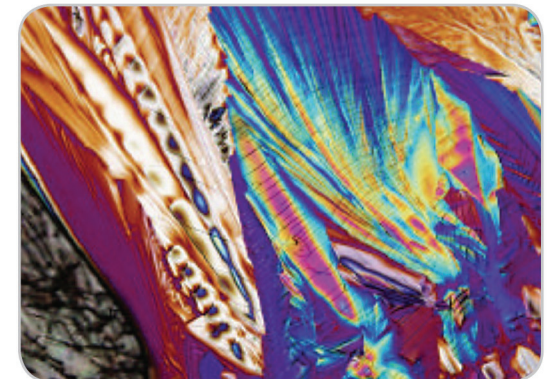
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Materials Science & Forensics Division

Sampling & Service
Information for Airborne
Particulate, Settled Dust
and Bulk Materials



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Common Tests and Parameters:

Common Particle Identification (CPID)

CPID is useful whenever large particles consisting of common indoor contaminants are present, for example, "dust bunnies" under the couch or fibrous particulate collecting on desks. The standard analytes included in the CPID are:

- ◆ Insulation: fibrous glass & mineral wool
- ◆ Cellulose: cotton fibers, plant matter, paper fiber & starches
- ◆ Synthetic fibers such as polyester from clothing and nylon from rugs
- ◆ Both human and animal hair and skin detritus
- ◆ Biologicals such as mold, pollen, diatoms & algae
- ◆ Insect fragments, moth scales, dust mites and spider silk
- ◆ Minerals are limited to asbestos, quartz (sand) and calcite

Results are expressed in particles per cubic meter for air samples and percent for dust and bulk, unless specified. We can report the results in other formats to meet your needs; just describe them on the CoC.

Sampling is best achieved by grab-bag or microvacuum for dust and 0.4um PC or 0.45um MCE cassette for air. Air-O-Cell cassettes can also be used; however, differentiation of the types of insulation fibers, synthetic fibers and the types of cellulose are limited. Whenever performing air sampling it is important to collect at least one dust sample from each area. Many types of particles have a rapid settling rate and can be missed by air sampling alone.

Full Particle Identification (FPID):

FPID is a continuation of the CPID analysis. The process begins with an CPID to identify the particles in the analyte list. Then the remaining unidentified material is analyzed by electron microscopy. In many cases infrared spectrometry (FT-IR) or X-ray Diffraction Spectrometry (XRD) is also utilized. This test is designed to identify the majority of materials commonly occurring in indoor environments. The standard analytes included in the FPID include:

- ◆ Everything from the CPID list
- ◆ Minerals, metals and oxides such as rust
- ◆ Construction debris such as gypsum, mortar and wood dust

Results are expressed in particles per cubic meter for air samples and percent for dust and bulk, unless specified. You are encouraged to submit "Reference" materials where applicable. For example, if an office has a build-up of dust on desks and shelving, submit a small piece of ceiling tile and we will let you know if the material is in the sample.

Sampling is best achieved by grab-bag or microvacuum for dust and 0.1um PC for air. It is highly recommended that you collect dust samples. Any particulate that is in the air will settle. Air samples can, and do, miss numerous types of particles.

Air-O-Cell cassettes and other impingement samplers are not suited for this type of testing.

Materials Identification (MID):

MID is used in cases where the material in question is not a typical indoor contaminant: drums of liquid or solids dumped on sites, unusual growths or build-ups of material on surfaces, in water, etc. If the sampling is to be performed away from the typical indoor home or office environment then Materials Identification is the test to request.

During analysis the sample is routinely subjected to optical and electron microscopy, XRD, X-ray Fluorescence Spectrometry (XRF), Thermo-Gravimetric Analysis (TGA), DSC and Fourier Transform Infrared Spectrometry (FTIR). In addition, Gas Chromatography/Mass Spectrometry (GC/MS) and a host of chemistry tests may also be employed to identify the components within the sample.

Examples of MID's include;

- ◆ Chemicals dumped on property
- ◆ Formation of material on walls, floors, in pipes and drums
- ◆ Material leaching from under floors or tanks - Contaminants within potable water, oil and other liquids
- ◆ Unusual dust formation in industrial settings or manufacturing processes

Due to the nearly limitless situations that you encounter from site to site, we suggest you call us ahead of time to discuss the best procedure for sampling. Nearly every job has its own unique background, and the MID analysis is designed to be tailored to the specific situation.