

PLM analysis for bulk asbestos sampling

When is it necessary to collect bulk samples for asbestos analysis?

Suspect building materials and other miscellaneous materials may contain asbestos, even newer products that are imported from other countries. EPA has designated many materials as suspect asbestos-containing materials ("ACM"), including vermiculite. Building owners will need to identify ACM prior to renovation or demolition, and remove the ACM prior to beginning work that will impact the ACM. This is called a National Emission Standards for Hazardous Air Pollutants (NESHAP) survey, and applies to all buildings, including single-family homes and public buildings. School districts are required to identify all ACM that is present in their buildings. This is called an Asbestos Hazard Emergency Response Act (AHERA) survey, which allows schools to assume all suspect materials are ACM instead of sampling. However, in the event that schools will undergo renovation that will impact the suspect materials, sampling must be performed beforehand, and the ACM must be removed prior to conducting renovation or demolition.

What analytical method must be used to analyze bulk samples in Massachusetts?

Polarized Light Microscopy (PLM) is the minimum requirement for analysis of bulk samples [454 CMR 28.02, 28.06(7)].

- **EPA 600/R-93/116:** Required for analysis of all friable and non-friable materials, including surfacing and miscellaneous materials.
- **Interim Method for the Determination of Asbestos in Bulk Insulation Samples, 40 CFR Part 763 Appendix A:** Permitted for the analysis of friable thermal system insulation (cannot be used to analyze non-friable organically bound materials).
- **Transmission Electron Microscopy (TEM):** Can be used in place of PLM to analyze any friable or non-friable bulk samples.

Samples shall not be composited for analysis by PLM.

How many samples must be collected and submitted for bulk sample analysis?

Bulk sample collection must be performed in compliance with 454 CMR 28.13(3)(a) and (b).

- **Miscellaneous ACM:** Collect samples in a "manner sufficient to determine whether the material is ACM or not ACM". No less than 2 samples shall be collected from each homogeneous area of a friable or non-friable miscellaneous material.
- **Thermal System ACM (TSI):** Collect at least 3 samples of each homogeneous area of TSI, in a randomly distributed manner. Collect at least 1 sample from each patched area of TSI if that patch is less than 6 linear or square feet. Collect at least 1 sample from each cement/plaster fitting, tee, elbow, or valve.
- **Surfacing ACM:** Collect samples in a statistically random manner which is representative of the homogeneous area as follows:
 - At least 3 samples for a homogenous area of 1,000 square feet or less
 - At least 5 samples for a homogeneous area greater than 1,000 square feet and less than 5,000 square feet
 - At least 7 samples for a homogeneous area greater than 5,000 square feet

EPA recommends applying this sampling scheme to large homogenous areas of miscellaneous materials, such as floor and ceiling tiles.

Is it necessary to re-sample certain materials for asbestos?

If a material has been sampled and determined to be ACM, it is not necessary to resample. However, there may be conditions under which resampling would be required:

- Materials that were not sufficiently sampled to determine whether asbestos is present.
- Non-friable materials that were analyzed using the EPA 600/M4-82-020 (1982) Interim Method for the Determination of Asbestos in Bulk Insulation. This method was not capable of detecting the fine, thin fibers or fibers that were coated or obscured by a matrix.
- Materials that constitute unique homogeneous areas, but were incorrectly grouped together into one homogeneous area.

All samples collected must be analyzed to confirm that a material is non-asbestos. One positive result is sufficient to consider a material as asbestos containing.

Can I resample materials to rebut earlier findings of asbestos in a bulk sample?

Any materials that has been determined to contain greater than 1% asbestos by PLM shall not be reanalyzed to rebut the presence of asbestos. If a situation should arise where a material that was previously tested positive for asbestos needs to be re-tested, such material shall be analyzed using quantitative TEM. The Department of Labor Standards (DLS) will not accept PLM analysis alone to rebut the presence of asbestos in a sample where asbestos was previously identified.

Who can analyze bulk samples in Massachusetts?

Asbestos Analytical Services must be approved and certified by the Department of Labor Standards. Class A laboratories may analyze bulk samples for any facility, including schools. Class B laboratories may analyze bulk samples for all facilities other than schools or facilities subject to AHERA and 454 CMR 28.13.

What are the reporting requirements for bulk sample analysis?

Laboratory reports shall contain, at a minimum:

- Laboratory name, address, and Massachusetts certification number
- Name and address of client
- Unique identification number of each sample collected
- The location of the sample
- The analytical method used
- Date of collection and date of analysis
- Name and signature of the analyst on the report (a signature on a cover letter is not sufficient)
- The results of analysis, including the percentage of asbestos and the percentage of any other analytes in the sample. Samples in which no asbestos is detected will identify the other matrices.

A completed *Chain-of-custody* will accompany each set of samples submitted to the laboratory, with the name and signature of the person relinquishing the samples, either in person or by mail.