



Asbestos in Soil Samples

EMSL now offering highest quality analysis available at any commercial laboratory.

Often soil will contain asbestos fibers either as naturally occurring asbestos (NOA) or by contamination from asbestos containing building materials. Verifying the presence of asbestos fibers in these materials may often be necessary prior to alteration, remediation, or removal of such material. Due to the variation in material and source of the asbestos, sampling and analytical approach should be discussed with the laboratory prior to the start of a soil project. Below are a few of the more popular analytical approaches, however it is important to note that it maybe a combination of these items that will yield the best results. While it may seem that the end goal is determination of asbestos percentage in the soil, it is important to note the action levels for asbestos containing materials (ACM) (>1% in US) were intended for building materials. This action level is not necessarily applicable in soil, particularly when asbestos is not trapped in a structured matrix, therefore careful consideration must be performed on the analytical results. Specialized tests like the fluidized bed can test the releasability of fibers found in soils.

Preparation and Analysis options:

Milling Prep: Milling is a preparation method in which material is ground to present a uniform material for analysis. Milling will grind any sticks or small rocks into a fine powder. Analysis utilizing EPA/600/R-93/166 is recommended. The California Air Resource Board (CARB) has developed a method (CARB 435) utilizing milling which is similar to the EPA method and should be used for samples in California.

Pros – The homogenization of the material yields a uniform material allowing for easier identification of asbestos

Cons – There is a potential to disperse bundles of asbestos which can increase the number of asbestos fibers detected during analysis.

EMSL now offers 4 levels of analysis for the EPA/600/R-93/116 and CARB 435 Method:

Level A PLM	0.25% sensitivity level
Level B PLM	0.1% sensitivity level
Level B TEM	0.1% sensitivity level
Level C TEM	0.01% sensitivity level

ASTM D7521-16 Sieve Method: For this method, the soil is sieved: effectively separating the soil into coarse, medium, and fine fractions. This versatile method is useful for most soil analysis, it will sift out large building material debris. If large building material is present, it will be analyzed and reported as separate material. The main analysis takes place on the resulting fine fraction of the sample. The analysis includes PLM analysis as well as a qualitative TEM analysis on the fine fraction and can be supplemented with a quantitative TEM analysis for an additional charge.

Additional prep techniques are often recommended:

Drying – Wet samples cannot be processed and may require time to fully dry

Jaw crushing – To reduce larger pieces of rock

Riffle splitting – To homogenize a large amount of soil

Incremental Sampling Methodology (ISM) – Another homogenization technique wherein procedures may vary

Gravimetric reduction – Maybe recommended for large amounts of tar, organic material, or post wildfire.