

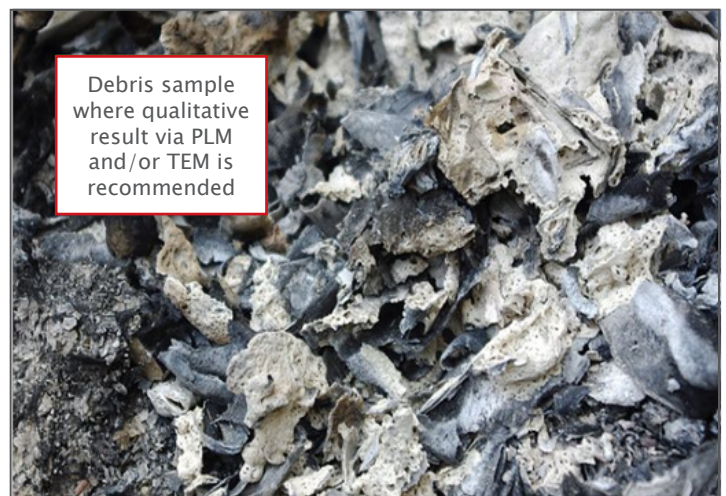
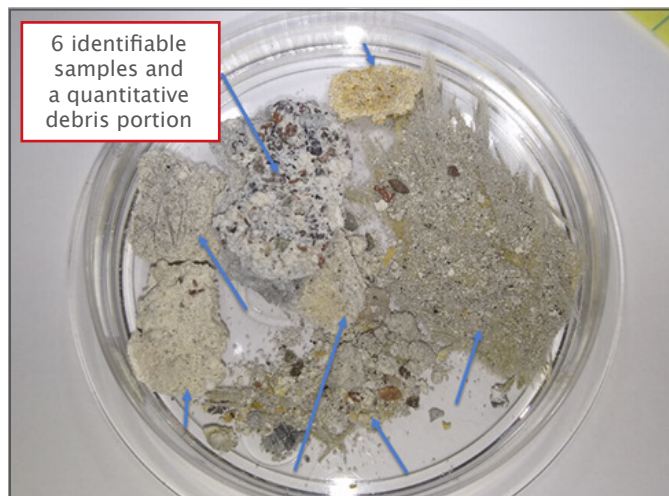


# Asbestos-Related Fire Debris Sampling

As wildfires continue to worsen year after year, it is imperative to test for the presence of asbestos to ensure the safety of the cleanup crews and toxicity of the debris. Unfortunately, both the sampling and the analysis of wildfire related materials can be problematic. Asbestos determination in these samples isn't as straightforward as routine PLM analysis of building materials, as is the intent of method EPA 600/R-93/116. There are challenges in finding the asbestos in a debris sample, and positively identifying it as asbestos if the fire was hot enough or sustained long enough to alter the fibers (See altered asbestos flyer).

Sampling material from a building damaged by wildfire can vary from building to building contingent on the amount of damaged that occurred to the building. When at all possible, the sampling process should adhere to normal sampling protocols; sampling and submitting any suspect material that can be identified such as individual floor tiles or roofing.

When the damage is severe and the resultant material can only be called debris and is inseparable in the field it will be handled in a similar manner in the laboratory, separating and individually analyzing as much identifiable building material as possible. A qualitative result can be reported for the remaining portion of the sample. For example, below is a 47mm petri dish with "a sample" submitted as one sample, each arrow points to a different building material. Best laboratory practice is to analyze and report all 6 different materials as well as a portion of unbound material that can only be reported as presence/absence for asbestos. For example, any piece of this debris can be ACM but the analytical effort in determining so it beyond a typical PLM. Therefore, most debris samples will be reported as presence/absence with the following report comment. *"Due to size and heterogeneous nature of material, samples reported for presence of asbestos only."*





It is not possible to determine an overall asbestos percentage in a sample consisting of many materials mixed together in a bag. If a quantitative result is required there may be preparation/homogenization methods such as gravimetric reduction or milling or a combination of the two may be performed, however there are limitations due to the size of the provided sample and there will be an additional cost. TEM analysis on debris can also be a valuable tool detecting smaller asbestos fibers but will more than likely only provide a presence/absence qualitative asbestos result.

The sample comment may be adjusted if a large amount of material is submitted. The analyst will be forced to take random grab samples to analyze. *“Analysis performed on random grab sample taken from large sample submitted to lab.”*

It is best to consider all analytical options at the beginning of a project. However, due to the amount of variables in these types of sample and analysis, maintaining an open line of communication between the client and laboratory is essential.

### **Analytical Suggestions**

It is important to note that debris samples require a customized approach as they are generally quite varied in composition and a positive material may easily be overlooked.

- If there are three or less distinct types of material in the bag EMSL suggests that the lab provide quantitative PLM for the three types of materials as well as a PLM Qualitative result for the remaining material (up to 4 analytical charges)
  - Note: the lab can use this approach on more than 3 layers, but it maybe cost prohibitive.
- If there are more than three types of material contained within a sampling bag EMSL recommends milling of the material to homogenize the sample followed by PLM analysis (PLM EPA milling with PLM 400 PTCT)
  - Please note that the size of the sample submitted is a critical component to the validity of the results; for example, it is impossible to provide a single representative sample result on a gallon ziplock back filled with fire debris therefore reports may be footnoted as applicable.
- Samples that consist of just ashed materials without any visible building materials may be able to be read by PLM qualitative, but we may recommend that the sample be sent for TEM analysis as the fibers may be smaller than the resolution of the PLM microscope.

