



## ASBESTOS REGULATORY CLARIFICATIONS

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Environmental and Consumer Safety Section  
Regulatory Services Division  
ARC – 019  
November 2001

### Subject: Application of Point Counting Bulk Samples in Regards to TAHPR

#### **BACKGROUND**

The National Emissions Standards for Hazardous Air Pollutants (NESHAP), under the definition of *friable asbestos-containing material (ACM)*, states that asbestos bulk samples that are less than 10% by visual polarized light microscopy (PLM), are to be analyzed by point counting. Consistent with the NESHAP, the Environmental Protection Agency (EPA) has clarified that results of point counting supersede visual PLM results. The Texas Asbestos Health Protection Rules (TAHPR) have no provisions for or against point counting.

This document clarifies how the Texas Department of State Health Services (DSHS) regulates point counting analysis of bulk samples under TAHPR and NESHAP, and how many samples must be point counted to refute the presence of asbestos containing building materials (ACBM). In addition, this clarification provides guidance in the use of gravimetry and transmission electron microscopy (TEM) analysis.

#### **RESPONSE**

Point counting is an option under TAHPR and NESHAP that, when used, supersedes the initial PLM results. Each sample that is taken and analyzed by visual PLM as greater than one percent asbestos is ACBM, unless that sample is rebutted through additional analysis (i.e. point counting).

DSHS and EPA recognize both gravimetry and TEM as acceptable means of asbestos analysis, when used in conjunction with PLM analysis. The sample guidelines for rebutting the presence of ACBM for point counting also apply to gravimetry and TEM analysis.



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## DISCUSSION

### Point Counting

According to 25 TAC 295.32, ACBM is defined as:

***Materials or products that contain more than 1.0% of any kind or combination of asbestos, as determined by the Environmental Protection Agency (EPA) recommended methods as listed in EPA/600/R-93/116, July 1993 "Method for the Determination of Asbestos in Bulk Building Materials".***

EPA/600/R-93/116 presents the different methods for sample preparation and analysis of asbestos. The PLM technique may be performed either by visual estimation or ***point counting***. ***Point counting*** provides a determination of the area percentage of asbestos in a sample.

In accordance with TAHPR, asbestos laboratories must be licensed to provide PLM analysis on asbestos samples taken from the interior space of a public building [25 TAC 295.54(a)]. Since point counting is a type of PLM analysis, TAHPR recognizes the use of point counting.

NESHAP provides clarification for point counting in regards to friable asbestos material by stating that ***if the asbestos is estimated to be less than 10 percent by a method other than point counting, such as visual estimation, EPA has revised the definition (of friable asbestos material) to require that the determination be repeated using point counting techniques with PLM.*** In an April 1998 electronic message from EPA – Region 6 to DSHS, EPA states that for ***nonfriable material, (EPA) may allow (laboratories) to use point counting.*** However, appropriate sample preparation methods must be followed to eliminate the effects of interfering substances such as binders, etc. Therefore, point counting is an acceptable standard under NESHAP for friable and nonfriable asbestos materials.



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### Refuting ACBM using Point Counting

TAHPR refers to the criteria to rebut ACBM in two (2) sections:

25 TAC 295.34(c)(1): ***Criteria to rebut the presence of ACBM in a public building shall be based upon inspections which conform to accepted standards such as the sampling protocol specified in 40 CFR Part 763 Subpart E, commonly referred to as the "AHERA" rules which are the required method for schools.***

TAC 295.58(h): ***Sampling for asbestos. A survey by a licensed asbestos inspector using accepted standards such as the Asbestos Hazard Emergency Response Act (AHERA) protocol or, as a minimum, three samples for each homogeneous area is required to rebut or confirm the presence of ACBM for abatement or operations and maintenance (O&M).***

Although, TAHPR requires three (3) samples at a minimum for each homogenous area, additional samples can be collected. Each sample that is collected and analyzed by visual PLM as greater than one percent asbestos is ACBM, unless that sample is rebutted through additional analysis (i.e. point counting).

EPA states in regard to PLM analysis and point counting, ***if a result obtained by point count is different from a result obtained by visual estimation, the point count result will be used*** (EPA Control Number C112). EPA also clarifies that ***if one or more samples analyzed shows greater than one percent asbestos, then the material in question is regulated as an asbestos containing material. One sample is adequate to confirm that asbestos is present in a homogeneous sampling area*** (EPA Control Number A960007). Therefore, point counting of all the samples that contained greater than one percent asbestos would have to be conducted to refute the original PLM analysis.

### Gravimetry and TEM Analysis

Additional acceptable methods of asbestos analysis as referenced in EPA/600/R-93/116 include gravimetry and TEM. These types of analysis are generally used when problems are encountered with PLM analysis for quality assurance purposes. If there is a quantitative problem, gravimetry is an additional analysis that can be conducted. Gravimetry involves the removal of binder components by using appropriate solvents or ashing. This process would isolate the asbestos from the sample, if asbestos is present. This method of analysis is not an identification technique for

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asbestos, and other analytical methods such as PLM or TEM must be used to determine if asbestos fibers are present.

TAHPR does not address licensing requirements for laboratories to conduct gravimetry analysis; however, due to the fact that analysis of samples in a public building is an asbestos-related activity and conducted with PLM or TEM analysis, laboratories would have to be licensed in accordance with 25 TAC §295.54.

TEM analysis is used for detection and positive identification of asbestos in both friable and non-friable bulk materials. TEM analysis is applicable for samples that contain a large amount of binding components that can be removed using gravimetry and that are not resolved by PLM techniques. The TEM method is used to quantify asbestos concentrations. The TAHPR requires appropriate licensing under 25 TAC §295.54 for laboratories that conduct TEM analysis on bulk asbestos samples taken from the interior space of a public building.

The DSHS recognizes both gravimetry and TEM as acceptable means of asbestos analysis, when used in conjunction with PLM analysis. The sample guidelines for rebutting the presence of ACBM for point counting also apply to gravimetry and TEM analysis.

### FREQUENTLY ASKED QUESTIONS

1. If 6 samples have been analyzed as greater than 1% asbestos by PLM, what is the minimum number of samples that need additional analysis to refute the presence of asbestos?

Answer: If additional analysis (point counting, gravimetry or TEM) of 1 sample is greater than 1% asbestos, then analysis of the remaining samples is not necessary. However, all 6 samples would have to be analyzed and determined to be less than 1% asbestos to refute the initial analysis.

2. When can gravimetry analysis be use and when can TEM analysis be used?

Answer: Both methods can be used after PLM analysis. Gravimetry analysis is used to remove common binders from a sample (i.e. calcite, gypsum, magnesite, etc.) and isolate the fibers (quantitative). This method does not determine if asbestos is present, and must be conducted in conjunction with additional analysis (PLM or TEM).

TEM analysis is used for detection and positive identification of asbestos fibers (qualitative).



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3. What is the minimum analysis required for bulk samples?

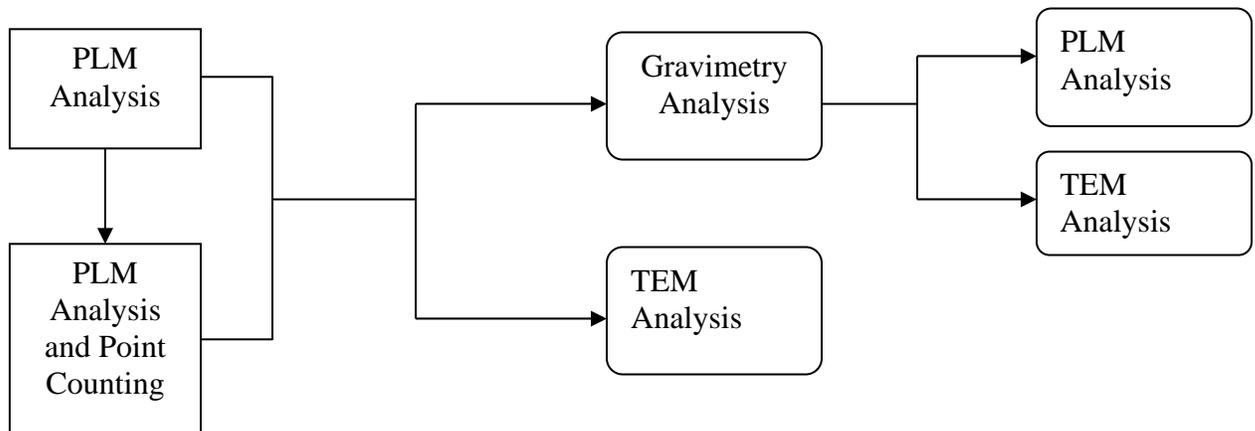
Answer: According to the TAHPR and NESHAP, only PLM analysis is necessary; however, additional analysis would be appropriate depending on the matrix of the material being sampled (i.e. floor tile).

4. The results of a bulk sample indicated that it was 3 – 5% asbestos using PLM analysis. The sample was then point counted to 1.5% asbestos. A final gravimetric analysis showed that the sample was less than 1% asbestos. Is the sample regulated by TAHPR or NESHAP?

Answer: No. TAHPR and NESHAP regulate asbestos greater than 1%.

5. What is EPA’s guideline for the analysis of bulk samples?

Answer: After conducting PLM analysis, which could include point counting, there are two additional analysis that can be utilized for quality assurance purposes: gravimetry and TEM. Gravimetry only provides the amount of fibers in a sample, and would have to be used in conjunction with PLM and TEM analysis. TEM analysis would provide both the type and amount of asbestos fibers present.





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