CONTRARIAN VIEW: TEM MICROVAC SAMPLING FOR ASBESTOS IN SETTLED DUST

Concerns of asbestos contamination in settled dust are daily events in buildings constructed with asbestos containing materials (ACM). Housekeeping personnel are cleaning without personal protective equipment or controls; maintenance and outside contractors are moving ceiling tiles with debris on the tile top surfaces; and building occupants are finding suspect dust on their work surfaces. The need to perform a comprehensive asbestos building survey is essential to identify the presence, location and quantity of ACM/PACM and to implement asbestos professional decision-making to control asbestos hazards, via an Operations and Maintenance Program (including training and notification). OSHA's Asbestos General Industry Standard (29 CFR 1910.1001(k)) housekeeping states "all surfaces shall be maintained as free as practical of ACM waste and debris and accompanying dust".

But what constitutes asbestos containing debris/dust? ACM is defined as any material containing more than 1% asbestos. Asbestos content is tested by Polarized Light Microscopy (PLM) per EPA 40 CFR 763.68 for bulk samples (not dust/debris).

Increasingly, it appears that asbestos contamination in settled dust is being evaluated using TEM microvac sampling per ASTM Standard D5755-09. This standard practice evaluates settled dust by vacuuming the surface at 2 liters per minute, generally over a 100 square centimeter surface area. Results are compared to guideline limits of <1,000 S/cm² (low), >10,000 S/cm² (above background), and >100,000 S/cm² (high). Of concern, a significant number of samples are being collected to develop an asbestos risk profile for a building without understanding the facts, resulting questions and subsequent professional decision-making which should be discussed with the building owner in advance of sampling.

FACTS

1. There are no federal, state or local asbestos regulations regarding asbestos levels in surface dust using TEM microvac sampling. Sampling results **cannot** be used for either objective data, substitution for initial monitoring or development of a negative exposure assessment under OSHA's Asbestos Standards.
2. There is no proven standard correlation between the amount of asbestos in settled dust (S/cm2) and the amount of asbestos fibers in the air when the dust is disturbed. What exposure level does 1,000 S/cm² or 100,000 S/cm² mean in surface dust compared to actual worker exposures?
3. Significant variability occurs in sampling results between similar sampling locations in close proximity regarding asbestos content in settled dust. Asbestos content/levels in surface dust is not uniform. Concentrations are higher closer to the point of disturbance and fall off as the distance increases. Air movement will also affect where contamination is found.

Additional questions which must be resolved prior to sampling include

4. At what asbestos level are work tasks restricted or personal protective equipment or specialty training mandatory?
5. At what level must notification be provided to building housekeeping, maintenance, outside contractors and general building occupants?
6. TEM analysis of asbestos in settled dust identifies microscopic fibers not visible with the naked eye. How can the extent of cleaning be verified by abatement workers (if he/she cannot see the asbestos)?
7. What level of clearance testing criteria is sufficient to verify cleaning? How does this criteria affect the time to complete and the cost of cleaning?

AET EXPERIENCE: Before entering that gray slippery slope area of TEM Microvac sampling to evaluate asbestos in settled dust, a clear understanding of the facts, resulting questions and plan for response must be presented and agreed upon by all parties. Expect a diverse range of sampling results and plan for the worst case accordingly. Periodically AET's CIH management staff are presented by clients with multiple TEM surface data findings from their facilities and the question "What do we do now?".

BEST ADVISE: Implement a concise site specific response plan, developed by an experienced consultant (such as AET) in agreement with the building owner, building management and their legal team.

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