



December 1, 2021

DAQA-496-21

Asbestos Sampling Guidance Document

This guidance document is supplemental to the DAQ's *Asbestos Frequently Asked Questions* document (July 2019) found on our website: asbestos.utah.gov.

The Utah Asbestos Rule has adopted the sampling protocol found in 40 CFR, Part 763.86. All asbestos inspections performed for anticipated demolition, renovation, or remodel must follow the sampling protocol found in 40 CFR, Part 763.86. The following document is meant as an interpretation and elaboration of that sampling protocol. Asbestos inspections must be performed by a Utah certified asbestos inspector working for a Utah certified asbestos company. This guidance document applies to projects that are regulated by the Utah Asbestos Rule and the EPA Asbestos NESHAP (40 CFR Part 61). This guidance document does not pertain to AHERA school inspections and re-inspections for the purpose of an asbestos management plan. If you are unsure if a material is a suspect asbestos-containing material or how many samples to collect, please contact the DAQ.

There are three main types of asbestos materials:

Surfacing Materials

Surfacing material means material that is sprayed-on, troweled-on, or otherwise applied to surfaces. This includes, but is not limited to wall textures, ceiling textures, block paint filler, lath and plaster-type wall, stucco that is applied to a substrate, and fireproofing.

"The 3-5-7 Rule": A certified inspector shall collect, in a *statistically random manner** that is representative of the homogenous area, bulk samples from each homogeneous area of surfacing material that is not assumed to be ACM, and shall collect the samples as follows:

- (1) At least three bulk samples shall be collected from each homogeneous area that is 1,000 square feet or less.
- (2) At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- (3) At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 square feet.

Thermal System Insulation

Thermal system insulation (TSI) means material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. This includes, but is not limited to pipe insulation, pipe elbows/tees, Mag Block, corrugated air cell, duct tape, duct insulation, tank insulation, flue insulation, boiler insulation, and boiler components.

A certified inspector shall collect, in a *randomly distributed manner**, at least three bulk samples from each homogeneous area of TSI that is not assumed to be ACM.

Exceptions include:

- Collect at least one bulk sample from each homogeneous area of patched TSI that is not assumed to be ACM if the patched section is less than 6 linear or square feet.
- In a *manner sufficient to determine** whether the material is ACM or not ACM, collect bulk samples (at least two) from each insulated mechanical system that is not assumed to be ACM where cement or plaster is used on fittings such as tees, elbows, or valves.
- Bulk samples are not required to be collected from any homogeneous area where the certified inspector has determined that the TSI is fiberglass, foam glass, rubber, metal, wood, or other non-ACM.

Miscellaneous Materials

Miscellaneous material means building material on structural components, structural members, or fixtures, and does not include surfacing material or TSI. This includes, but is not limited to, resilient flooring, ceiling tiles, roofing, asbestos cement products such as panels, pipes, and siding, window caulking or glazing, wall system (this only includes the drywall, tape, and joints compound), roof drains, roof flashing, tar paper, vapor barriers, TSI end caps, pre-fabricated stucco panels (manufactured as panels, this does not include stucco applied to substrates), vibration collars, heat shields, laboratory tabletops, fume hood components, sealants and paints, and loose-fill vermiculite type insulation material¹. If a material looks like a suspect asbestos-containing material, then we recommend the inspector sample it.

In a *manner sufficient to determine** whether material is ACM or not ACM, a certified inspector shall collect bulk samples (at least two) from each homogeneous material that is not assumed to be ACM.

¹Exception: Although loose-fill vermiculite type insulation material is considered a miscellaneous material, the Utah DAQ requires that certified inspectors follow the 3-5-7 rule that inspectors use when sampling surfacing materials. Please refer to the Utah DAQ's other guidance document titled *How many samples are required of loose-fill vermiculite type insulation to prove it is not ACM?* for more information.

*What does the “manner” of sampling mean?

Statistically random manner of sampling:

The EPA released the “pink book” titled *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials* that discusses statistically random sampling manners in detail. The DAQ recommends that certified inspectors review the EPA pink book. The DAQ has provided the following summary:

1. Identify all friable surfacing materials and group them into homogeneous sampling areas.
2. Divide each sampling area into 9 equally sized subareas. This can be done carefully by eye. Exact measurements are not needed. For very irregularly shaped areas, the sampling area may be divided into 9 approximately equal sized subareas that do not necessarily form a rectangular grid.
3. If 9 samples are to be collected, the certified inspector will take one sample from each grid. Samples should be taken at the center of a subarea or as close as possible.
4. If less than 9 samples are to be collected, the certified inspector must label the subareas according to “sampling area 1” in Table 2 from the EPA pink book (found on the following page).
5. If 3 samples are to be collected, the certified inspector must collect them from subareas 1, 2, and 3. If 5 samples are to be collected, the certified inspector must collect them from subareas 1, 2, 3, 4 and 5. If 7 samples are to be collected, the certified inspector must collect them from subareas 1, 2, 3, 4, 5, 6, and 7.
6. When the certified inspector is ready to move onto a different homogeneous area, repeat steps 2-5 above. If less than 9 samples are to be collected, the certified inspector must label the subareas according to “sampling area 2” in Table 2 from the EPA pink book. The certified inspector should continue to use the other “sampling areas 3 through 18” in Table 2 from the EPA pink book with all the remaining homogeneous areas that need to be sampled.

Table 2. Sampling locations. For each Sampling Area, take the First Sample from the Center of the Subarea Marked 1, take the Second Sample from the Center of the Subarea Marked 2, etc.

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Randomly distributed manner of sampling:

Randomly distributed samples shall be collected from various areas of the building. Inspectors shall consider the size of the building, number of floors and rooms, and the type of systems that need to be sampled in a randomly distributed manner. Samples shall not be collected immediately adjacent to each other. For example, when sampling a homogeneous area of TSI in a multi-story building, the inspector may try to collect samples from different pipe runs on different levels.

Sufficient to determine manner of sampling:

The phrase “in a manner sufficient to determine” means the certified inspector must take an appropriate number of bulk samples (plural) of such material that permits a determination of whether the material is not ACM ([EPA FAQ](#)). This phrase allows for the inspector’s discretion to determine if more than two samples are needed.

Interpreting and Understanding Results

Bulk samples must be analyzed by a laboratory accredited by a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or laboratories that have been rated overall proficient by demonstrating passing scores for at least two of the last three consecutive rounds out of the four annual rounds of the Bulk Asbestos Proficiency Analytical Testing program administered by the American Industrial Hygiene Association (AIHA). Samples must be analyzed by Polarized Light Microscopy.

What is positive stop and when can it be used?

A homogeneous area is considered not to contain ACM only if the results of all samples required to be collected from the area show asbestos in amounts of 1% or less. A homogeneous area shall be determined to contain ACM based on a finding that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1%. This means that if one sample from the homogeneous area is greater than 1% asbestos, the other samples of that homogeneous area do not need to be analyzed (this is called “positive stop”). Regardless of whether the other samples from that homogeneous area are less than 1%, the homogeneous area is considered ACM.

What is point counting and when must it be used?

Sample results that are between trace to 10% asbestos must be either:

1. Considered ACM, or
2. Point counted by a laboratory to determine if the material has greater than 1% asbestos.

Samples containing greater than 1% asbestos are considered ACM. Certified inspectors should use general rounding rules when determining if a sample is greater than 1%. This means that a material with a point count sample result of 1.49% or less, is not regulated by the DAQ.

Sample results that are non-detected do not need to be point counted and are not considered ACM.

Determining if a material is friable

Friable asbestos-containing material means any asbestos-containing material that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. This includes previously non-friable material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure. A certified inspector must touch the material to determine if it is friable.

“Category” of ACM

There are three NESHAP categories of ACM when performing an inspection for a demolition, renovation, or remodel. These are not the AHERA categories of ACM that relate to school AHERA inspections, re-inspections, and management plans.

RACM

Regulated asbestos-containing material (RACM) means friable ACM, Category I non-friable ACM that has become friable; Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading; or Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation project operations.

RACM can include surfacing materials, TSI, and miscellaneous materials. When performing an inspection, the certified inspector should consider why they are doing the inspection and what will happen to the materials after the inspection. For example, if the purpose of the inspection is a pre-demolition inspection, then materials that are currently non-friable, such as asbestos cement products or lath and plaster, have a high probability of becoming friable

during the demolition. In this case, the certified inspector should sample the material as if it was a friable material, with the understanding that it will likely become friable later.

Category I non-friable

Category I non-friable material means asbestos-containing packings, gaskets, resilient floor coverings, or asphalt roofing products containing more than 1% asbestos.

Category II non-friable

Category II non-friable material means any material, excluding Category I non-friable ACM, containing more than 1% asbestos.

Flooring mastic is considered a Category II non-friable material if it is in good condition (EPA ADI #A060002).

The felt backing on sheet vinyl floorings is considered a Category II non-friable material if it is in good condition and will not be disturbed. However, the inspector and building owner must consider what work will take place when deciding if it needs to be removed by a Utah certified asbestos contractor. If the sheet vinyl and backing will be removed during a renovation or remodel, then the removal work must be performed by a Utah certified asbestos contractor. If the building will be demolished and the debris not recycled, then the sheet vinyl and backing can remain in the building during demolition. If the sheet vinyl and/or backing is not in good condition, then it is considered RACM and must be removed by a certified asbestos contractor prior to renovation or demolition activities that would disturb it.

Understanding “Wall System”

A wall system (also called wallboard system) includes the drywall, tape, and joint compound (also called mud) found on walls and ceilings of buildings. Joint compound when used as a skim coat on the entire wallboard system is treated as an add-on material. It is only when joint compound and/or tape is used specifically to cover the joints and nail holes in a wallboard system (not to cover the entire wallboard) that the material samples may be averaged for a “composite” result. The decision to exempt joint compound and/or tape in this circumstance is based on practical enforcement issues and not epidemiological data. It would be difficult at best to find all the joints and nail holes in a wall system that are covered with asbestos-containing material, measure and add the surface areas together to determine if the 160 square foot threshold has been exceeded, and then abate only the regulated material. (EPA ADI #A960014).

Any add-on layer, whether joint compound or decorative texture, that is applied to the entire surface of the wall or ceiling is considered a separate and distinct layer (which is defined by the rule as a surfacing material) and must be analyzed and reported separately.

GLOSSARY OF TERMS USED

ACM (asbestos-containing materials) means any material containing more than 1% asbestos by the method specified in 40 CFR Part 763, Subpart E, Appendix E, Section 1, Polarized Light Microscopy (PLM), or, if the asbestos content is greater than a trace amount of asbestos, but less than 10% asbestos, the asbestos concentration shall be determined by point counting using PLM or any other method acceptable to the director.

AHERA is the Asbestos Hazard Emergency Response Act or 40 CFR 763.

DAQ means Utah Division of Air Quality. If you have questions, we can be reached at asbestos@utah.gov or 801-536-4000.

EPA ADI means an Applicability Determination Index. This is a document that the Environmental Protection Agency (EPA) has released to the public to provide additional clarification about its rules. Many of the EPA ADI documents can be found here: <https://cfpub.epa.gov/adi/>

Friable asbestos-containing material means any asbestos-containing material that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Homogeneous area means an area of surfacing material, TSI, or miscellaneous material that is uniform in color and texture. A homogeneous sampling area contains material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type, or formulation, or material.

NESHAP is the National Emissions Standards for Hazardous Air Pollutants or 40 CFR 61.

This document is meant to help facilitate compliance. This document and the opinions within are subject to change and may be amended in the future. Regulatory compliance is determined on a case-by-case basis.

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