

Helpful Asbestos Links:

*Federal regulations, guidance documents, methods and various articles
by agency and/or topic*

U.S. Environmental Protection Agency (EPA)

EPA asbestos page: <https://www.epa.gov/asbestos>

EPA state contact list

<https://www.epa.gov/asbestos/state-asbestos-contacts>

- *While one hopes that EPA keeps up with the ever-changing staff within state programs, do not be surprised if what is found here may not be current. If you must work with a state agency, do try to identify the manager or senior staffer and try to work with that person versus a recently hired staff member that may not savvy in regulation details.*

EPA asbestos laws & regulations page:

<https://www.epa.gov/asbestos/asbestos-laws-and-regulations>

Main asbestos NESHAP page:

<https://tinyurl.com/yd8nfdyw>

- *This page is of value for those that want to learn more about history and existing statues supporting the regulation. Of real help is a list of “regional contacts” (Regional Asbestos Coordinators, RAC). These individuals are NESHAP experts for each of the 10 EPA regions. Consulting them can be very helpful. At the bottom of the page is a link for the EPA “Applicability Determination Index” (ADI) where determination letters and historical documents can be found.*

EPA asbestos NESHAP (the regulation):

<https://tinyurl.com/mh8hz4u6>

- *This regulation drives most asbestos work in the U.S. **Most important sections:** 61.141 (definitions, a must-read), 61.145 (read sections a and c...b is notifications, just follow state rules/forms) and 61.150 (waste issues)*

Also: Appendix A to the asbestos NESHAP (mandatory): Appendix A to Subpart M of Part 61— Interpretive Rule Governing Roof Removal Operations

<https://tinyurl.com/4e8rbdd8>



EPA “AHERA” (K-12):

<https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol31/pdf/CFR-2011-title40-vol31-part763-subpartE.pdf>

- *While not a NASA issue, many use the concepts in AHERA for their work. The final clearance air sampling issues (as with TEM) are considered by many to be a general industry practice for building/structure re-occupancy after asbestos removal work. For those issues, there are two sections: Response Actions; § 763.90 (i) and the mandatory section of Appendix A (to Subpart E) “Interim TEM Analytical Methods...to Determine Completion of Response Actions”*

EPA mandatory PLM methodology:

<https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol31/pdf/CFR-2011-title40-vol31-part763-subpartE-appE.pdf>

- *This was previously referred to as the “’82 method.” It was incorporated as an appendix to AHERA in 1987. This was written for, as still is, for friable materials. Section 1 (PLM) is mandatory.*

EPA non-mandatory PLM method:

<https://www.nist.gov/system/files/documents/nvlap/EPA-600-R-93-116.pdf>

- *This is referred to as the “’93 method.” This method was supposed to replace the current mandatory method, but the EPA never took those steps for a variety of reasons. But there are many useful methods here that are commonly used, especially for those materials that are nonfriable.*

Asbestos survey suspect material list (useful for all asbestos surveys, not just EPA)

<https://tinyurl.com/528hrt62>

- *A helpful list put together over time for classroom use. Do know, there can be others than what is found here.*

A Guide to Normal Demolition Practices Under the Asbestos NESHAP

<https://tinyurl.com/37tm6mbb>

- *Very helpful in that it describes various allowed demolition practices...and when Category I and II NF materials can become RACM during demolition.*

Applicability of the Asbestos NESHAP to Asbestos Roofing Removal Operations: Guidance Manual

<https://www.epa.gov/sites/default/files/documents/roofing-guidance-manual-199408.pdf>

- *This is a companion document to Appendix A of the asbestos NESHAP governing roof removal operations.*



EPA asbestos NESHAP “no end date” letter for asbestos surveys.

<https://tinyurl.com/28z6pfzj>

- *Also...PLM analysis required and no use of items like MSDS/SDS etc. for NESHAP compliance*

EPA memo about original bans in the 70’s

<https://tinyurl.com/6rxafy48>

- *This one is hard to find and is a much clearer explanation of what occurred at that time than what is currently found on EPA web pages.*

EPA Point Count clarification:

<https://cfpub.epa.gov/adi/pdf/adi-asbestos-c112.pdf>

- *The abstract says it all...*

EPA letter: ASTM 2356 “Pre-construction Survey” allowed for NESHAP compliance

<https://cfpub.epa.gov/adi/pdf/adi-asbestos-a150001.pdf>

- *Do read the details of the letter*

EPA asbestos common questions:

https://www.epa.gov/sites/default/files/documents/asbestosfaqs_0.pdf

- *We’re not exactly sure when this was pulled together (nor does the agency remember...we asked) but it’s likely in the mid 2000’s. Most of this has to do with AHERA issues...but there are some of value that apply to general work.*

The current EPA FAQ page and asbestos:

<https://www.epa.gov/faqs/search/topics/asbestos-315203>

- *You’ll have to do some digging, but this could be helpful. Remember...OSHA does not always have copacetic opinions with EPA.*

Occupational Safety & Health Agency (OSHA)

OSHA asbestos page: <https://www.osha.gov/asbestos>

OSHA general industry:

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1001>

OSHA construction page: <https://www.osha.gov/asbestos/construction>

- *Many useful items and links. Do see the link for “Letters of interpretations.” These are very helpful and they are binding for enforcement purposes.*



OSHA asbestos construction standard:

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1101>

OSHA shipyard employment:

<https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.1001>

- *For those that would be impacted by “shipyard employment” the rules are almost identical to the asbestos construction standard.*

OSHA respiratory protection:

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134>

OSHA asbestos CPL: <https://www.osha.gov/enforcement/directives/cpl-02-02-063>

- *Their “compliance directive”...as in how OSHA can enforce the rules...worth reading and enforceable.*

OSHA and states with designated programs: <https://www.osha.gov/stateplans>

OSHA and “asbestos” (≤ 1%, Varga letter):

<https://www.osha.gov/laws-regs/standardinterpretations/2003-11-24-0>

OSHA and wallboard system removal:

<https://www.osha.gov/laws-regs/standardinterpretations/1997-02-07-0>

- *As with drywall and joint compound. This is always Class II work. Composting is not required, nor allowed by OSHA to alleviate Class II work should the joint compound be ACM.*

OSHA and asbestos PELs – not a health-based standard (2 letters of interest)

<https://www.osha.gov/laws-regs/standardinterpretations/1999-05-13-0>

<https://www.osha.gov/laws-regs/standardinterpretations/1999-07-23>

National Institute for Occupational Safety and Health (NIOSH)

NIOSH 7400...PCM sampling and analysis

<https://www.cdc.gov/niosh/nmam/pdf/7400.pdf>

NIOSH 7402 (TEM corollary to 7400)

<https://www.cdc.gov/niosh/nmam/pdf/7402.pdf>

NIOSH Roadmap: *Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research* [Revised April 2011]



<https://www.cdc.gov/niosh/docs/2011-159/default.html>

****Final clearance air sampling article (starts on page 34):**

<https://hi.healthyindoors.com/i/1489776-hi-december-2022-usa-edition/0?>

***Advocates TEM final clearance and describes the problems with PCM*

ASTM International (ASTM) references

Of importance, ASTM documents are copyrighted. See the ASTM policy at:

<https://www.astm.org/copyright-and-permissions>

E2356 – Asbestos inspections

<https://www.astm.org/e2356-18.html>

D5755 – Microvac dust sampling

<https://www.astm.org/d5755-09r14e01.html>

- *Note: this will be shown as “withdrawn.” This occurred from a staff error when the document was to be updated. We are working to get it back as “active.” One can still use this method, even if withdrawn.*

D6480 – Wipe dust sampling

<https://www.astm.org/d6480-19.html>

Note: there is a specified wipe sampling media to be used...do read the details

E1368 - Standard Practice for Visual Inspection of Asbestos Abatement Projects

<https://www.astm.org/e1368-23.html>

This is a useful document for the evaluation of post-abatement inspections of work areas, and more.

D-7712 - Standard Terminology for Sampling and Analysis of Asbestos

<https://www.astm.org/d7712-18.html>

Articles addressing regulations

No “cut off date” for asbestos surveys (emphasis on OSHA “PACM” issues)

- *Also see the EPA letter link above that formally addresses a “no cut off” date*

<https://tinyurl.com/3buunda5>

EPA asbestos NESHAP and RACM



<https://tinyurl.com/mv53jhub>

Asbestos: Wallboard Compositing and Point Counts, Myths, Facts and Fraud

<https://tinyurl.com/4c8k82zz>

Libby vermiculite: Libby Amphibole Asbestos (LAA)...it's time to use this EPA term in our industry

<https://tinyurl.com/m9memh99>

ASTM International Asbestos Dust Sampling Methods...an overview of these issues

<https://tinyurl.com/2zszyrnx>

Asbestos Testing Labs: What They Provide and What They Are NOT Going to Provide

<https://tinyurl.com/4p9wy3n5>

Vermiculite

The vermiculite issue is really based on that which was mined in Libby, Montana in the 20th century. It is well known to be naturally contaminated with Libby Amphibole Asbestos (LAA). The mine was owned by WR Grace for decades and the product was sold primarily under the trade name of “Zonolite.” The mine ceased operation in 1990. So, any current use of vermiculite is not likely to present the problems we have with currently installed “Libby vermiculite.” Should NASA have locations with vermiculite from installation years-ago or as a packing material, treat it as ACM and removal as OSHA Class I work despite asbestos percentage. A few items of interest...

Office of Inspector General Report: EPA’s Actions Concerning Asbestos-Contaminated Vermiculite in Libby, Montana

<https://www.epaoig.gov/sites/default/files/2015-12/documents/montana.pdf>

****Zonolite (Libby) Attic Insulation Exposure Studies**

<https://tinyurl.com/3nc4unkb>

***The most important paper published on exposures...they can be geometric. The “s/cc” values are from NIOSH 7402 (TEM) data. The reported asbestos fibers would be in the same sizes as would be found by PCM. While it is likely that vermiculite on the market today and for future use does not asbestos as did the Libby deposit, should installations of vermiculite on the agency’s properties be found, treat as ACM unless a qualified lab has performed analysis. Because of the exposure potential, this should be a detect/non-detect matter, not judged by >1%.*

CDC paper: Vermiculite, Respiratory Disease, and Asbestos Exposure in Libby, Montana: Update of a Cohort Mortality Study

<https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.9481>



Lessons from Libby: Understanding the impact of asbestos exposure

<https://www.openaccessgovernment.org/article/lessons-from-libby-understanding-the-impact-of-asbestos-exposure/171870/>

- *Of interest here...the issues of **autoimmune disease and asbestos** were found with the exposed to LAA. Much work has progressed on this issue and from other authors. Dr. Pfau is universally respected. Also see the work of Dr. Brad Black.*

Assessment of Autoimmune Responses Associated with Asbestos Exposure in Libby, Montana, USA

<https://pubmed.ncbi.nlm.nih.gov/15626643/>

Other asbestos references

From CDC: Asbestos bibliography: <https://stacks.cdc.gov/view/cdc/5171>

- *This was published in 1997, but it could be helpful for historical references*

EPA research ('91) Evaluation of Two Cleaning Methods for Removal of Asbestos Fibers from Carpet

<https://tinyurl.com/yc5y3ef3>

- *Of importance here, total asbestos removal is not possible. This is well known in industry. When in doubt, throw it out. This would apply to all "soft goods" that are not truly cleanable.*

EPA research ('91): Asbestos Fiber Re-entrainment During Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet

<https://tinyurl.com/4zzpva84>

Asbestos Exposure During and Following Cable Installation In the Vicinity of Fireproofing ('93)

<https://tinyurl.com/5a7vueyk>

Exposures here can be significant

Observations of Settled Asbestos Dust in Buildings ('96)

<https://tinyurl.com/3d76auwj>

Quantitative Evaluation of HEPA Filtration Systems At Asbestos Abatement Sites

<https://tinyurl.com/4c6xcr6t>

- *This is important work to show that poorly made "negative air machines" can leak, and badly. HEPA vacuums too. None of the machines in the article are currently in production, but an important point...HEPA filters are tested and rated...the machines they are placed within are most often not. There is no published data to know which modern negative air machines or HEPA vacuums are problematic.*
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Highly recommended...revised and published by The Environmental Information Association (EIA) available in hard copy and PDF

Managing Asbestos in Buildings: A Guide for Owners and Managers

A complete revision to the United States Environmental Protection Agency's 1985 document "Guidance for Controlling Asbestos-Containing Materials in Buildings" (EPA 560/5-85-024) Known as the Purple Book. This is the preeminent guide for those that own or manage buildings that contain asbestos-containing materials.

<https://www.eia-usa.org/eias-expert-publications/>

