

# Asbestos



Asbestos can be described as a super mineral. Its remarkable physical properties have contributed to its use in a number of building products. However, its amazing properties are diminished by its health risk. Airborne fibers of a certain size (not too big and not too small) can lodge in the

lungs and slowly cause a number of different diseases over time. Diseases can occur in 3-5 years from very severe exposures although it is much more common for symptoms of the disease to occur over 15 or more years from the exposure. The

Short List of Building Products Potentially Containing Asbestos: Sprayed-on insulation and rustproofing for steel beams in large buildings; heat insulation for pipes, furnaces, boilers and ductwork; loose fill, blown and sprayed wall or ceiling insulation; soundproofing; ceiling tiles; asphalt floor tiles; the backing on vinyl sheet flooring; various adhesives for carpet, tile and general construction; wallboard and wallboard patching compounds; caulks, spackles and putties; heat resistant adhesive compounds such as furnace cement; concrete and Portland cement products (including cement wallboard); chalkboards; cement fresh water and drain pipes; exterior siding on homes; fire doors; roofing shingles; paints and texture coatings on walls and ceilings; plaster; wiring insulation and fabrics.

## **Asbestos can generally categorized into the following types:**

- High risk materials that are readily identifiable based on appearance without testing (e.g. duct insulation, pipe insulation, heat/light shielding)
- Potential high risk materials that should be tested (pipe insulation installed after the early 1960s)
- Potential low to medium risk materials that are probably asbestos (e.g. cement shingles, 9x9 floor tile)
- Potential asbestos materials that can be low to high risk depending on use and circumstances (e.g. sash window glazing)

- Asbestos vermiculite containing materials that can be low to high risk depending on use and circumstances
- Low risk materials that may contain asbestos (foundation window putty, roof flashing, door caulk)

## **Repair, Encapsulate, Remove or Leave it Alone?**

How asbestos is managed in the home depends on the material involved, the condition, disturbance or risk of disturbance and comfort level of the homeowner. Fortunately there are very few forms of asbestos found in homes that require some action even when in good condition. How asbestos should be managed is specific to the material type and situation. Many forms of asbestos are best left in place until a renovation requires removal. You may have heard that it is safer to leave asbestos in place because sometimes asbestos air levels are higher after abatement. This erroneous belief originated from early USEPA studies when asbestos abatement was in its infancy. This may have been a result of the background levels from installation or previous improper removals rather than the removal being studied. Abatement methods are generally well-established and safe. Even when initial air clearance sampling fails, it is not difficult with additional cleaning and air-scrubbing to get airborne levels back to within safe limits. Ultimately, the decision to remove asbestos is driven by health concerns associated with the building residents or workers that will potentially be contacting the asbestos. In addition, sometimes asbestos removal becomes a peace-of-mind decision.

## **Vermiculite / Zonolite**



The concern with asbestos in vermiculite used in construction in the 1960s through the 1980s is a relatively recent, developing into an issue approximately 20 years ago. The basic problem with vermiculite asbestos (tremolite and actinolite) is that it is different than the types of asbestos that has been regulated since the 1970s. Existing regulations pertain to three other types of asbestos that, if present in a concentration of >1%, are regulated as an asbestos-containing material. However, many believe that tremolite and actinolite

are much more dangerous forms of asbestos that should be regulated more stringently. Further complicating matters is the possibility suggested by some studies that the tremolite and actinolite asbestos is only an “indicator contaminant” and that the health risk is associated with or increased with several co-existing non-asbestos and quasi-asbestos minerals including winchite, reibeckite and/or richterite (“quasi-asbestiforms”).

Guidance for best practices for homeowners can be found at <http://www.epa.gov/asbestos/pubs/verm.html>. It is generally recommended that the vermiculite insulation be appropriately covered and left in place undisturbed. Removal is generally unnecessary unless required for renovation or demolition. Since vermiculite asbestos is often unregulated, opinions vary regarding proper safeguards and controls for homeowners and contractors working in attics. I am currently in discussions with installers to develop an understanding of their concerns and appropriate controls to allow the safe installation of additional insulation.



Many attic insulation installers are understandably concerned about working around vermiculite asbestos. Many simply refuse to work in an attic where vermiculite asbestos is present, regardless of whether it is present in a regulated concentration. However, there is no reason that additional attic insulation cannot be installed over asbestos

vermiculite with an unregulated concentration of <1% as long as some appropriate precautions are followed, especially since the asbestos present is often in the fine settled fraction rather than the coarse fraction of insulation at the surface. The lack of formal regulation gives you the opportunity for creative and flexible site-specific safety controls.

The following is recommendations pertaining to vermiculite asbestos insulation:

- For "inactive" attics where entry is very infrequent, it is recommended that Tyvek or an equivalent barrier be applied on top of the vermiculite insulation and additional insulation added above.
- For "active" attics where entry is fairly common due to household storage practices or if significant renovation activity is to be performed by contractors, it is recommended that a fogging and encapsulating spray sealant be applied to "lock-down" any fibers not trapped within the insulation. A barrier and additional insulation should then be applied. Visible dust accumulations should be cleaned from floorboards and other settling surfaces.

The mere presence of vermiculite insulation in an attic is not believed to present an unreasonable health risk. It is generally understood that the asbestos is generally settled in the finer insulation near the bottom. Incidental contact with the coarser surface insulation does not necessarily cause an unsafe exposure. Additional surface sampling can be conducted to assess whether any asbestos is present near the surface layer of the insulation that could be affected by attic installations.

If you are acquiring a home with vermiculite asbestos insulation, an appropriate devaluation of the building should be recognized due to the potential for a release in the event of catastrophic incident (e.g. roof collapse) and the potential abatement cost for removal prior to a major renovation such as a building addition or for future demolition, particularly if vermiculite asbestos becomes regulated at some time in the future at a level <1%. In the event of ceiling leakage of insulation, such as may occur during ceiling fan installation, the insulation/dust should be cleaned using wet wiping and wastes disposed of in a sealed plastic bag. A homeowner should not be unduly alarmed from a one-time exposure event.

There is understandable concern about the safety of the air in the attic from the historical vermiculite installation process. If the insulation was poured in a manner that released large amounts of asbestos fiber, residual asbestos fibers could remain in the dust and air. Tri-Tech can perform additional dust and air sampling to satisfy these concerns. These results can be applied to the existing EPA standards for dust and air. However, it may be prudent to apply a tenfold reduction in the standards to accommodate the additional risk factor from the more hazardous form of asbestos in vermiculite. Surface testing of the specific areas to be disturbed can also be

performed to differentiate surface concentrations from the amounts safely buried near the bottom of the insulation layer.

Obviously, additional vermiculite asbestos controls and testing adds to the costs and lengthens the return on your investment. A successful, safe and cost effective attic insulation project will require good communication and coordination between the homeowner, the installing contractor and an asbestos building hygienist.

## **Asbestos on Ductwork**



In homes constructed in the 1920s through the 1950s sometimes had an asbestos fabric wrap insulation on the outside of sheet metal supply ducts. Sometimes this was added extensively to all the ducts (including inside the walls) and sometimes it was just added near perimeter walls or just on the duct elbows. Sometimes the ducts were uninsulated but the seams were sealed with an asbestos tape. Sometimes an asbestos shield was only installed directly over the top of the furnace on the main supply duct. Less common is asbestos insulation or asbestos board on the return air ducts. Occasionally, an asbestos board was affixed between the basement joists to form the

return air ducts. On rare occasions, an asbestos insulation was used inside the return air ducts near the perimeter wall to insulate the return air by forming a thermal barrier with the foundation. Unfortunately this hidden use of asbestos is hard to detect! Detection generally requires removing the return air vent covers, which is typically a destructive affair as the vents are typically heavily painted and removal causes damage to the adjacent wall.

Over the years, some homeowners may have removed most of the insulation but may have left it in less visible areas.

Obviously, having duct cleaning performed if there is any asbestos on the outside or inside your ducts is a very bad idea! Fortunately, at least some duct cleaners in my experience are conscientious enough that they will warn a homeowner of the

suspected presence of asbestos and refuse to clean ducts where they think asbestos may be present.

Keep in the mind that the visible absence of duct insulation in the basement of an older home is not sufficient evidence that insulation is not present on ducts inside the walls or inside the ducts themselves! A trained asbestos inspector can inspect your ducts for evidence of residual or hidden asbestos duct insulation to provide assurances that it is safe to have your ducts cleaned.

If asbestos is found on your ducts, should it be abated (removed) before your ducts are cleaned? Actually, probably NOT! The only realistic and practical solution is to have the ducts removed in their entirety by an asbestos abatement contractor and then have new ducts installed. The only exception is if there is just a residual amount of insulation remaining or just the seams are taped. Do NOT waste money having an abatement contractor strip insulation from ductwork!

## Floor Tiles



"Resilient flooring" is defined as materials softer than the non-resilient flooring materials such as stone, slate, brick, ceramic tile. Resilient flooring materials include organic types of flooring: asphalt based floor tiles, rubber floor tiles, vinyl-asbestos floor tiles, linoleum, and plastic tile.

Armstrong floor tile - Rosato © Daniel

Friedman In 1920 asphalt roofing manufacturers, who had been using asphalt and fiber binders to make asphalt roofing shingles for some time, tried to develop a rigid product that could be a substitute for (more costly) slate roofing. The material did not perform acceptably as a roof covering, but it led to the development of asphalt floor tiles.

Many older floor tiles contained asbestos. It is possible to match a size and pattern to a manufacturer to help assist in determining if asbestos was utilized, but this can be difficult. A sample can be taken and reviewed at a lab which is the best way to assess the risk.

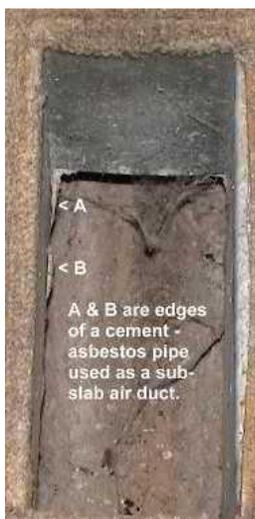
## Pipe Insulation:



Pipe insulation or pipe covering remains one of the most hazardous asbestos products found in homes and buildings. It was often used to control the temperature of hot pipes typically with steam or hot water heating systems. Pipe covering that is found today is usually old, crumbly and therefore very hazardous. Air

Cell pipe insulation was a very common type. Recommend testing to properly assess the risk.

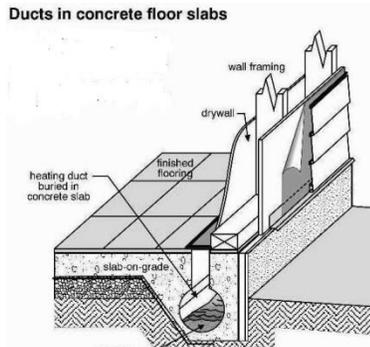
## Transite Piping:



Transite pipe, which contains significant percentage of asbestos fibers, was often used for heating ducts. Transite pipe used as HVAC ducts or air ducts for heating and air conditioning was often installed buried in a concrete floor slab - methods that placed the asbestos-cement transite piping below or in a building floor slab. While it's cementitious, transite ducts or even transite pipe used for heating flue vents is a potential asbestos hazard in buildings. Transite pipe typically contains about 15% to 25% asbestos fibers, typically fibrous chrysotile asbestos. A careful asbestos testing lab may report both fibrous and fragmented asbestos which can occur in

still smaller pieces (thus more easily remaining airborne and increasing human

exposure to asbestos). The balance will be cement and possibly other fibers or binders. If transite pipe is damaged or is cut mechanically (such as by using power equipment), friable, airborne asbestos fibers may be generated - a health and costly cleanup concern.



## Summary:

Asbestos was utilized in many building products with the more common uses listed above. Client's concerns in regard to asbestos vary greatly. Unfortunately there is not one right answer. My goal in performing the typically pre purchase inspection is to point out items that could contain asbestos, educate my client as to the concerns and provide additional testing if desired by the client.

When disturbing building materials during a building project it is important to take precautions. This includes testing the material that is being disturbed, sealing and venting the area to avoid additional contamination of the building and protecting the work persons and occupants.

## Asbestos Remediation Firms:

Peak Environment

<http://www.peakenvironment.com>

888-670-7325

BBEK Environmental

<http://bbekenvironmental.com>

248-674-1600

Environmental Maintenance Engineers

<http://www.teameme.com/>

313-791-2600

State of Michigan Asbestos Program for Certified Abatement Firms

[http://www.dleg.state.mi.us/asbestos\\_program/sr\\_contractor.asp](http://www.dleg.state.mi.us/asbestos_program/sr_contractor.asp)

## **Asbestos Testing Laboratories:**

Absolute Labs

<http://www.absolutelabs.net/>

877-343-5227

IMS Laboratory

<http://imslaboratory.com/>

877-665-3373