The Who, What, Why, Where, When, and How of Asbestos Demolitions and Renovations

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ENVIROSCHOOL

- **What** is asbestos?
- **Why** should I care about asbestos?
- **Where** will I find asbestos?
- **Who** is regulated?
- **What** is regulated?
- **When** is notification required?
- **How** do I handle, transport, and dispose of asbestos?

What is Asbestos?

What is Asbestos?

- It is a fibrous, naturally occurring mineral that is mined from the earth
- It can be found throughout the world
- Asbestos Material – asbestos, or any material or product which contains more than 1% asbestos

What is Asbestos?

2 Groups

1) Serpentine
2) Amphibole

- What is the difference?
  - Their crystalline structure
    - Serpentine = sheet or layered structure
    - Amphibole = chain-like structure, crystal structure

What is Asbestos?

Type of Serpentine

- Chrysotile* (white asbestos)

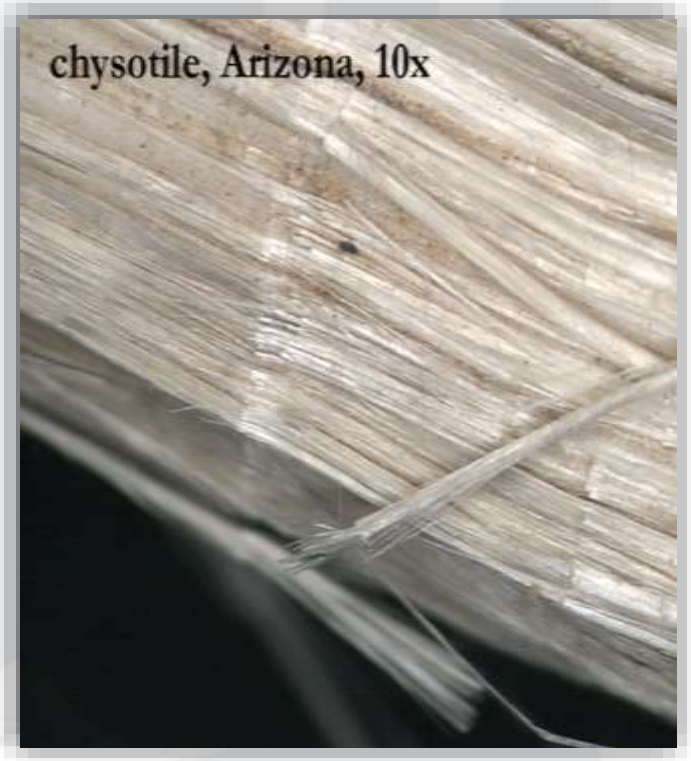
Types of Amphibole

1) Amosite* (brown asbestos)
2) Crocidolite* (blue asbestos)
3) Anthophyllite (rare)
4) Tremolite
5) Actinolite

*most common varieties

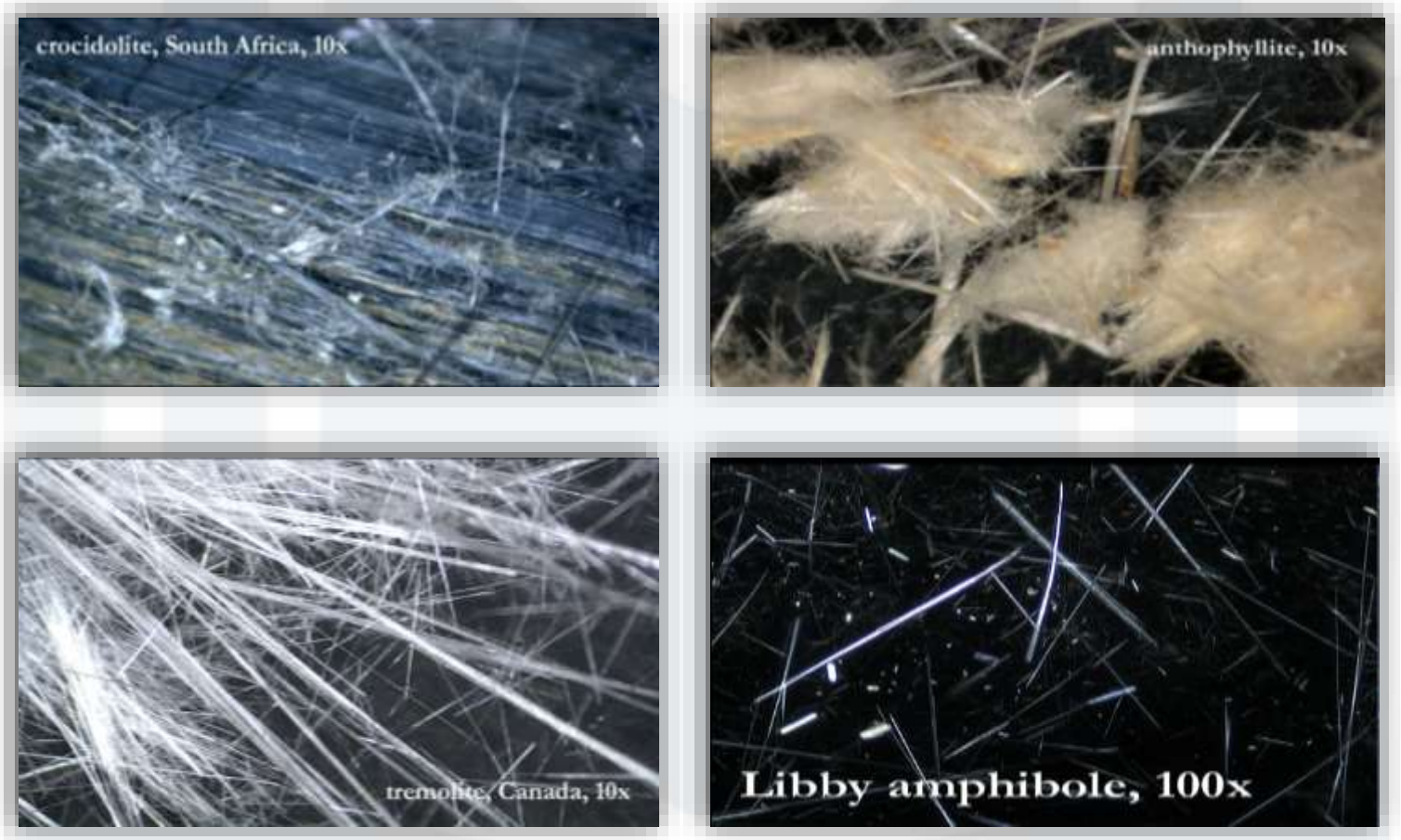
What is Asbestos?

Chrysotile



Photos from Fiberquant Analytical Services http://www.fiberquant.com/photosasbestosfibers.htm

What is Asbestos?



Photos from Fiberquant Analytical Services http://www.fiberquant.com/photosasbestosfibers.htm

Why Should I Care?

Why Should I Care?

- Studies & epidemiologic investigations have shown that inhalation of asbestos fibers may lead to increased risk of developing 1 or more diseases.
- Factors: amount of exposure; lifestyle; individual susceptibility
- Routes of entry into the body: inhalation and ingestion*
- Latency period from 10 – 40 years

Although ingestion is a route of exposure, it would take a LOT , and the long term health risk is " Increased risk of developing benign intestinal polyps"

Why Should I Care?

Asbestos Related Diseases

1. Asbestosis
2. Lung Cancer
3. Mesothelioma

Why Should I Care?

Asbestosis

- Fibrotic scarring of the lungs
- Reduces capacity of lungs
- Common symptom is shortness of breath
- Typical latency period is 15-30 years
- Based on a dose-response relationship

Latency period is the amount of time from the moment of exposure to the start of symptoms.

Dose response relationship means the higher the dose, the more severe the response.

Why Should I Care?

Lung Cancer

- Asbestos is only one of the many causes lung cancer
- Estimated increased risk from smoking is 10x
- Estimated increase risk from asbestos is 5x
- Combine (smoking & exposure to asbestos) increased risk is over 50x more likely to get lung cancer than non-smoker that doesn't work with asbestos
- Typical latency period is 20-30 years

Latency period is the amount of time from the moment of exposure to the start of symptoms.

Why Should I Care?

Mesothelioma

- Cancer of the chest cavity lining (mesothelium)
- Can also occur in the lining of the abdominal cavity (peritoneal)
- Spreads rapidly and is always fatal
- Rarest of the asbestos related diseases
- Doesn't appear to have a does-response relationship or increased risk for smokers
- Typical latency period is 20-40 years

Latency period is the amount of time from the moment of exposure to the start of symptoms.

Why Should I Care?

Because it's regulated

Asbestos was one of the first hazardous air pollutants regulated under the air toxics program.

Why Should I Care?

- EPA Regulations
  - AHERA
  - NESHAP
- LDEQ Regulations
  - Title 33, Part III, Chapter 27
  - Title 33, Part III, Chapter 51, Subchapter M

Why Should I Care?

- EPA Regulations
  - AHERA - **Asbestos Hazard Emergency Response Act**
    - Regulates asbestos in schools
  - Asbestos NESHAP - Asbestos National Emission Standards for Hazardous Air Pollutants
    - Milling, Manufacturing, and Fabricating
    - Renovation and Demolition of Buildings
    - Waste Disposal and Transportation

Why Should I Care?

- LDEQ Regulations
  - Title 33, Part III, Chapter 27 Asbestos-Containing Materials (ACM) in Schools and State Buildings
  - Title 33, Part III, Chapter 51, Subchapter M Emission Standard for Asbestos
    - 5151.F - Emission Standard for Demolition, Renovation, Asbestos-Contaminated Debris Activities, Response Actions and Major Fiber Release Episodes
      - Applicability, notification requirements, and emission control requirements
    - 5151.J – Waste Disposal for Manufacturing, Fabricating, Demolitions, Renovations, Major Fiber Release Episodes, Response Actions and Spraying
      - Transporting and disposal
    - 5151.P - Training and Accreditation Requirements

Where will I find asbestos?

Where will I find asbestos?

- Asbestos was used so prevalently because of the characteristics and properties:
  - Extremely long, thin flexible fibers that can be woven
  - High tensile strength
  - Resistant to chemical & thermal degradation
  - High electrical resistance
  - Fire resistant
  - Good insulator

Where will I find asbestos?

Categories of asbestos-containing building materials (ACBM)

EPA identifies 3 categories of ACBM

1) **Thermal system insulation (TSI)-**insulation used to inhibit heat transfer or prevent condensation on pipes, boilers, tanks, ducts, & various other components of hot or cold water systems and HVAC systems.
2) **Surfacing material-** ACM sprayed or troweled on surfaces for acoustical, decorative, or fireproofing purposes.
3) **Miscellaneous material-** other, largely nonfriable materials such as floor tile; ceiling tile; roofing felt; concrete pipe; outdoor siding; fabrics

Where will I find asbestos?

Asbestos is used in over 3,000 commercial products.

- Cement siding
- Cement wallboard
- Pipeline wrap
- Roofing felt
- Roof coatings
- Roofing shingles
- Asphalt floor tile
- Vinyl sheet flooring
- Vinyl floor tile
- Floor backing
- Mastic/Adhesives
- Acoustical plaster
- Decorative plaster
- Textured paints/coatings
- Ceiling Tiles
- Spray Applied Insulation
- Fireproofing materials
- Thermal taping compounds
- Laboratory hoods; table tops; gloves
- Fire blanks; curtains; doors
- Elevator equipment panels & brake shoes
- HVAC duct insulation

Where will I find asbestos?

Asbestos is used in over 3,000 commercial products.

- Boiler insulation
- Ductwork flexible fabric connectors
- Cooling towers
- Electric panel partitions
- Electric wiring insulation
- Cement shingle
- Base flashing
- Caulking/Putties
- Cement pipe
- Non-roofing coatings
- Gaskets
- Wallboard
- Joint compounds
- Spackling compounds
- Automatic transmission components
- Clutch facings
- Friction materials
- Disk brake pads
- Drum brake linings
- Brake blocks
- Vinyl wall coverings

Who is regulated?

Who is regulated?

Facility

- any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, and residential buildings having greater than four dwelling units); any ship; and any active or inactive waste disposal, or *asbestos contaminated debris (ACD)* site. Residential buildings that have four or fewer dwelling units are exempt from the provisions of this Subchapter, except those residential structures that are intentionally demolished or renovated as part of a commercial or public project, such as urban renewal or highway right-of-way projects and those that are intentionally burned. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this Subchapter is not excluded, regardless of its current use or function.

Who is regulated?

Facilities

- Institutional
- Commercial
- Public
- Industrial
- Residential having greater than four dwelling units
- Installations
- Ships
- Asbestos Contaminated Debris (ACD) sites

Who is regulated?

- Institutional facility - a facility operated by an organization having a governmental, educational, civic, or religious purpose, such as a school, hospital, prison, military installation, church, or other similar establishment

- Installation - any building or structure or any group of buildings or structures at a single demolition or renovation site that are part of a planned project that are under the control of the same owner or operator (or owner or operator under common control).

- ACD (Asbestos Contaminated Debris) site – site containing demolition or renovation debris that contains regulated asbestos-contaminated material

Who is not regulated?

- Residential buildings that have four or fewer dwelling units are exempt
  - Except…
    - Residential structures that are intentionally demolished or renovated as part of a commercial or public project, such as urban renewal or highway right-of-way projects are installations and are regulated.
    - Residential structures that are intentionally burned, such as the institutional use of fire fighting practice, are regulated.
    - Buildings or structures or any group of buildings or structures at a single demolition or renovation site that are part of a planned project that are under the control of the same owner or operator (or owner or operator under common control) are regulated. Another example of an installation. (A single demolition site can be a block).
    - Any structure, installation or building that was previously subject to the regulations is not excluded, regardless of its current use or function.
    - A single home which is converted into a non-residential structure is also regulated.
    - A single home in a residential co-operative where the homes are not individually owned is regulated. Apartments or Housing Authority

Who is not regulated?

- Debris from buildings that are unintentionally burned. An accidental fire is not a demolition or renovation.
  - Only the debris is not regulated. Any remaining portion of the building that is subsequently demolished or renovated is regulated.
  - Intentional fires are considered demolition by fire and are regulated.
- Building debris from buildings destroyed by natural disaster. According to EPA, building debris on the ground from structures destroyed by natural forces, as opposed to human activities, is not subject to the Asbestos NESHAP.
  - Only the debris on the ground is not regulated. Any remaining portion of the building that is subsequently demolished or renovated is regulated.

Who else is regulated?

People who work with regulated asbestos must be accredited

- There are 5 asbestos accreditation disciplines
  - Inspectors
  - Management Planners
  - Abatement Project Designers
  - Abatement Contractor Supervisors
    - Air monitors are required to be accredited as a Contractor/Supervisor
  - Abatement Workers
- All disciplines require training from a Recognized Asbestos Training Provider (RATP).
  - A list of RATPs can be found at https://internet.deq.louisiana.gov/portal/divisions/asbestos/asbestos-training-providers
  - Annual refreshers are required to keep continuous accreditation.
  - Demolitions and renovations disturbing greater than 3 square or 3 linear feet of regulated material (SSSD) must be designed, supervised and conducted by accredited persons
- Once training is complete, proof of training, along with an application and a fee, must be submitted to LDEQ to receive the accreditation.
  - Once the application is processed, a certificate of accreditation is issued. You are accredited upon receipt of the certificate of accreditation.
  - Training alone is not enough. You must be accredited.

What is regulated?

What is regulated?

Any demolition, or renovation, response action or Asbestos Contaminated Debris Activity (ACDA) that disturbs *Regulated Asbestos Containing Material (RACM)* if the combined amount of **RACM** to be stripped, removed, dislodged, cut, drilled, or similarly disturbed is:

- at least 60 linear feet on pipes;
- at least 64 square feet on other facility components; or
- at least 27 cubic feet of facility components where the length or area could not be measured previously.

These are called thresholds.

What is regulated?

Demolition - the permanent wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

Renovation - altering a facility or one or more facility components in any way, including the washing, stripping, or removal of *RACM* from a facility component. Operations in which load-supporting structural members are wrecked or taken out are *demolitions*

Response action - a method, including actions during demolition or renovation that provides for removal, encapsulation, enclosure, repair, and operations and maintenance activities, that protects human health and the environment from *RACM*.

ACDA - the handling and/or disposal of *asbestos-contaminated debris* as *RACM*.

What is regulated?

Whether it's RACM or not depends on friability.

- Asbestos Containing Material (ACM) is broken up into 3 categories when talking about friability
  - *Friable Asbestos Material* - any material containing more than 1 percent asbestos as determined by using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, polarized light microscopy that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. (TSI, surfacing material)
  - *Category I Nonfriable asbestos containing material (ACM)* - asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined by using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, polarized light microscopy that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure.
  - *Category II Nonfriable asbestos containing material (ACM)* - any material, excluding *category I nonfriable ACM*, containing more than 1 percent asbestos as determined by using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, polarized light microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

What is regulated?

Regulated Asbestos Containing Material (RACM)

- *friable asbestos material*;
- *category I and II nonfriable ACM* that has become friable such as asbestos-cement material that is not removed from a facility prior to demolition;
- *category I and II nonfriable ACM* that has a high probability of becoming or has become crumbled, pulverized, ground, sanded, cut, abraded, or reduced to powder by the forces that have acted or are expected to act on the material in the course of demolition or renovation operations; or
- *resilient floor covering or the asbestos-containing mastic* used to attach it to the floor surface that is scraped, sanded, abraded, bead blasted, cut, ground, crumbled, pulverized, or reduced to powder by any means, either hand or mechanical equipment.

What is regulated?

How do you know if RACM is present?

- Regulated facilities must be inspected by an accredited inspector prior to a demolition, renovation, or response action. An accredited inspector must thoroughly inspect the affected facility or part of the facility where the activity will occur for the presence of asbestos, including category I and category II nonfriable ACM.
- Or you can skip the inspection and assume that *RACM* is present, and treat all suspect material as RACM.

What is regulated?

Inspections

- The inspection must be made be an accredited asbestos inspector.
  - For each area of the building that will be affected the inspector must:
    - Visually inspect to identify suspected ACM
    - **Touch all suspected ACM to determine friability**
    - Identify all homogeneous areas of friable and non-friable suspected ACM
    - Assume that some or all of the homogeneous areas are ACM, or for each homogeneous area that is not assumed to be ACM, collect and submit bulk samples for analysis
      - Samples must be analyzed for asbestos using an accredited laboratory
    - If suspect material is assumed to be ACM, or if sample analysis proves that it is ACM, the inspector must assess the condition of the material to determine if it is friable, or has a high probability of becoming friable during the demolition, renovation, or response action
      - ACM that is friable or has a high probability of becoming friable, as determined by the accredited inspector, is RACM.

What is regulated?

NOTE:

You can either inspect or assume and treat all suspect material as *RACM*. You cannot assume that it is ACM that is non-friable. Only an accredited inspector can determine friability!

What is regulated?

- If a facility is demolished or renovated prior to an inspection or notification, or if the facility being demolished is structurally unsound and in danger of imminent collapse, and therefore cannot be inspected for ACM prior to demolition, then **all debris** at the site is categorized as *asbestos-contaminated debris (ACD)*, and shall be handled and disposed of as RACM.
  - You cannot take samples from the debris pile!
  - You cannot segregate any materials from the debris pile!

ACD Site

ACD Site

ACD Site

ACD Site

ACD Site

When is notification required?

When is notification required?

Notification is required if:

- The amount of RACM to be removed during a demolition, renovation, response action, or ACDA is at or above the thresholds and an Asbestos Disposal Verification Form (ADVF) is required
  - An ADVF is a shipping document required for disposal of RACM from a demolition, renovation, response action or *ACD* activity, used to track and substantiate the disposition of asbestos-containing waste material to a Recognized Asbestos Landfill (RAL)
  - An AAC-2(a) form must be submitted to the LDEQ Office of Environmental Services to receive an ADVF.
- A structure is being <u>demolished</u> but an ADVF is not required, because either no ACM is present, ACM is present but is not and will not become RACM, or ACM that is or will become RACM is present but is below thresholds
  - This is referred to as a Negative Declaration.
  - An AAC-2(b) Negative Declaration form must be submitted to the LDEQ Office of Environmental Services for <u>ALL</u> demolitions. You must include the inspection report.
  - Negative Declarations are not required for renovations.
- Resilient floor covering will be removed without rendering it RACM
  - Notification must be made to the LDEQ regional office by e-mail

When is notification required?

Postmark or Deliver:

- At least 10 working days before asbestos activities begin for a demolition, renovation, response action, or ACDA where RACM is at or above threshold (AAC-2a)
- At least 5 working days before a demolition begins where RACM is below threshold (AAC-2b)
- As early as possible before, but not later than the following working day, when the facility is being demolished under an order issued by a state or local government agency because the facility is structurally unsound and in danger of imminent collapse
- In no case later than four hours after learning of an emergency incident, notify by phone, email, or voice mail the Office of Environmental Services and LDEQ regional office responsible for inspecting the project site
    - Within five working days after the emergency notification is made, an AAC-2 form shall be submitted to the Office of Environmental Services
- Notify the LDEQ regional office by email three days prior to the start of the removal of *resilient floor covering* if removing without rendering it RACM

When is notification required?

New Start Date

- If the activity will begin after the start date contained in the original AAC-2, notice of a new start date must be submitted
  - notify the LDEQ regional office responsible for inspecting the project site of the new start date by email as soon as possible before the original start date
  - provide the Office of Environmental Services with a revised AAC-2 of the new start date as soon as possible before, and no later than, the original start date.
- If the activity will begin on a date earlier than the original start date, submit a revised AAC-2 with the new start date to the Office of Environmental Services

When is notification required?

Completion

- Within 24 hours after the demolition, renovation, response action, or ACDA has ended and the work area has been cleaned, send a notice of completion to the LDEQ regional office responsible for inspecting the project site by email
  - Schools and state buildings require air clearance at the conclusion of any regulated action greater that 3 linear or 3 square feet. The project is not complete until the work area has been cleaned and air clearance has passed.
    - In the case of a demolition of a school or state building where occupants will not reenter the building, clearance sampling is not required.

When is notification required?

E-mail addresses

Office of Environmental Services

DEQ.ASBESTOSNOTIFICATIONS@LA.gov

Regional

AROasbestos_admin@LA.gov

CROasbestos_admin@LA.gov

NEROasbestos_admin@LA.gov

NWROasbestos_admin@LA.gov

SEROasbestos_admin@LA.gov

SWROasbestos_admin@LA.gov

How do I handle, transport, and dispose of asbestos?

How do I handle asbestos?

- If the amount of RACM is at or above threshold, all RACM must be removed before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal.
- ACM need not be removed before demolition if:
  - it is category I nonfriable ACM that is not in poor condition and has a low probability that it will become RACM;
  - it is on a facility component that is encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition;
  - it was not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed. If not removed for safety reasons, the exposed RACM and any ACD shall be treated as ACWM and adequately wet at all times until disposed of; and
  - it is category II nonfriable ACM and the probability is low that the materials will become RACM.

How do I handle asbestos?

- If greater than **3 square or 3 linear feet** of RACM will be disturbed during the demolition, renovation, response action, or ACDA you must hire the appropriate people to conduct the work.
  - A person contracted to perform a demolition, renovation, or response action which disturbs RACM or conducts an ACDA shall comply with requirements of the Louisiana State Licensing Board for Contractors to perform asbestos abatement.
  - No demolition, renovation, or response action activity that disturbs RACM or an ACDA shall be conducted unless at least one accredited asbestos abatement contractor/supervisor is physically present
  - All asbestos abatement workers who are performing demolition, renovation, or response action activity that disturbs more than 3 square or 3 linear feet of RACM or ACDA shall be accredited, and supervised by an accredited asbestos contractor/supervisor.
  - If air clearance is required, the air monitor must be accredited as an asbestos abatement contractor/supervisor

How do I handle asbestos?

On the job site

- An accredited asbestos contractor/supervisor must be physically present at all times during activity
- The asbestos contractor/supervisor and workers directly involved in the demo/reno must have proof of accreditation (LDEQ issued card or accreditation certificate and photo ID)
- RACM and any ACD must be adequately wetted prior to and during the demo/reno, and during staging and loading
- Emission control methods must prevent visible emissions (work area controls such as containment, neg air, etc)
- For facilities demolished where RACM is not removed prior to demo, care must be taken to avoid crushing the ACM, and ACM must be adequately wet at all times. (Don't roll over the pile with heavy equipment!)


VOLVO
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EC140

How do I handle asbestos?

On the job site cont.

- RACM must be adequately wet, and contained in a leak-tight, clear transparent wrapping. Can be individual bags or a lined dumpster.
- Asbestos warning labels must be placed on the leak-tight, clear transparent wrapping
- Generator information labels must be placed on the leak-tight, clear transparent wrapping prior to transporting off-site
- Store all wrapped and contained asbestos-containing waste material (ACWM) in a labeled, secured area, away from the public where it will not be subject to disturbance or tampering, until it can be transported off-site
- The ADVF must be kept at the site during demolition, renovation, response action or ACDA
  - ADVFs are only valid for 90 days
  - Any unused ADVFs must be returned to the OES by the owner/operator within 30 days after expiration
- The work area must be cleaned upon completion

How do I handle asbestos?

Cleaning the work area:

- Remove all loose debris in and adjacent to the immediate work area whether or not it is RACM; and
- Encapsulate all remaining RACM in the immediate work area when feasible with a nonwhite pigmented (opaque) encapsulant which is compatible with the contacted surface.
- After completion of a demolition activity, where no load-supporting structural member of a facility is left, no asbestos-containing floor covering or asbestos-containing mastic shall remain on surfaces where the material has the potential to become RACM.

How do I transport asbestos?

- Transportation
  - Asbestos containing waste material* (ACWM, not just RACM) must be transported by an authorized Solid Waste Transporter
  - Vehicles used in transporting ACWM must be marked appropriately during loading and unloading
  - If ACWM is transported in an open bodied truck, a tarp must be used to cover the load when in motion
    - If RACM is wrapped (not bagged) in clear leak-tight wrapping, the burrito wrap technique shall be used if it is transported in a open bodied truck.
- RACM must be transported with an ADVF

** ACWM includes RACM and non-RACM*

How do I dispose of asbestos?

Disposal

- ACWM must be disposed of at a Recognized Asbestos Landfill (RAL)
  - RACM must be disposed of at a Type I or Type II RAL authorized to accept RACM
  - RACM cannot be disposed of in a Type III (construction and demolition) landfill
  - Non-RACM can be disposed of at a Type III landfill but you must disclose that it is non-regulated ACM
- The ADVF is relinquished to the RAL
  - The RAL must verify the information on the ADVF and mail the original copy to the OES within 30 working days
  - A copy of the ADVF must be returned to the waste generator within 30 working days
- If ACWM is stored in an alternative location prior to disposal, the location must be registered as a non-processing transfer station. The ADVF stays with the waste.


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In Summary

In Summary

You must:

- Inspect (or assume)
  - Use an accredited asbestos inspector
- Notify
  - Use an AAC-2 form
- Remove
  - Use accredited asbestos contractor and workers for RACM greater than 3 square of 3 linear feet
- Transport
  - Use an authorized solid waste transporter
  - If storing prior to disposal, must store at a registered non-processing transfer station
- Dispose
  - Dispose at a Recognized Asbestos Landfill

"The New Rule"

Chapter 33

- LDEQ is combining Chapter 27 Asbestos-Containing Materials (ACM) in Schools and State Buildings and Chapter 51, Subchapter M Emission Standard for Asbestos into one rule under Chapter 33

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