Toxic Substance Management for Environmental Compliance Officers

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TOXIC SUBSTANCES

ASBESTOS, the biggest of the 3 programs, but also is the easiest to violate.

LEAD-BASED PAINT, is the forgotten material.

TSCA COMPLIANCE

Polychlorinated biphenyls (PCBs), although rarely is handled by non-electrical and computer technicians; improper disposal practices can be very costly.

Toxic Substance Management

- ***Hazard Management Plan:*** Describes the program approach and identifies individual responsibilities for key personnel.
- ***Work Order Review Board:*** Provides compliance oversight. (Engineering, Environmental, Safety, Fire Department, PM, NEC)
- ***NEPA Review Program:*** Performs environmental reviews for project planning and coordination.
- ***Asbestos/LBP Building Inspection & Survey Program****:* Provides material analysis and hazard assessment. (Asbestos - every 3 years and LBP & PCB - as needed)
- ***Environmental Compliance Officer (ECO) Course:*** Provides the ground work for environmental stewardship at the unit level.
- ***Environmental Awareness Training:*** Offers training based upon individual and/or organizational training requirements.

TOXIC SUBSTANCE MANAGEMENT

TOXIC SUBSTANCE COMPLIANCE

TOXIC MATERIAL CHARACTERISTICS AND HEALTH EFFECTS

TOXIC MATERIAL MANAGEMENT AT THE UNIT LEVEL

ASSESSING HIDDEN HAZARDS (PLANNING A SELF-HELP PROJECTS)

TOXIC SUBSTANCE

COMPLIANCE

ASBESTOS

2004

$20,000 FINE FOR IMPROPER ABATEMENT & DISPOSAL PRACTICES

2008

$12,000 FINE FOR FAILURE TO NOTIFY & IMPROPER DEMO PROCEDURES

Each violation resulted in fines, disciplinary actions, and the issuance of a regulatory **Consent Order**.

Fines can range from $250 to $25,000 per day per count

TOXIC COMPLIANCE

2013 RED DIAMOND TRAINING AREA

Asbestos Containing Roofing Material

- 3 out of 5 debris piles around the Red Diamond track
- 2 roll off containers located in the Mulch Site
- 9 other previously demoed sites within the training area
- Voluntary Disclosure letter sent to SCDHEC

TOXIC COMPLIANCE

SEVEN POTENTIAL VIOLATIONS TO BE AWARE OF

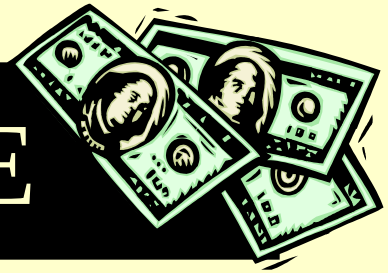
- **Failure to provide SCDHEC written notice of intent to demolish** at least 10 working days prior to demolition

- Failure to include asbestos survey for each building with notice of intent and **pay appropriate project fees**

- **Failure to obtain asbestos project licenses from SCDHEC**

- **Failure to use workers licensed by SCDHEC (EPA & OSHA)**

TOXIC COMPLIANCE



SEVEN POTENTIAL VIOLATIONS TO BE AWARE OF

- Failure to **adhere to the work practice requirements** for performing a regulated asbestos project

- Failure to **thoroughly inspect for the presence of asbestos prior to** the commencement of the demolition

- Failure to **ensure that a licensed asbestos building inspector performed an asbestos survey** prior to demolition

TOXIC MATERIAL CHARACTERISTICS AND HEALTH EFFECTS

ASBESTOS

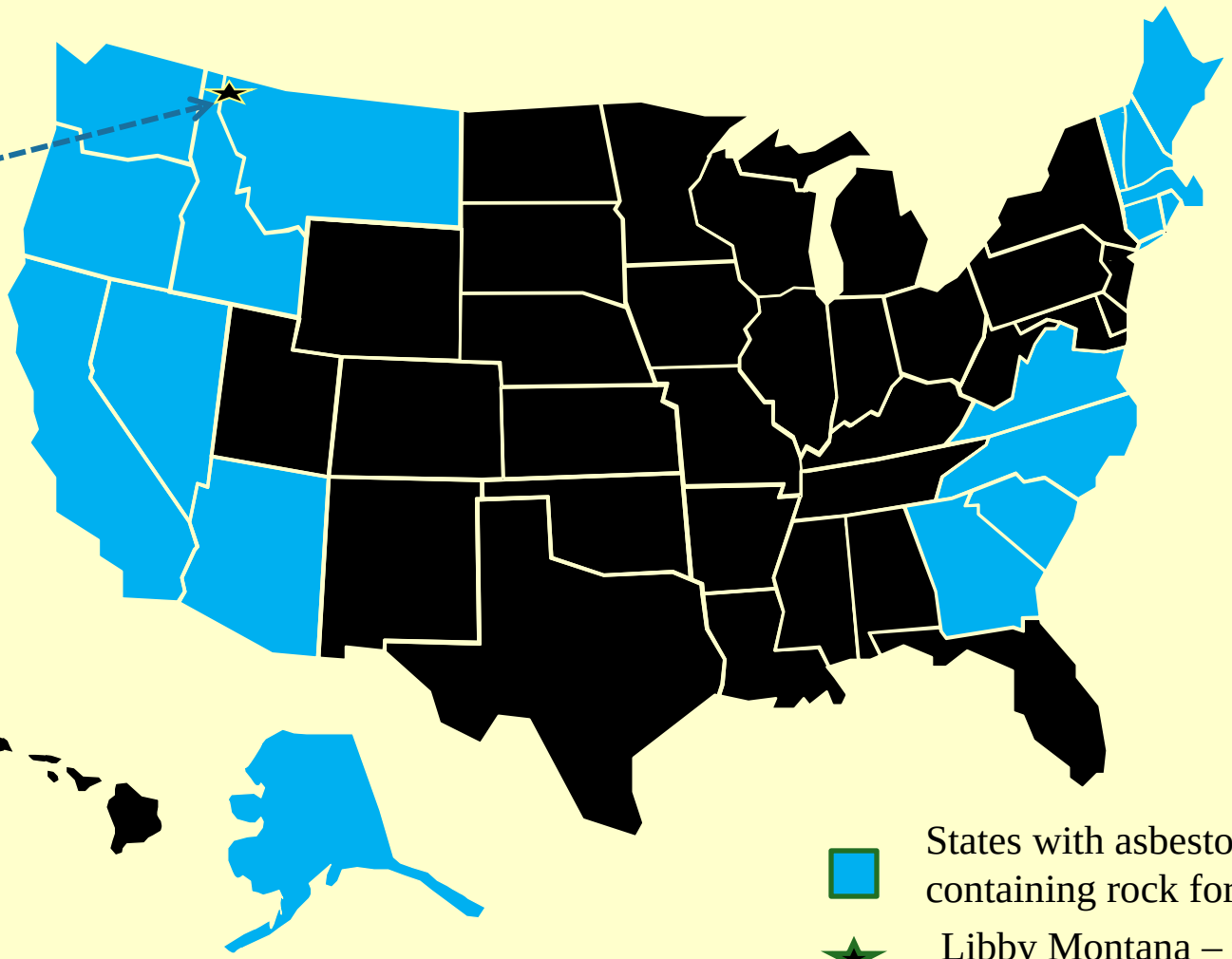
ASBESTOS CHARACTERISTICS

Ancient Greek adjective meaning “inextinguishable”
Roman called it the “Miracle Mineral”

HISTORY:

• 800: Roman Emperor Charlemagne is rumored to have owned a tablecloth made of asbestos.
• 1943: Asbestos, at its height during WWII, was used for construction and shipbuilding .
• 1972: Vets with Mesothelioma stemming from use in WWII.
• 1989: EPA bans asbestos products but ban was overturned.
• 2001: 9-11 attack releases large amounts of asbestos in the air.
• 2011: All asbestos mining operations in Canada stop.
• 2012: Despite being the cause of global danger, **asbestos is still legal in the US** and widely used.

Where Can Asbestos Be Found?



States with asbestos containing rock formations

Libby Montana – vermiculite mine

Approx. 40 countries have banned asbestos, not the United States.

ASBESTOS CHARACTERISTICS

SIX FORMS OF ASBESTOS MINERALS

*** Chrysotile** (white asbestos) was used in 95% of ACBM such as insulation, siding and floor tiles from 1940 to 1990.

Amosite (brown asbestos) was used in high friction applications such as brake shoes and clutches.

Crocidolite (blue asbestos) was used in high temperature applications in energy generating and manufacturing plants.

Actinolite, Anthophyllite, are the rarest forms of asbestos.

Tremolite has quickly become a major concern because manufacturer mixed this material with vermiculite and used it in attic insulation. **BRAND NAME: ZONOLITE**

ASBESTOS CHARACTERISTICS

***Asbestos is a naturally occurring fibrous mineral.**

Asbestos Containing Material: containing >1% asbestos (EPA)
Friable: A material when dry, can be crumbled, pulverized, or reduced to powder with hand pressure (EPA).

PHYSICAL ATTRIBUTES

- High tensile strength
- Good thermal insulator
- Resistant to chemical
- Resistant to fire
- Plentiful and inexpensive

CATEGORIES OF ASBESTOS

Surfacing Materials
- Sprayed or trowel applied

Thermal System Insulation
- Water and stream system

Miscellaneous Materials
- All other forms ACM

SURFACING MATERIALS

Sprayed or troweled on ceiling Material use as a decorative ceiling texture, fire retardant, or sound proofing application.

SWIRLED TEXTURED

LIGHT WEIGHT

POPCORN

FIRE PROOFING

THERMAL SYSTEM INSULATION

Insulation material used to inhibit heat transfer or prevent condensation on heating, ventilation, and air conditioning (HVAC) systems and plumbing applications.

AIR CELL WRAP

MUDDED ELBOW

INSULATED BOILER

MISCELLANEOUS MATERIALS

Assigned to all other types of ACM

Various colors of 9 x 9 floor tile

Floor tile mastic (adhesive)

Commercial Roofing Products

Window glazing

Brake shoes & pads

Transite panel siding

Roofing shingles

Ceiling tile/glue daubs

Cement piping

Theater curtain

Fire door insulation

ASBESTOS HEALTH EFFECTS

ASBESTOS HEALTH EFFECTS

*ASBESTOS can only pose a health hazard if the MATERIAL is disturbed and the FIBERS are released into the air.

Projects that may disturb asbestos consist of :

- Hanging a potted plant on piping runs and hangers.
- Installing video equipment to drywall wallboard systems.
- Removing a wall to increase work area space.
- Hanging pictures that may requires nailing or drilling holes.
- Stripping floor wax off asbestos tiles using an abrasive pad.
- Installing Elect/Comm cables above the ceiling grid, along interior walls, and in multi-story facilities, between floors.

ASBESTOS HEALTH EFFECTS

Asbestosis – dosed related (not a cancer)

- cumulative fibrotic scarring
- 15 to 30 year latency period

* **Lung Cancer -** most common dose related

- Increased risk for smokers (80-90 times)
- 30 year latency period

Mesothelioma – not dose related

- Cancer of the lung or abdominal lining
- 30 to 40 year latency period

MESOTHELIOMA

Disco Queen Donna Summers died after being expose to asbestos dust from the collapse of the WTC in NYC.

Steve McQueen, Merlin Olsen' and Paul Gleason died from mesothelioma.

LEAD BASE PAINT & PCBs CHARACTERISTICS

In 1979, the US banned the use of Lead and PCB products

- Lead is a very soft metal that is resistance to corrosion, moisture, and most acids including sulfuric acid.

- First used in ammunition, solder and rolled sheeting to form pipes, gutters, and downspouts but later expanded to x-ray shielding, additives in gasoline, ceramic glazes, and lead base paint as an inhibitor for corrosion.

- The significant source of lead in per 1980 homes is lead-base paint.

- PCBs were produced and marketed in the US under the name “Aroclor”

- Enhance insulative properties, improve physical and chemical resistance, and act as a fire retardant, plasticizer, coolant, and lubricant.

- Products: ballasts, circuit boards, pesticide, cutting oils, coatings on electrical wiring, joint compounds (concrete), carbonless copy paper, transformers and capacitors fluids.

LEAD BASE PAINT & PCBs HEALTH EFFECTS

LEAD: Primary routes of exposure are ingestion and inhalation.
Note: Fetus, infant, and children are more susceptible since lead can easily be absorbed into the blood stream within their growing bodies.

CHILDREN <6 years: Putting toys and other objects in their mouth. (hand-to-mouth activity) (EPA focal item)

ADULTS: Lead dust due to dry sanding, scraping, and grinding on lead-base painted surfaces.

HEALTH EFFECTS: Death (in high doses), kidney damage, miscarriages, disruption of nervous system, brain damage, declined fertility of men, diminished learning abilities of children

LEAD BASE PAINT & PCBs HEALTH EFFECTS

PCB: Primary routes of exposure is through ingesting animal fats, inhalation, or dermal contact (absorption).

HEALTH EFFECTS:

- Suppresses the immune system, increasing the risk of acquiring several human diseases.
- Enhances risk of carcinogenic tumors to form.
- Reduces IQ and alters behavior in the early stages of life.
- Alters thyroid and reproductive functions in both males and females.

TOXIC MATERIAL MANAGEMENT

LEAD-BASE PAINT DUST SAMPLING

IN-PLACE MANAGEMENT !!!

Per Army Regulation 420-1

- Management must be IAW the Installation Asbestos Management Plan
- **Facility must have a current (<u>within 3 years</u>) asbestos building survey or scope specific hazard analysis prior to renovation/demolition activities.**
- Asbestos abatement decisions **MUST** be based upon factors such as; hazard exposure assessments, facility long term cost, and usefulness of the facility.
- * Common asbestos containing building material (ACBM) includes such items as siding, floor tiles, ceiling tiles and thermal insulation.

DAMAGED / LOOSE / CHIP / BROKEN FLOOR TILES

- Pick-up loose or broken floor tile **– Safety Hazard vs. Asbestos Exposure.**
- *** Only ECOs can pickup and dispose of loose floor tiles.**
- **DO NOT dispose of ACM in the regular garbage containers.**
- Collect all loose floor tiles in 6-mil poly bags
  - Call 751-3838 for bags and additional disposal information.

DAMAGED FLOORING – WATER LEAKS & BUSTED PIPES

- **DO NOT use excessive amount of water on vinyl flooring.**
- Clean up water leaks immediately when found.
- Call the work order desk if water leak can’t be stopped in-house.
- Contact Toxic Manager if flooring starts to roll up on the ends or become loose due to water damage.

UNSERVICEABLE SAFE or SECURITY BOXES

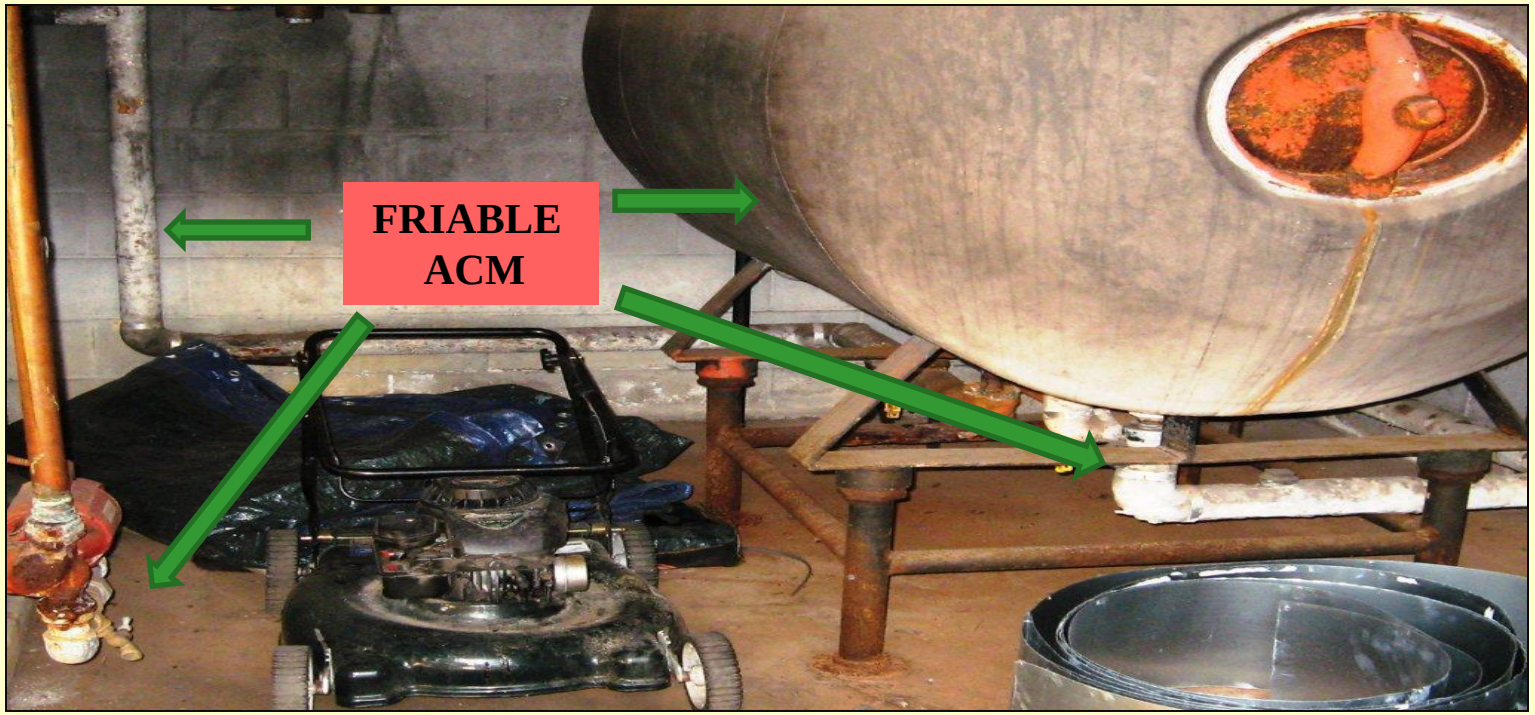
DO NOT RIP OPEN A SECURED SAFE.

- Inner material may contain “friable” ACM
- Brand names such as, “Diebold and Rand Mc Nalley” has been linked to using asbestos in the linings of their safes.

Safe and Security boxes are considered a controlled item.

- Check with **DLA-DSJ** (formally DRMO), for disposal requirements

IMPROPER EQUIPMENT STORAGE



- Do not use equipment rooms for additional storage areas.
- Do not disturb “Friable” asbestos containing materials.
- Materials used to insulate hot and cold water systems such as furnaces, boilers, water storage tanks and associate piping becomes a hazard when disturbed.

RESTRICTED AREAS – ASBESTOS ABATEMENT

DO NOT allow unit personnel to enter posted "Asbestos/LBP Work Areas"

- Prior to the start of the project, remove all personal property.
- Restrict entrance to **ONLY** authorized personnel. Authorized personnel must be EPA accredited /DHEC licensed.

Asbestos Awareness training **does not** qualify anyone for authorized entrance.

- Requirement Training:
  - Asbestos Abatement Workers
  - Asbestos Supervisor
  - Asbestos Inspector

LEAD-BASED PAINTED SURFACES

FACILITIES AND/OR STRUCTURES BUILT PRIOR TO 1978

The Major Concerns: Lead exposure to children under 6 years of age in child occupied facilities and Day Cares.

Managing lead-based painted surfaces in-place:

- **<u>Do not "DRY"sand, grind, saw, or scrape on lead surfaces</u>.**
- Prior to a repainting project, get a lead hazard evaluation.
- **Always use "Wet Methods" when…**
  - Hand sanding (the safest way to remove lead paint)
  - Broom sweeping or brushing flaking or peeling paint
  - **Light scraping** is also allowed during prep phrase.
- Prior to starting lead removal, r**emoved pregnant personnel** from the immediate work area.
- C**all the Hazardous Substance Program Manager (751-4231) for disposal requirements… Lead Only!**

POLYCHLORINATED BIPHENYLS (PCBs)

The Major Concerns: Inhalation from overheating or burning electrical equipment and absorption from leaking transformers oils and greases

In-Place Management of Transformers, Capacitors, and Ballasts:

- Dielectric Fluids greater than 50 ppm PCB
- **Maintain PCB transformer disposal inventory (DPW)**
- **Use proper PPE when handling PCB contaminated items.**
- **Determine appropriate wastestream for PCB containing materials.**
  - Potentially 2 waste stream for electrical ballasts.
  - Call 751-3838, Toxic Substance Manager

Submitting your Self-Help Project

1. Initiate a work order request, DA Form 4283 and complete a Record of Environmental Consideration (REC) http://www.jackson.army.mil/sites/garrison/docs/790 .

2. *** Per Fort Jackson Policy, All self-help flooring replacement projects are "PROHIBITED."**

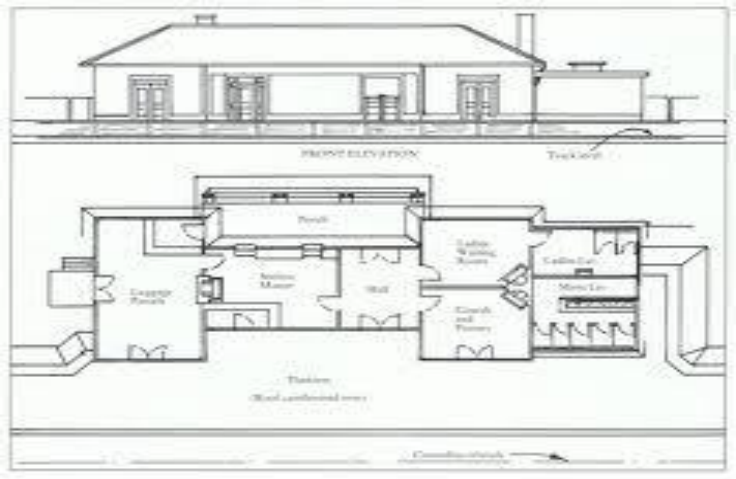
3. **Self-help ceiling tile replacement projects are authorized** with special provisions established by DPW.
   - Call 7684/7685 - Ms Debra Alexander, DPW Work Order Coordinator (All requests will be reviewed).
   - If approved… ceiling tiles will be issued to unit/organization .
   - If not… request will be submitted to BOID for contract consideration.

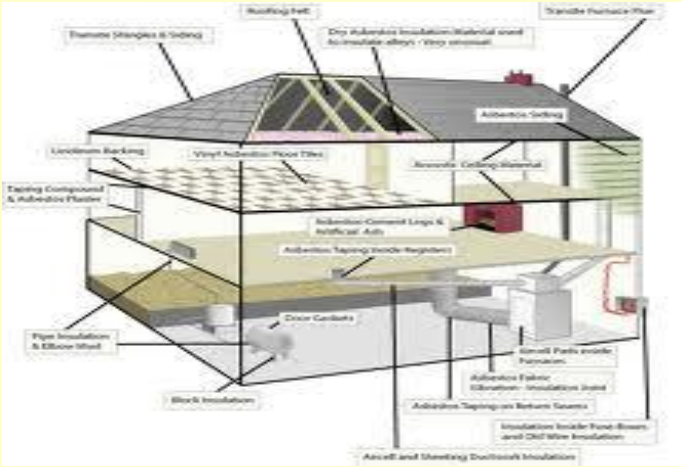
ASSESSING HIDDEN HAZARDS
PLANNING A SELF-HELP PROJECT

PLANNING A SELF-HELP PROJECT

Define your scope of work.

- Know exactly what you want to do.
- Draw a diagram, take pictures, put together a solid Statement of Work.
- Always think outside the box…**looking for any potential environmental hazards.**





PLANNING A SELF-HELP PROJECT

Conducting a hazards assessment

- Always consider the potential for asbestos disturbance.
- Ask to see if there is a current Asbestos/LBP building survey on file.
- If no survey, request a scope specific hazard assessment.
- **<u>Check for hidden environmental hazards</u>**

Assessing Hidden Hazards #1… Multiple Layers of Materials

Hazards associated with flooring replacement projects… vinyl floor tile, plywood, carpeting, linoleum, rubberized flooring

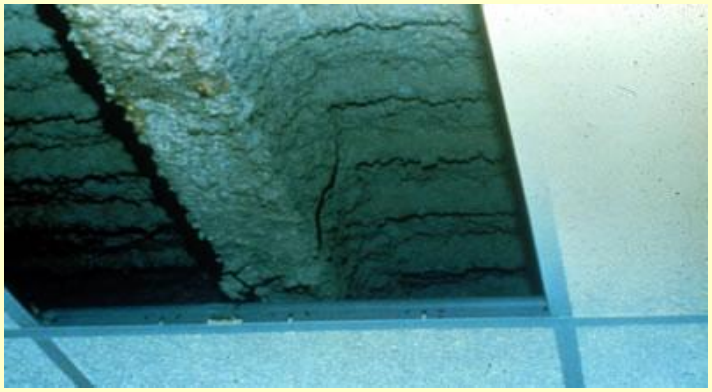
Adhesives/Tile

Plywood

Carpeting

Assessing Hidden Hazards
#2…Acoustical Ceiling Replacement Projects

Hazards associated with acoustical tiles replacement projects… adhesives, fire proofing, attic insulation, insulated storage tank



Pouring and leveling Zonolite Insulation Fill.

Assessing Hidden Hazards
#3… Hard Ceiling Repair Replacement Projects

Hazards associated with hard ceiling repair projects… friable skim coating, exposed water pipeline insulation, popcorn or knock-down troweled applied coating

Assessing Hidden Hazards
#4…Walls, Doors, and Window Projects

Hazards associated with walls doors and windows…
joint compound, skim coating, drywall,
caulking, window glazing

Assessing Hidden Hazards
#5…Pipes, Fire Doors & Siding Projects

Hazards associated with pipe chases, fire doors and siding… behind walls and crawls spaces, fire rated insulation, transite soffits and siding panels

Assessing Hidden Hazards
#6… Painting Projects

Hazards associated with painting projects…
multiple layers of flaking paint (lead-based paint), ceramic tiles (lead glaze), creating lead dust, children under 6 years of age

*** REMEMBER…**
ANY SUSPECT ASBESTOS CONTAINING BUILDING MATERIAL IS "POSITIVE" UNTIL LABORATORY ANALYSIS PROVES OTHERWISE!!!

NOW… YOU ARE READY TO

FOR INFORMATION ON MOLD AND ANY OTHER HEALTH CONCERNS

PLEASE CONTACT

Greg Shepherd 803-751-5220
Chris Edwards 803-751-5243
Department of Preventive Medicine
Industrial Hygiene Services

TOXIC SUBSTANCE MANAGEMENT FOR ENVIRONMENTAL COMPLIANCE OFFICERS

TOXIC SUBSTANCE COMPLIANCE

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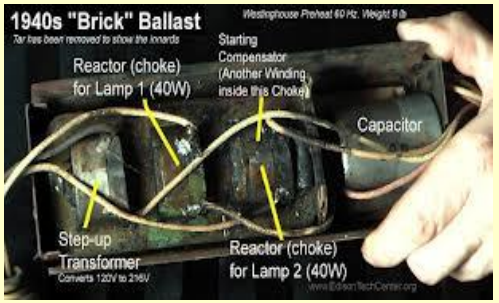

ANY QUESTIONS

November 2002

Glove Bag Asbestos Abatement Project in Panama

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