Asbestos Training

What is asbestos?

- It occurs naturally in many parts of the world
- Asbestos is a fibrous material

3 main types:

- Chrysotile – White asbestos
- Amosite – Brown asbestos (Africa)
- Crocidolite – Blue asbestos (Africa and Australia)

Construction's Magic Mineral

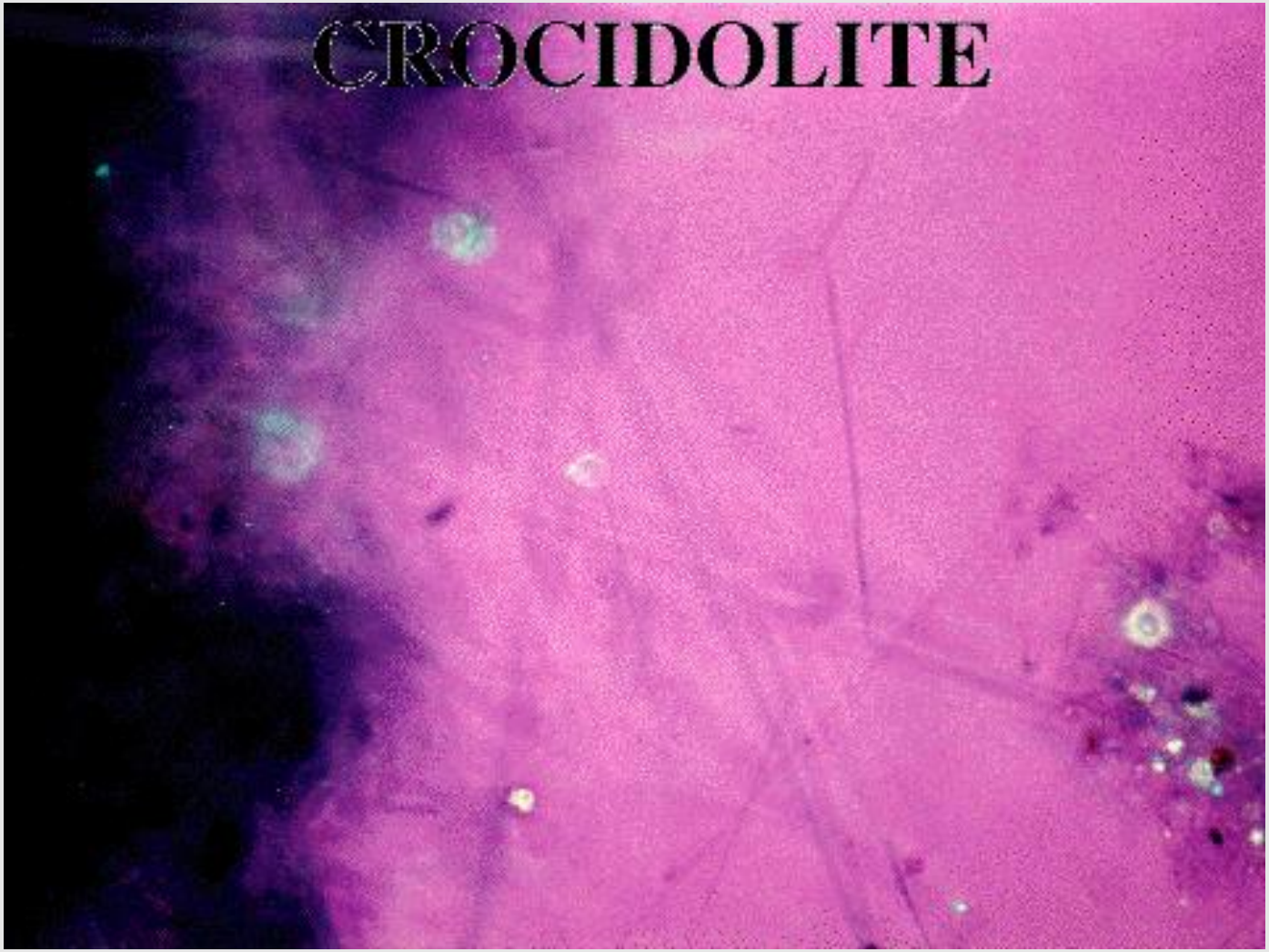
- A binder
- Strong
- Doesn't conduct electricity
- Fireproof
- Insulates
- Inexpensive
- Small size

Why Was It Used?

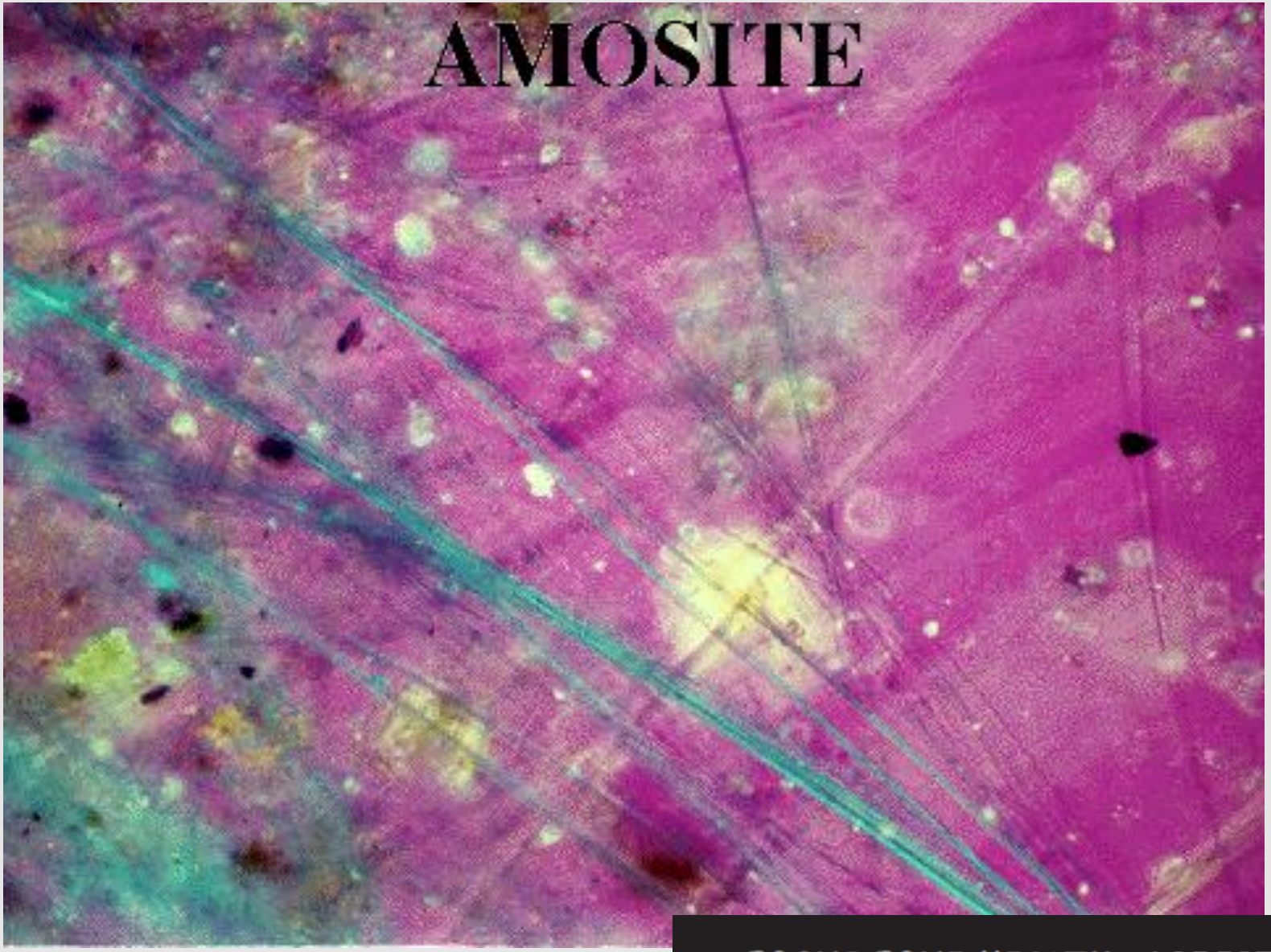
- It’s great stuff!
- It was added to products because of the beneficial properties of the material
  - Binder, strong, fireproof, cheap, small
- Was added to construction products without regard for health effects

Fibrous Asbestos on Muscovite

Fibrous Asbestos



As viewed under microscope and dyed to be able to distinguish fibers



FOCUS FOUR HEALTH: **ASBESTOS**

Historical Health Effects

- Described as a disease from these occupations:
  - Mining
  - Construction (many trades)
  - Auto mechanics
  - Refinery workers
  - US Navy and ship building

Rules

- 1970
  - OSHA
    - 1972 (PEL is 5 f/cc)
    - 1976 (PEL is 2 f/cc)
    - 1986 (PEL is 0.2 f/cc)
    - 1994 (PEL is 0.1 f/cc)
- 1987
  - Asbestos Hazard Emergency Response Act (AHERA)
  - Schools

Oregon OSHA

- You have the right to a safe and healthy workplace
- Employees have the right to report work-related injuries and illnesses free from retaliation

Definitions

- ACM – asbestos containing material (>1%)
- PACM – presumed asbestos containing material (<1980)
- Competent person – capable of identifying and controlling existing asbestos, has authority to take action, taken EPA courses
- Disturbance – activities that disrupt matrix of ACM
- Asbestos fiber – particulate 5 micrometers or longer, length-to-diameter ratio of 3-to-1

Definitions

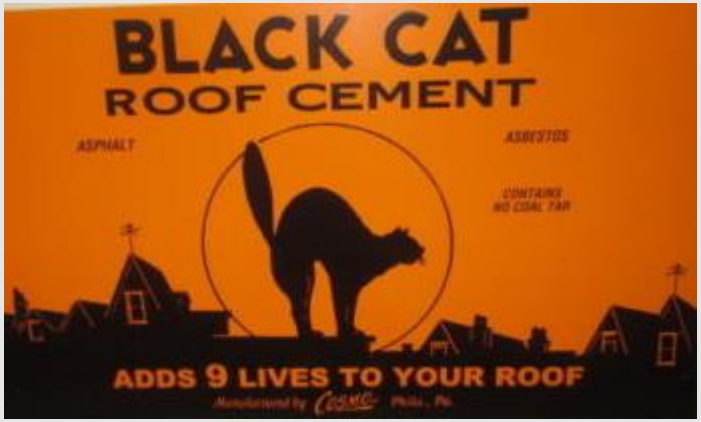
- Friable – able to be pulverized, broken with hand
- Non-friable – not able to be pulverized with hand
- TSI – thermal system insulation; in pipes, fittings, boilers, tanks, ducts
- PEL – permissible exposure limits
  - TWA – time weighted average; 0.1 fiber/cc
  - Excursion Limit – 1.0 fiber/cc (30 minutes)

Where is it Found?

- Used in 3,000 types of building materials
  - (in varying amounts 1%-100%)
- Pipe/duct insulation
- Building insulation
- Ceiling and wall panels
- Carpet underlayment
- Roofing materials
- Fireplaces
- Pot holders
- Hair dryers
- Floor tiles
- Electrical wires

Is it still used?

- Products up to 1980
- Some products today
  - Insulating/insulator (specific industry/processes)
  - Roofing tar
  - Flooring



- Other countries still allow

Asbestos Products

Lagging
- To boilers
- On pipes

Sprayed Coatings
- Ceilings
- Insulation

Gaskets
Rope

9X9 Floor tile

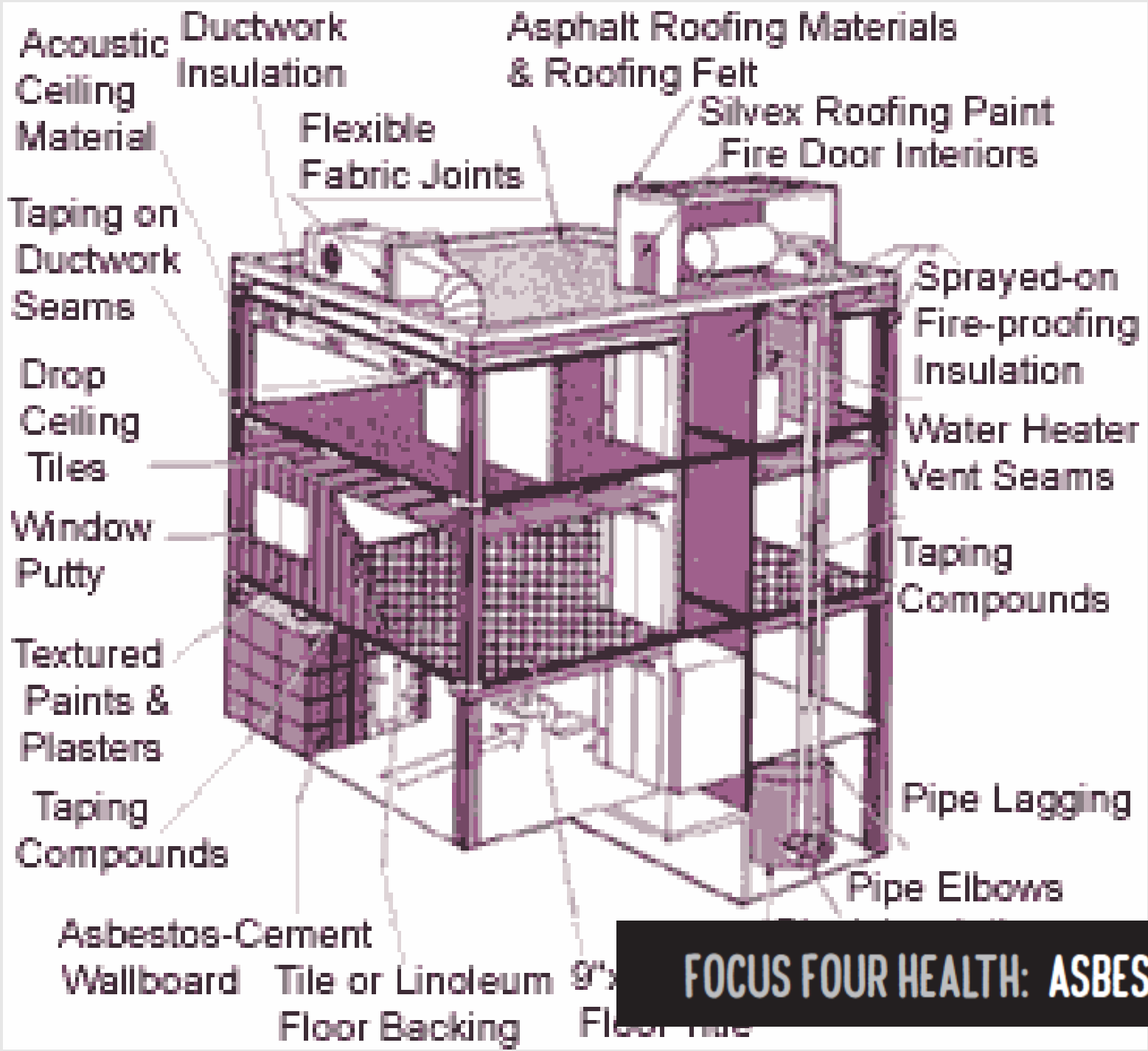
FOCUS FOUR HEALTH: ASBESTOS

Thermal System Insulation

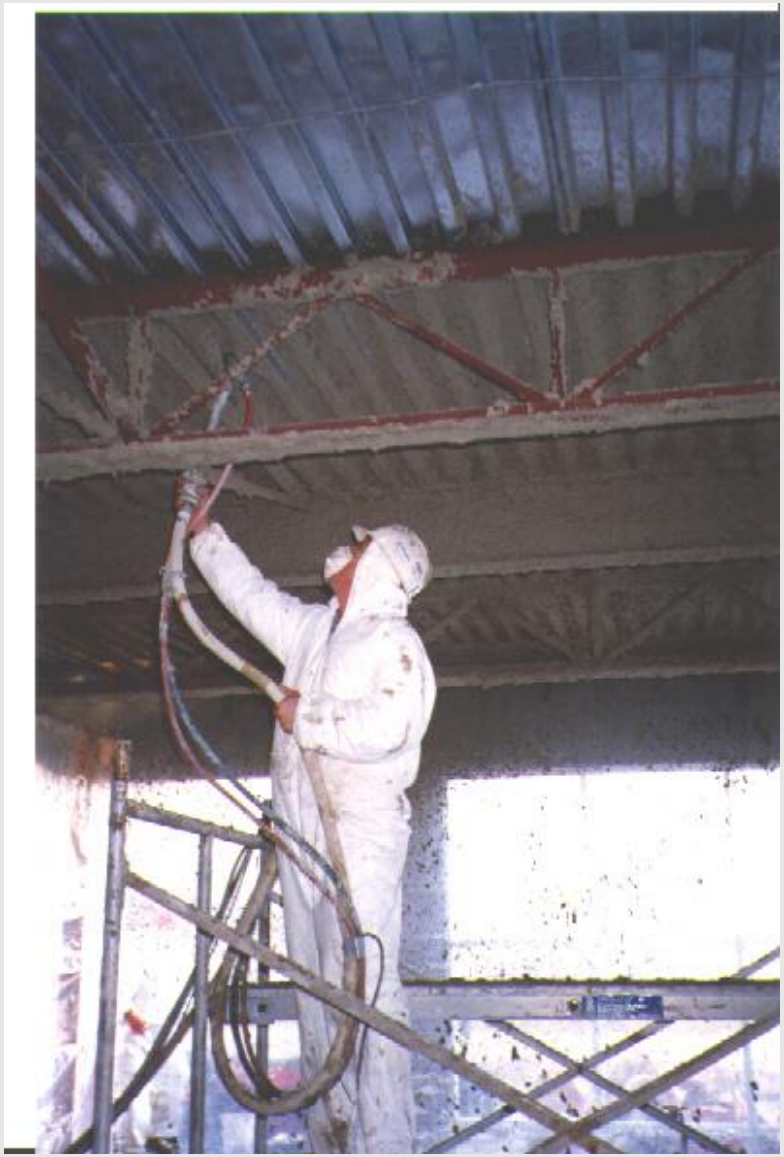
TSI


FOCUS FOUR HEALTH: ASBESTOS

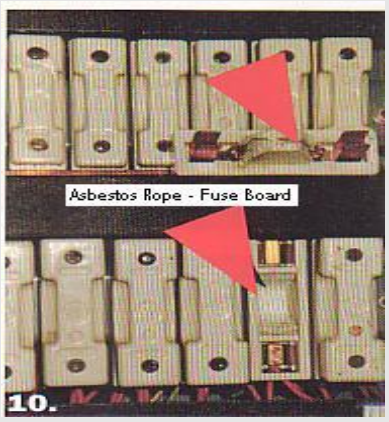

FOCUS FOUR HEALTH: ASBESTOS


Acoustic Ceiling Material
Ductwork Insulation
Asphalt Roofing Materials & Roofing Felt
Silvex Roofing Paint Fire Door Interiors
Flexible Fabric Joints
Taping on Ductwork Seams
Sprayed-on Fire-proofing Insulation
Drop Ceiling Tiles
Water Heater Vent Seams
Window Putty
Taping Compounds
Textured Paints & Plasters
Taping Compounds
Pipe Lagging
Pipe Elbows
Asbestos-Cement Wallboard
Tile or Linoleum Floor Backing
FOCUS FOUR HEALTH: ASBESTOS

Fireproofing



Asbestos Products



Pipe lagging, gaskets, and woven asbestos

FOCUS FOUR HEALTH: ASBESTOS

Asbestos Products

Sheets
- Flat or Corrugated

Used as:

Roofing, Walls, Ceilings Panels/Partitioning, Bath panels, under stairs, Door-linings, Cladding

Ducts

Flues from boilers/ water heaters

Rainwater pipes/ guttering

Water storage tanks

Decorative plaster finishes (Artex)

Floor tiles / roof tiles / Car parts (Brake and Clutch linings)

Asbestos Roof

Brake Pads

FOCUS FOUR HEALTH: ASBESTOS

Asbestos Products

Bath Panel

Corrugated Roofing

Fire Door

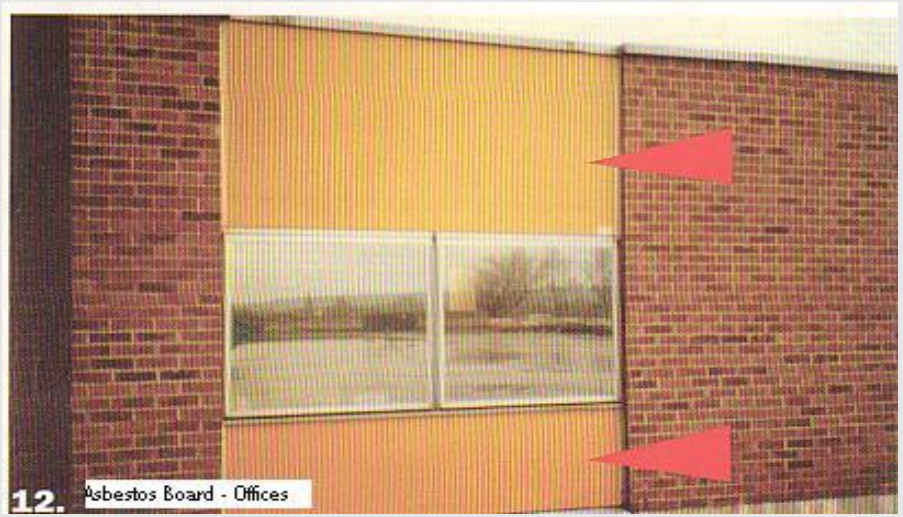
FOCUS FOUR HEALTH: ASBESTOS

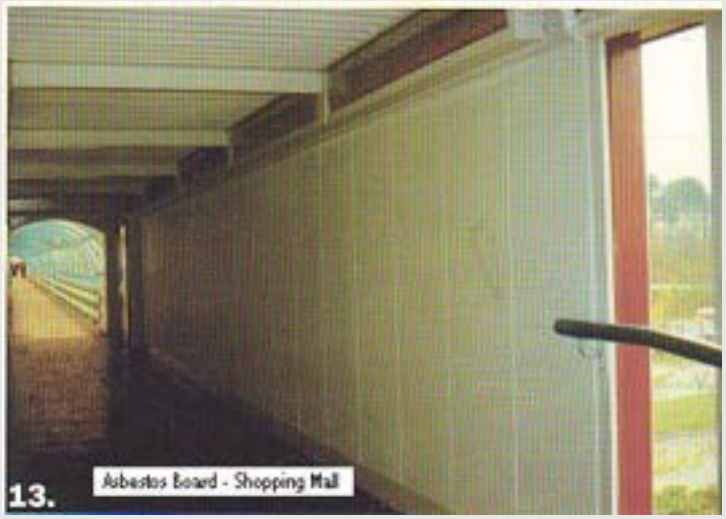
Asbestos Products

Asbestos Insulating Board

- Used as: Ceiling panels / tiles
  Wall panels / partitioning
  Soffits
- Internal / External
  Door linings, especially in fire doors
- Heating unit
- Cupboards
- Cladding to ducts

Asbestos Products





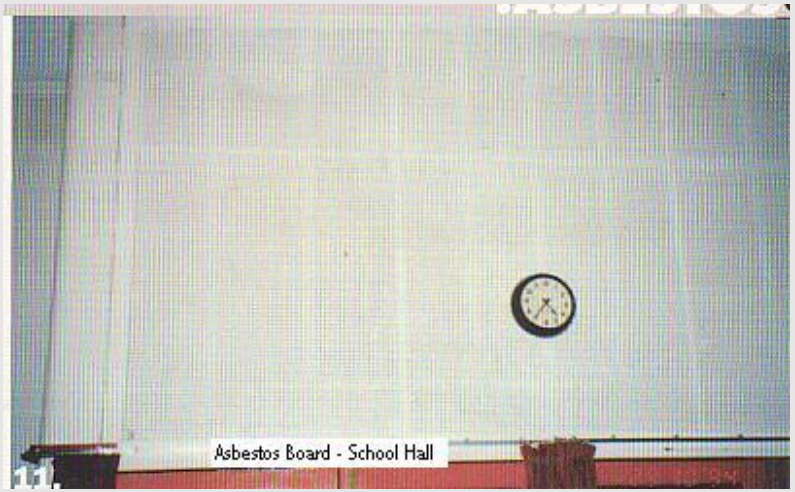
Seen in offices and in shopping malls

ASBESTOS BOARD

FOCUS FOUR HEALTH: ASBESTOS

Asbestos Products

Damage caused by cable



Acoustic panel at school gym

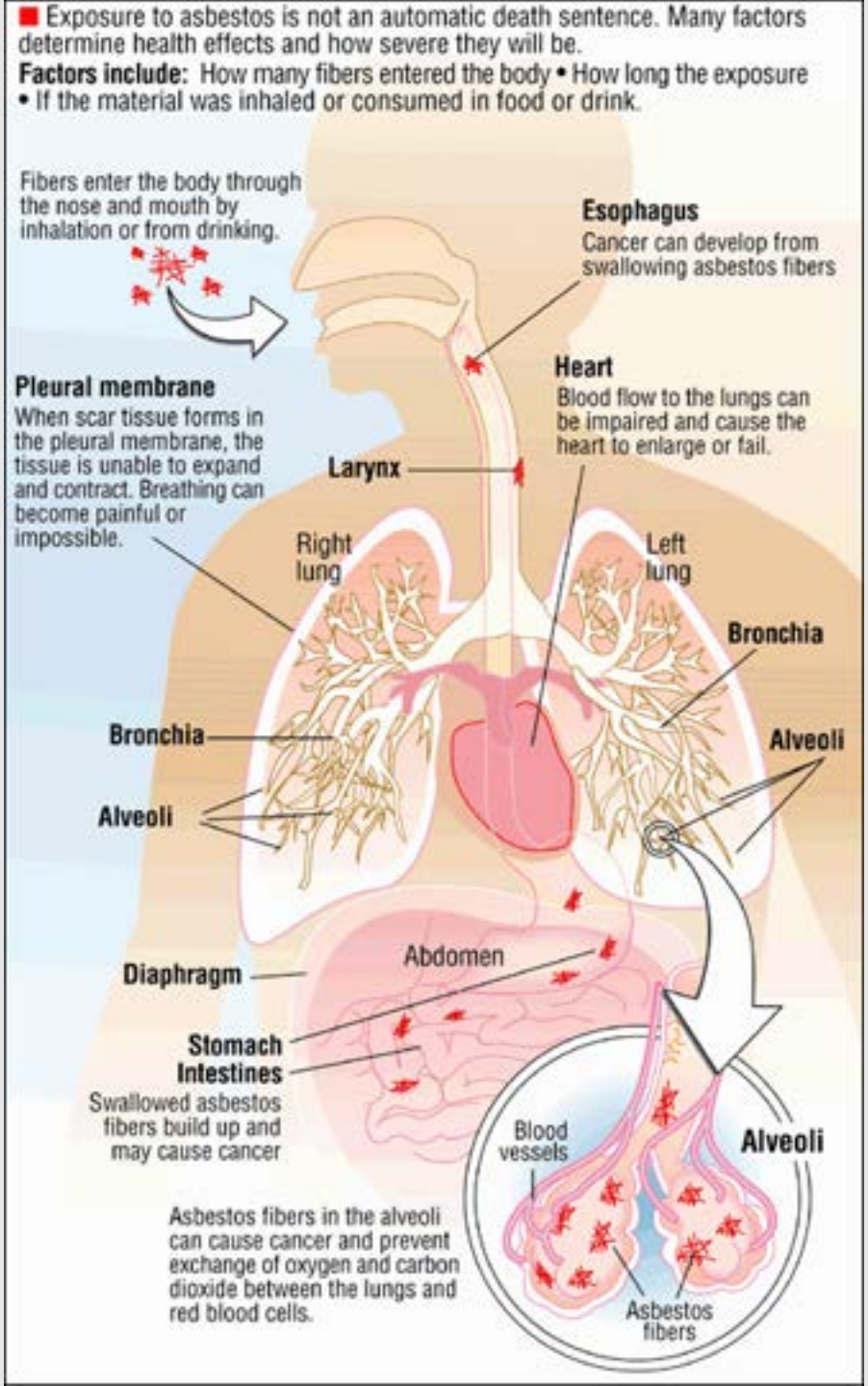
Asbestos board

Health Effects

Carcinogen (cancer causing)
There are no safe limits of asbestos
- Greater exposure, greater risk

Mechanism of Exposure

- Asbestos bundles can split with small fine fibres breaking away.
- If inhaled, the fine fibres, too small to see, can lodge deep in the lungs.
- Size of asbestos is 0.01 um – 20.0 um
- Human hair is 17 – 181 um

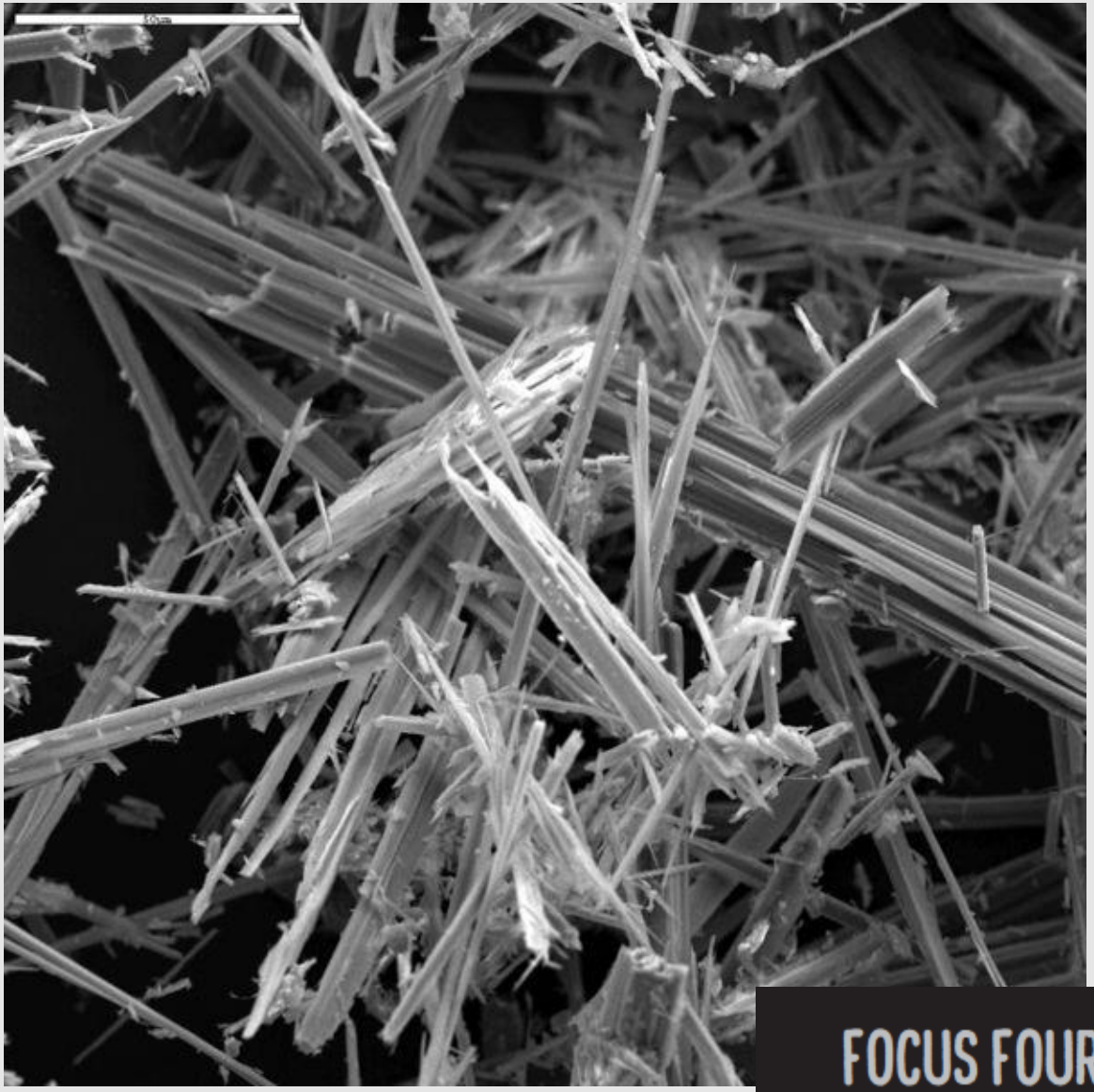


FOCUS FOUR HEALTH: ASBESTOS

Health Effects

- Exposure may cause:
  - Asbestosis
    - Scarring of the lungs; affects breathing, leading to disability and can cause death
  - Lung cancer
    - Can be caused by many substances; usually leads to death
  - Mesothilioma
    - Cancer in the lining of the chest which can lead to death

Asbestos Fibers



Asbestosis

- Disease first discovered in naval shipyards
- Fibers are trapped in lung tissue
- Body produces acid/macrophages in an attempt to kill foreign asbestos fiber in body
- Chemical from macrophages is released, scarring occurs
- Scarring inside lungs = asbestosis
- Latency period (time between exposure and onset of disease)
  - (20 to 40 years)

Cancer Types

- Lung cancer (most typical)
  - Smokers increase their risk by 50% to 90%
- Gastrointestinal cancer
- Stomach cancer
- Latency period 15 to 30 years

Mesothelioma

- Cancer in the outer **lining** of the lungs and/or the abdominal wall
- Only been found from asbestos exposure (and asbestosis)
  - Which is why attorney's solicit people with the disease – there is a direct link
- Latency period 15 to 30 years

What Causes Exposure?

- Fibers
- Usually fibers are bonded in a building material (paper, mastic, tiles, insulation)
- It becomes airborne by:
  - Grinding, sawing, crushing, etc.
  - Activities we do in construction – not normal wear and tear

What Does Individual Exposure Depend On?

- Concentration of fibers in the area
  - Lots of work, small space?
- Duration of exposure
  - All day? Years?
- Worker's breathing rate
  - Heavy labor?
- Weather conditions
  - Rainy?, Dry?, Windy?
- Personal protective equipment
  - Dust mask?
  - Respirator?

What if We See Asbestos?

1. Stop
2. Review building survey
   - Survey must be done prior to bidding project (DEQ rules)
3. Sample
4. Hire abatement company
5. Work with your safety personnel to control the hazard

How Can We Control It?

- Leave it alone!
  - What is the existing condition?
  - Friable / nonfriable?
- Do not remove
- Prevent airborne releases of fibers
  - Water, covering with tape, sealing
- Nature of work will dictate controls

How Can You Identify Asbestos?

- Building products pre-1985 (or so)
  - No date in DEQ's rules
- Sample analysis (bulk)
- Performed by an AHERA accredited inspector
  - $15 to $40 / sample
  - Small amount
  - All layers
- Sample analysis (air)
  - Polarized light microscopy (PLM)

Working With/Around Asbestos

- DEQ rules consider the:
  - Size of abatement
  - Amount of asbestos in product
- OSHA rules:
  - Consider the employee
  - Consider the type of activity / work
  - Any airborne exposure
  - Any amount of asbestos found (even less than 1%)

FOCUS FOUR HEALTH: ASBESTOS

Types of Asbestos Work (Abatement)

- Classes I, and II
  - Notify DEQ prior to work
  - Regulated areas
  - Demarcation
  - Critical barriers
  - Authorized access
  - Respirators
  - Prohibited activities, eat, drink, smoke
  - Competent person

Construction Activities: Class III

- Defined as:
  - means repair and maintenance operations, where asbestos containing material, including thermal system insulation and surfacing asbestos containing material is **likely to be disturbed**
- Notify DEQ prior to work
- 16 hours of training

Construction Activities: Class IV

- Non DEQ regulated
- Periodic monitoring
- Defined as:

Repair and maintenance where employees **contact but do not disturb ACM**, including clean up waste and dust from Class I, II, III activities

Building Owners Responsibilities

- Before work is begun, building and facility owners shall determine presence, location, and quantity of ACM/PACM.
- They shall notify by writing or personal communication to:
  - Prospective employers applying or bidding for work
  - Employees of the owner who will work in adjacent areas
  - All multi-employers and employees working at jobsite
  - Tenants

So, You Don't Want Asbestosis

ARE YOU RENOVATING YOUR HOME?

ASBESTOS IS DEADLY SERIOUS

- Do not disturb PACM
- Do not smoke

FOCUS FOUR HEALTH: ASBESTOS

ASBESTOS AWARENESS

This material has been made possible by a grant from the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services

FOCUS FOUR HEALTH: ASBESTOS

Post Test (True/False)

1. Friable material means, “able to be pulverized”.
2. Asbestos exposure causes diabetes.
3. Asbestos can be found in construction materials.
4. If you see suspected asbestos you should remove it immediately.