Inspector Review

Sections A, B and J

ASBESTOS AND ITS PROPERTIES

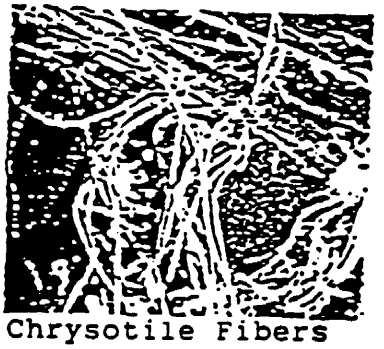
I. Asbestos Materials: Definition
A naturally occurring fibrous mineral


Amosite Fibers Under Magnification

II. Types of Asbestos

A. Amphiboles -- shorter, straight, thick fibers -- harder to wet -- appears to be most dangerous

1. Amosite - "Brown" -- 2nd most common type in North America; most common in some other parts of the world
2. Crocidolite - "Blue" -- seen occasionally
3. Tremolite | rarely used commercially
4. Anthophyllite | occasional contaminants
5. Actinolite | in other material


Chrysotile Fibers Under Magnification

B. Serpentine

1. Chrysotile - "White" -- thin and flexible (most likely to be found in woven materials); most common in North America; most valuable

III. Physical Characteristics

Structure:

A. Fibril Bundles -- tend to break down to smaller and smaller fibers lengthwise
B. Fiber size

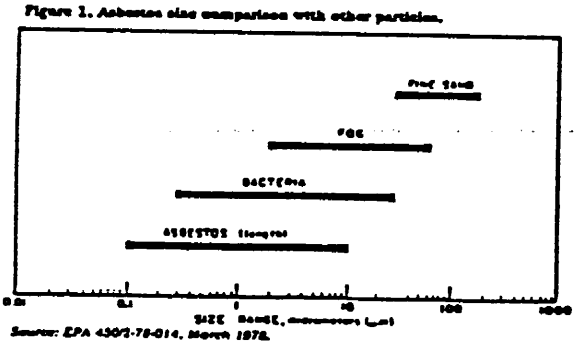


Figure 1. Asbestos size comparisons with other particles.
Source: EPA 450/2-78-014, March 1978.

Chrysotile (Range %)	
SiO_2	38.8-41.5
Fe_2O_3	0.04-1.6
FeO	3-2.3
Al_2O_3	0.04-4.7
MgO	38.2-42.6
CaO	0.35-2.3
Na_2O	0.04-0.1
K_2O	0.02-0.2
H_2O+	11.4-12.9
H_2O-	0.6-0.9

CHEMICAL CONTENT OF CHRYSOTILE

Small asbestos fibers are aerodynamic. The smallest fibers can remain suspended in air for hours or days.

C. Strength: Tensile Strength of Steel
D. Resists structural breakdown under high temperatures
E. Resists chemical breakdown
F. Does not contain dangerous chemicals

Amosite (Range %)	
SiO_2	49-53
MgO	1-7
FeO	34-44
K_2O	0-0.4
H_2O	2.5-4.5

CHEMICAL CONTENT OF AMOSITE

ASBESTOS PRODUCTS AND USES

I. Definitions

A. Friability: "Crushibility"
B. Friable Asbestos Containing Material: more than 1% asbestos by weight, crushible by hand pressure
C. Binder: Substance combined with asbestos to make a product. Delamination

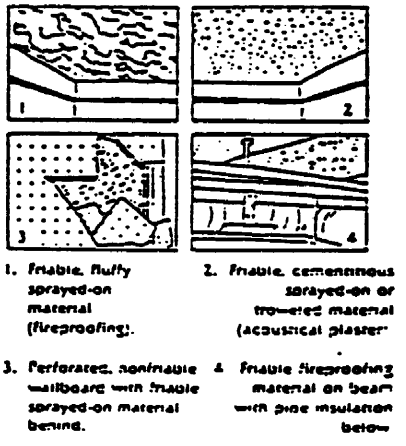
II. History of Uses

A. Ancient Greeks: Lamp wicks
B. Classical and Medieval: Burial shrouds, table cloths
C. First Insulation Use. Late 19th Century
D. Explosion of Use: Post World War II
E. Used in 3,000 - 4,000 products

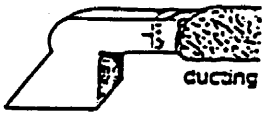
III. Extraction Process: Mining, then milling ore

IV. Asbestos-Containing Products - A partial list. See also question 38 (p. 23) on "100 Questions."

A. Potentially friable building materials
   1. Wall treatments
   2. Ceiling treatments
      a. Sprayed on
      b. Troweled on
      c. Drop ceilings
   3. Pipe insulation } TSI
   4. Boiler & tank insulation }
   5. Fireproofing
   6. Electrical insulation
   7. over spray



B. Non-friable building materials
   1. Roofing -- a growing area of concern
   2. Siding
   3. Floors -- VAT
   4. Transite



C. Non-building uses
   1. Brakes
   2. Gaskets
   3. Household uses
   4. Commercial uses -- such as components of appliances
   5. Asbestos Cement Pipe - as used in city water distribution systems

D. Asbestos is a possible contaminant in:
   1. Talc
   2. Vermiculite

FIBER DISPERSAL IN BUILDINGS
The nature of operations and conditions that could result in exposure

I. Primary Entrainment

A. Knocked loose

B. Water damage

C. Vandal damage

D. Wear and tear

E. Vibration

1. Equipment
2. Nearby Highways

F. Erosion (break down of binder)

G. Air stream passing over the material

H. Remodeling and repair

II. Secondary Entrainment

A. Air stream

B. Improper cleaning methods

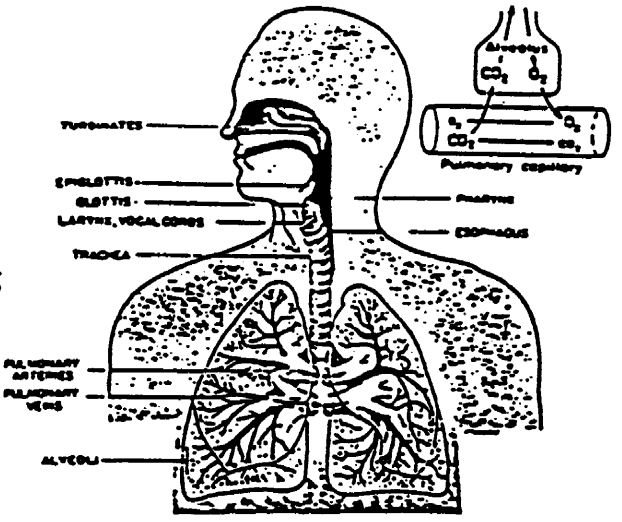
C. Movement of people or equipment

D. Moving objects where asbestos has settled

E. Improper disposal

MEDICAL ASPECTS OF ASBESTOS EXPOSURE

I. Diseases Associated with Asbestos Exposure



A. Asbestosis
A Fibrotic lung disease

B. Lung Cancer

C. Mesothelioma -- a rare cancer of the pleural lining

D. Other cancers

II. Routes of Exposure

A. Inhalation
Primary route

B. Ingestion: only as a by-product of inhalation

C. Water borne asbestos -- EPA studies do not show elevated cancer rates, but no clean bill of health is assumed

D. Cuts, eyes, etc.: no appreciable risks

E. Skin -- greatest risk is that fibers not removed from skin will later become airborne and be inhaled

III. Dose -- Response Curve -- Is there a "safe" level of exposure?: None that can be determined; low cumulative exposures have been shown to result in disease.

IV. Latency Period of Disease Onset: 15 to 50 + years.

V. Medical Monitoring (See also OSHA Medical Exam requirements)

A. "Early Warning" -- Xrays, pulmonary function tests, medical questionnaires.

B. Fitness for wearing respirators also considered.

C. Diagnosis: Xray, pulmonary function test, tissue biopsy, sputum cytology.

VI. Asbestos Exposure and Smoking -- synergistic effects.

Studies have shown that smoking asbestos workers having as much as 18 times the risk of lung cancer of asbestos workers who do not smoke.

INTRODUCTION TO ASBESTOS AND DISEASE

Supplementary information to the 1986 OSHA Standard contains the following statement:

> ***OSHA is aware of no instance in which exposure to a toxic substance has more clearly demonstrated detrimental health effects on humans than asbestos exposure.***

How does Asbestos Cause Disease?

Asbestos fibers too fine to be seen become airborne during mining and industrial processes. They are then inhaled and swallowed. Because of their size and needle-like shape, asbestos fibers can penetrate body tissues and remain imbedded for life.

As asbestos fibers build up, they produce chronic irritation. They cause scarring and thickening of your lungs' tiny air sacs or alveoli. That effect inhibits the air sacs from diffusing oxygen to the blood and receiving carbon dioxide in exchange. You have difficulty in breathing. The threats those asbestos fibers pose depend on the amount and the duration of your exposure, individual susceptibility, smoking habits, and the presence of other air pollutants.

Asbestos-related diseases develop slowly to undermine the health and shorten the lives of workers. Typically, the first 10 to 15 years after initial exposure to asbestos are free of signs or symptoms. After that time, early Xray changes may appear.

What are the Health Warning Signals

Asbestos can cause asbestosis, mesothelioma, and cancers of the respiratory and digestive system.

Asbestosis is evidenced by shortness of breath. With a stethoscope, your doctor may hear a dry, crackling sound coming from lungs during inhalation. Besides breathing difficulty, which causes a strain on the heart, the symptoms of asbestosis include a cough, increased sputum, and weight loss.

Today, almost every asbestos insulation worker with more than 20 years of exposure to the material has asbestosis to some degree.

Lung cancer is the most serious health risk to asbestos workers. It accounts for as much as 20 percent of all deaths among that occupational group. In the general population, 4 to 5 per cent of deaths are caused by lung cancer. The disease is related to the amount of asbestos present in the lungs and to cigarette smoking.

Smoking greatly enhances the lung cancer causing properties of asbestos. One study showed that the asbestos worker who smokes is 90 times as likely to get lung cancer as is one who has never worked with the fiber and does not smoke.

The primary symptom of lung cancer is a cough or a change in cough habit. Blood-streaked sputum and persistent chest pain unrelated to cough are also signs of the disease.

Mesothelioma is a cancer of the chest lining and the membrane lining of the abdominal cavity. It is extremely rare in the general population, occurring mainly among asbestos workers. In some asbestos exposed occupational groups, 10% to 18% of deaths have been attributable to mesothelioma.

The first symptom is usually shortness of breath or pain in the wall of your chest or abdomen. Although Xrays are of some help in diagnosing the disease, a tissue biopsy is required.

Other cancers: Asbestos workers also have a higher than average rate of other cancers, notably cancers of the larynx, stomach, colon, esophagus, and kidneys. Those cancers are probably caused by swallowing asbestos fibers or the asbestos-contaminated mucus that has been cleared form the lungs.

What are the Risks?

As estimated by OSHA, based on a career exposure (45 years) to the PEL of 0.2 fibers/cc, the following are the expected number of cases per 100,000 workers:

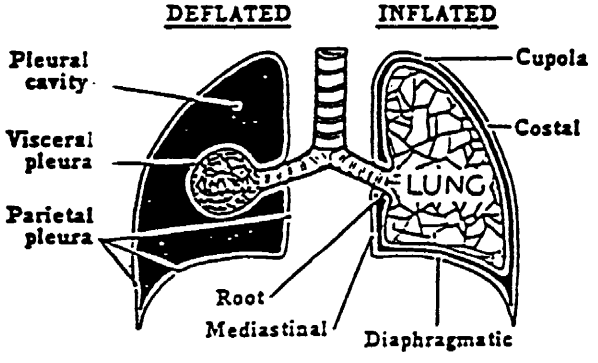
ASBESTOSIS:	500 certified disabilities
LUNG CANCER:	460 mortalities
MESOTHELIOMA:	164 mortalities
GASTROINTESTINAL CANCER:	46 mortalities

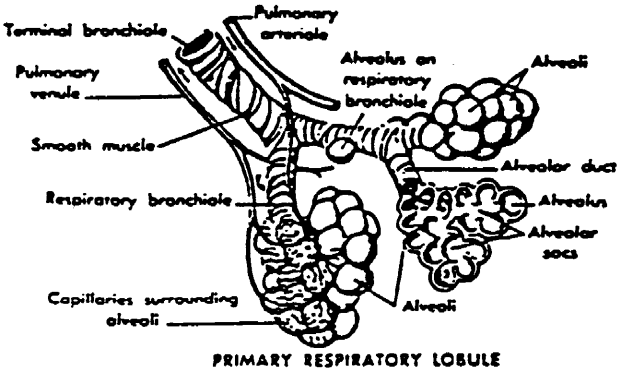
Treatment

Asbestosis: Asbestosis is irreversible. It is often a progressive disease, even in the absence of continued exposure.

Lung Cancer: Few cases of lung cancer are curable, despite advances in medical and surgical oncology. Only 9% of lung cancer patients survive for 5 or more years after diagnosis. (American Cancer Society in OSHA review of Health Effects of Asbestos Exposure.)

Mesothelioma: Fatal within 18 months of diagnosis in almost every case.





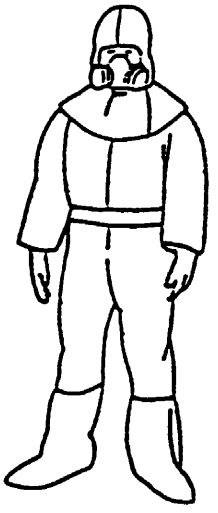
PROTECTIVE CLOTHING AND EQUIPMENT

I. Protective Clothing

A. Reasons for Wearing
1. Contain fibers in work area by facilitating decontamination. Showering may not remove all fibers from hair and pores -- so keep it off in the 1st place with coverings
2. Prevent skin rash and skin abrasion
3. Prevent Contamination of other Clothing -- (the protective clothing is a precaution when fiber release not expected, such as a glovebag procedure in a clean area)

B. Acceptable Clothing
1. Normal clothing acceptable but discouraged -- complicated laundering procedures must be followed.

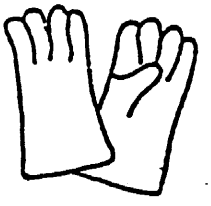
Typical Facility For Laundering Contaminated Clothes:
a. Washer and dryer in a negative pressure containment
b. Washer has 3 to 5 micron filter for waste water
c. Dryer exhaust has HEPA filter for air exhaust



2. Disposable clothing is preferred.

Options
a. Breathable or non-breathable
b. More expensive brands do not tear as easily
c. Parts -- hood, booties, suit OR one piece
d. Sized to cover a SCBA

C. Clothing Required by OSHA -- OSHA says no rips or tears while in the negative pressure enclosure -- mend or replace immediately
1. Coveralls
2. Foot Covers -- be careful of materials that add to the slipping hazard
3. Head Covers
4. Gloves -- (may be cotton, latex, surgical, etc.)



Under the clothing?
a. Nylon bathing suits allowed by some experts
b. Tyvek underwear

Over the Clothing: Extra cloths (for warmth, for example) must be donned and removed in the equipment room, and treated as contaminated

Tyvek® Boxer Shorts — Elastic waist

II. Other Protective Equipment
A. Safety Glasses and eye protection
B. Hard hats
C. Knee Pads
D. Safety shoes
E. Padding to prevent chafing from belts for air lines, PAPR's, air sampling pumps.

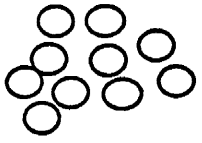
RESPIRATORS

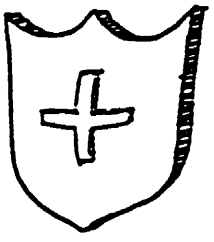
What do they do? Reduce the amount of contamination you breathe.

How much? It depends on the protection factor of the respirator.

EXAMPLE 1:

IF
for every
ten fibers in the air
outside the respirator





Respirator

one passes into
the respirator to be
inhaled

THEN

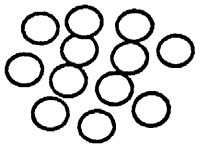
10 fibers outside / 1 fiber inside = 10

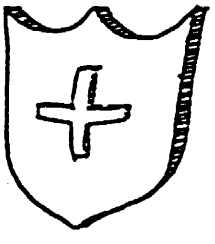
The "protection factor" of the respirator is 10.

EXAMPLE 2:

IF

for every 12 fibers
in the air
outside the respirator





Respirator

two pass into the
respirator to be
inhaled

THEN

12 fibers outside / 2 fibers inside = 6

The "protection factor" of the respirator is 6.

EXAMPLE 3:

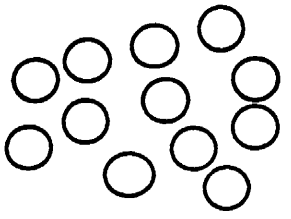
IF the fiber count is 0.4 f/cc, and you are breathing 0.004 f/cc; THEN the protection factor of your respirator is 0.4/0.004 = 100

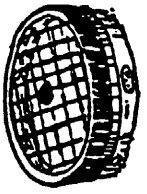
HOW RESPIRATORS WORK

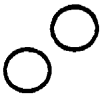
Respirators reduce the amount of contamination inhaled by

1.

Filtering contamination from the air

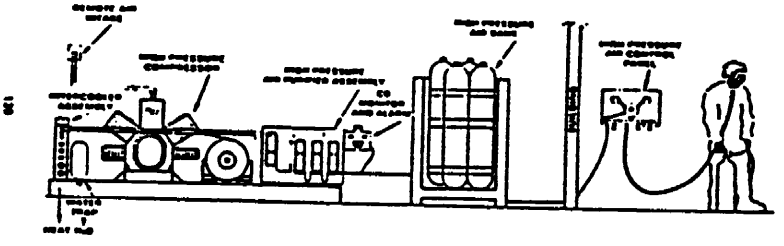






OR

Supplying clean air to breath



2. AND sealing contaminated air out of the breathing chamber by

Closing off the breathing chamber

OR for loose fitting hoods

AND for 1/2 and full-face PAPR's airline respirators, and SCBA's

Creating positive pressure inside the breathing chamber

PREPARING TO USE RESPIRATORS

I. Regulatory overview:

Respirator use is governed by the requirements of OSHA asbestos regulations, OSHA Respirator Program requirements (29 CFR 1910.134), State regulations, MSHA/NIOSH joint approval of each type of respirator manufactured, and EPA/NIOSH recommendations for respirator use in asbestos abatement.

II. Before you use a respirator

A. Get a medical exam to make sure a respirator will not cause undue physical stress
B. Be trained in the use and care of respirators
C. Be trained in the hazards associated with the contaminants anticipated in the work place.

III. Choosing and Donning the Respirator

A. Consider the:

1. Type (gaseous or particulate hazard, lack of oxygen, etc.)
2. Degree of protection needed

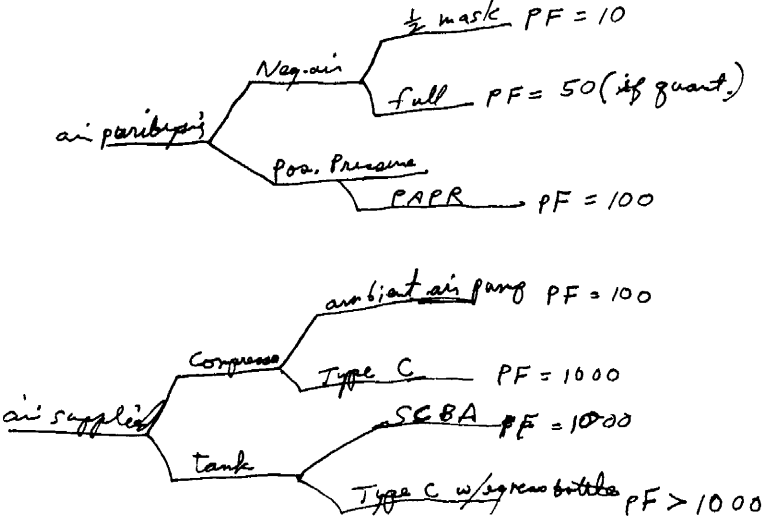
B. At a minimum, select protection required by regulations

C. Get a fit test of the facepiece (required for negative pressure respirators under the OSHA asbestos regulations.)

1. Qualitative fit test (see page Selecting the Proper Fit Test)
2. Quantitative fit test

D. Inspect the respirator before each use. (See page Inspecting the Respirator)

E. Use a positive and negative fit check each time the facepiece is donned. (See page Respirator Fit Checks)



EPA/NIOSH RECOMMENDATIONS FOR REPSPIRATOR USE FOR PROTECTION AGAINST ASBESTOS

Respirators Allowable Under Existing Regulations for Protection Against Asbestos

Although only the first two of the following respiratory protective devices are recommended by NIOSH/EPA for use in asbestos abatement operations, the other respirator types (numbered 3 through 13) may be allowable under OSHA regulations (29 CFR 1910.1001) and/or EPA regulations (40 CFR 763.121).

[CAUTION: The Occupational Safety and Health Administration and many States are currently revising regulations pertaining to asbestos abatement. Some of the devices listed below may not be permitted in the future. Employers choosing not to follow the NIOSH/EPA recommendations in this document should verify existing regulatory requirements before selecting these respirators.]

These devices are listed in order of decreasing protection (the most protective devices are listed first). Employers should note that regulatory requirements regarding specific respirator types may be dependent upon measured asbestos exposure levels which must, generally, be determined prior to selection.

Recommended by NIOSH/EPA:

1. A self-contained breathing apparatus with full facepiece operated in pressure-demand mode;
2. A combination Type C supplied air respirator with full facepiece operated in the pressure-demand mode, and with an emergency backup SCBA operated in the pressure-demand mode;

Not Recommend by NIOSH/EPA:

3. Any pressure-demand supplied-air respirator with full facepiece;
4. Any pressure-demand supplied-air respirator;
5. Any continuous-flow supplied-air respirator with full facepiece, hood, or helmet;
6. Any continuous-flow supplied-air respirator;
7. Any powered-air-purifying respirator with high-efficiency filter and full facepiece, hood, or helmet;
8. Any dust, fume and mist respirator with high-efficiency filter(s) and full facepiece;
9. Any powered-air-purifying respirator with high-efficiency filter;
10. Any demand supplied-air respirator or demand self-contained breathing apparatus;
11. Any dust, fume, and mist respirator with high-efficiency filter(s);
12. Any dust, mist, or asbestos-containing dust and mist respirator with full facepiece; or
13. Any dust, mist, ~ asbestos-containing dust and mist respirator.

[IMPORTANT; TH RESPIRATOR TYPES NUMBERED 3 THROUGH 13 ABOVE ARE NOT RECOMMENDED BY NIOSH OR EPA FOR USE AGAINS ASBESTOS. However, various existing regulations allow their use. In fact, the existing respirator certification regulations (30 CFR Part require NIOSH to certify single-use or dust, mist, and asbestos respirators. However, as a matter of public health policy, NIOSH and A DO NOT RECOMMEND THEIR USE IN ASBESTOS ENVIRONMENTS.]

(2) Respiratory Protection for Non-Abatement Operations

Air-purifying respirators supplied with high-efficiency particulate/aerosol (HEPA) filters or respirators that offer higher protection are recommend for use ONLY in special situations such as during pre-abatement inspections, preparation of the abatement area, final cleaning, removal of the last layer of plastic, etc., when measurable concentrations of asbestos are not detectable. The use of air-purifying respirators is only a precaution in the event of an accidental disturbance of asbestos, and for exposures to other dusts and particulates which may be present in the workplace.

Glove Bag Removal

Air-purifying respirators may also be suitable for use by workers performing glove bag removal of asbestos from pipes, valves, etc., where the environment in which the glove bag abatement operation is to be conducted is free of any measurable concentration level of asbestos. The use of air-purifying respirators in this case is a precaution in the event of accidental puncture or rupture of the glove bag. Should puncture or rupture occur, workers should immediately leave the area of exposure and begin decontamination procedures in an appropriate designated area.

From: A Guide to Respiratory Protection for the Asbestos Abatement Industry
EPA / NIOSH
EPA-560-OPTS-86-001
April 1986

SELECTING THE PROPER FIT TEST
As Required in 29 CFR 1926.58

Fit Test to select a NEGATIVE PRESSURE respirator:

Initially for proper fit
For any change of respirator model or size
When a condition may affect the seal, such as:

1. Weight change of 20 pounds or more.
2. Significant facial scarring in the area of the seal.
3. Significant dental changes.
4. Reconstructive or cosmetic surgery.

AND at least every 6 months.

QUALITATIVE FIT TESTS may be employed for half mask or full face respirators to establish a protection factor of 10. There are three acceptable testing agents:

1. Isoamyl Acetate (BANANA OIL)
2. SACCHARIN Solution Aerosol
3. IRRITANT SMOKE fumes

IF A SATISFACTORY FIT IS NOT OBTAINED, the worker must use a full face negative pressure respirator or a positive pressure respirator.

A QUANTITATIVE FIT TEST must be used for full face respirators for a protection factor of 50. It may be used for half mask respirators. The measured fit must be by 1,000 and 100, respectively.

IF A SATISFACTORY FIT IS NOT OBTAINED, the worker must use a positive pressure respirator.

During a fit test, the worker is instructed to perform a series of exercises while the respirator is challenged with the test substance. These exercises include normal breathing, deep breathing, head movement, reading the Rainbow Passage out loud, and jogging. When irritant smoke is used, the worker must close his eyes. In that situation, recitation of something like the alphabet is an acceptable alternative to the Rainbow Passage.

The worker may request a powered air purifying respirator in lieu of a negative pressure respirator.

INSPECTING THE RESPIRATOR

All respirators should be inspected before and after use and at least monthly by a competent person to assure that they are in satisfactory working condition. A general inspection check list should include:

- Tightness of connections.
- Condition of connecting tubes.
- Condition of exhalation and inhalation valves. If the sides of the exhalation valve gap even slightly, it must be replaced with a new valve.

  Check For: Dirt
  Cracks, holes, tears
  Distortion
  Material between valve & valve seat

- Condition of Headbands -- Elasticity
  clips, fasteners, adjusters
  material breaks and tears
- Condition of Facepiece -- Dirt
  Cracks, holes, tears
  Distortion
- Cartridge Holders: Gaskets
  Threads
- Filters -- Clean
  Undamaged
- Pliability and flexibility of rubber parts. Deteriorated rubber parts must be replaced. Unused rubber parts should be worked, stretched and manipulated with a massaging action.
- Condition of lenses should be checked. Lenses must be tight, and scratched or damaged lenses replaced.
- On self-contained breathing apparatus, the charge of the compressed air cylinders should be checked and sufficiently charged.
- Proper function of regulators and warning devices.
- On Type C respirators, the compressor, warning devices, hoses and attachments.

Respiratory protection is no better than the condition of the respirator in use, even though it is worn conscientiously. Frequent random inspection must be conducted by a qualified individual to assure that respirators are properly cleaned and maintained.

RESPIRATOR FIT CHECKS

Fit Checks are maneuvers routinely performed by the employee to increase his protection by testing the seal of the respirator. The worker can determine whether a respirator has been donned (put on) properly or is continuing in proper adjustment during the course of the day.

There are two different fit checks:

1. The POSITIVE FIT CHECK and
2. The NEGATIVE FIT CHECK.

These checks should be performed routinely prior to each entry of the abatement area.

I. The "POSITIVE FIT CHECK" or "POSITIVE PRESSURE TEST"

With the exhaust port(s) blocked, the positive pressure of slight exhalation should remain constant for several second without detection of leakage.

II. The "NEGATIVE FIT CHECK" or "NEGATIVE PRESSURE TEST"

With the intake port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds without detection of leakage.

POSITIVE PRESSURE CHECK

NEGATIVE PRESSURE CHECK

If a respirator does not fit properly, it may be due to:

1. Improper adjustment
2. Facial hair
3. Scarring or wrinkles
4. Change in dentures
5. Weight change
6. Clothing or glasses

POTENTIAL PROBLEMS WHILE WEARING THE RESPIRATOR

What can go wrong with a respirator?

Filters: Wet
Overloaded
Restricted flow
Pressure on seals
Wrong one - lets small fibers through

Note: HEPA cartridge are normally purple or magenta. At least one brand of respirators offers an orange HEPA approved only for asbestos particles.

NOTE: Filter respirators do not supply oxygen!

What can cause contaminated air to leak into a positive pressure respirator?

Battery pack runs out

Air line kinked, cut, crushed

Supply runs out (tanks)

Over-breathing (breathe more than supplied)

Contamination pulled into intake on compressor

What route does contaminated air take in leaking in the face piece?

Through a poor filter gasket seal

Through a breathing valve

Around the skin to facepiece seal due to such things as: hair; clothing; shape of face; scarring; straps loose; or straps losing elasticity

Bumping into something and breaking seal

Eating, drinking, chewing tobacco or gum, and smoking are prohibited when wearing respirators

RESPIRATOR CARE

Care and Maintenance:

Personnel involved in respirator maintenance must be thoroughly trained. Substitution of parts from different brands or type of respirators invalidates MSHA/NIOSH approval of the device. Repairs and adjustments should never be made beyond the manufacturer's recommendations.

Cleaning the Respirator:

Respirators must be cleaned and disinfected after each day's use when they are assigned to one individual or after each use if they are assigned to more than one person. The following procedures are recommended for cleaning and disinfecting the respirator:

- As required, remove and discard any filters or cartridges.
- Wash facepiece and breathing tube in detergent and warm water (120 degrees) or cleaner/disinfectant solution. Use a soft brush to facilitate removal of dirt. Cleaner/disinfectant solutions are available from respirator manufacturers or it can be made by suing a solution of water and household chemicals, such as two tablespoons of chlorine bleach to one gallon of water or one teaspoon of tincture of iodine to one gallon of water. A two minute immersion of the respirator into either solution is sufficient for disinfection.
- Rinse completely in clean, warm water.
- Air dry in clean air.
- Clean out other parts as recommended by the manufacturer.
- Inspect the valves, head straps, and other parts and replace with new parts if defective.
- Place facepiece in a plastic bag or container for storage in an assigned area.
- Insert new filters or cartridges prior to use, making sure the seals are tight.

Storing the Respirator:

When they are not being use, respirators should be individually sealed in plastic bags and stored at convenient locations in order to protect them against dust, sunlight, extreme temperatures, excessive moisture or damaging chemicals. They should be stored in such a way that the facepiece and exhalation valve are not being distorted.

INSPECTOR REFRESHER

C. a. FUNCTIONS

1. Determining whether ACBM is present in a building.
2. Assessing physical characteristics of ACBM and of the building.

b. QUALIFICATIONS

1. AHERA suggestions - High School Diploma
2. Required:
   a) Participate in an approved 3-day course
   b) Have a minimum score of 70% on examination
   c) Annually thereafter attend one-half day refresher

c. INSPECTOR'S ROLE

1. Check and investigate plans, records, specifications, drawings, etc. on the building
2. Inspect
3. Delineate homogeneous areas
4. Collect samples for analysis
5. Touch suspect materials and determine friability
6. Collect information on building in reference to disturbance of ACM and fiber release

D. LEGAL

a. Liability

1. Contract
2. Tort
3. Regulatory

b. Insurance

I. Types of Insurance important to the abatement industry

1. General Liability -- covers the insured is a 3rd party is injured.
2. Workman's Compensations -- covers the insured if an employee is injured.
3. Property -- covers the insured if property or equipment is damaged or lost under unusual circumstances.
4. Errors and Omissions (E & O) or Professional Liability -- covers an insured consultant if the insured is responsible for a problem causing injury or property damage.
5. Other -- Medical, life, automobile, disability

II. Sources of Insurance

1. Self Insurance -- set aside your own money
2. Commercial Insurance -- admitted carriers or off-shore companies
3. Captives -- formed by investors from the industry to serve the industry
4. Risk Retention Groups -- a form of captive taking advantage of recent laws designed to make the formation of the group easier
5. Purchasing Groups

III. Key consideration in purchasing insurance

1. Financial -
   a) rates
   b) deductibles
   c) minimum earned premium
2. Coverage -
   a) types of activities covered/not covered
   b) time span: retroactive dates and tail coverage
   c) amount paid on claims
   d) amount paid on claims

Key Terms: Claims made vs. Occurrence forms

3. The insurance company -
   a) financial strength
   b) customer service
   c) licensed
   d) Quality control demands placed on contractor

IV. New Developments for Contractors

1. Lower rates -- less than 10% of gross sales
2. More companies offering policies
3. More occurrence forms (especially for large contractors
4. More nominal "occurrence" policies that act like "claims made" policies

c. Bonding

E. BUILDING SYSTEMS

"Investigating Drawings: - "the ability to recognize where asbestos is likely to be found in blue prints, drawings, specifications, etc."

a. Structural drawings - physical plan - the skeleton.
   *Look for fire proofing on structural members.
   *Look for building code reference specifying fire proofing

b. Mechanical Drawings

   1. HVAC - What kind of system? Is insulation called for in the plan? Check heating, cooling and air plenums.
   2. Plumbing
      a) pipe insulation
      b) asbestos pipe
   3. Electrical Systems
      a) most likely to be changed from drawings
   4. Specifications
   5. Shop drawing and submittals

NOTE: If you were an asbestos salesman, where would you have specified ACM?

F. PUBLIC RELATIONS

a. Three Major Concerns:
   1. Building occupants should be informed of any potential hazard
   2. People who are informed are less likely to disturb the material.
   3. Early and full disclosure may reduce legal liabilities.

b. Best approach:
   -Bring it up
   -Tell the truth
   -communicate with all affected parties

c. Have a plan with the building owner on how questions are to be answered, how to deal with requests for more information.

d. Timing

e. Public Relations Outline

   I. Purpose

      A. Answer critics
      B. Provide information
      C. Fact -- Fiction
      D. Allow decisions
      E. Encourage cooperation
      F. Confirm intergrity
      G. Encourage participation
      H. Prescribe procedures
      I. Identify parameters
      J. Express commitment
      K. Reduce anxiety

   II. Targets

      A. Internal

         1. Employees
         2. Occupants

      B. External

         1. Press
         2. Parents
         3. Neighbors
         4. Vendors
         5. Visitors

III. Media

A. Written

1. Letter
2. Guidance document
3. Policy

B. Posted

1. Notice
2. Warning

C. Presented

1. Public gathering

D. Recorded

1. Video
2. Photographic

IV. Format

A. Language
B. Tone
C. Accuracy
D. Simplicity
E. Context
F. Sufficiency
G. Truth

V. Content

A. Past

1. Context
2. Progress

B. Present

1. Dilemma
2. Options
3. Plan

C. Future

1. Intentions

VI. Must be

A. Aimed

1. Personalities

a. Facts -- Possibilities
b. Warmth -- Impersonal

2. Filters

a. Education
b. Mood
c. Politics
d. Risk

B. Received

C. Understood

D. Believed

E. Appreciated

G. PRE-INSPECTION PLANNING

a. Inspection Team
   1. Owner's Representative (Designated Person)
   2. Original architect (if available)
   3. manager or Maintenance Director
   4. Consultant (if used)
   5. Other possible - EPA Coordinator, Owner's Attorney, State Asbestos Program, In-House Staff, etc.

NOTE: Building owner or School Administrator must assure full cooperation and access.

b. Informing non-participants (see P.R. Section)

c. Pre-Inspection Meetings:

   1. Focus on relevant historical documents, i.e., records, plans, reports, prior inspections. Make arrangements to review those records.
   2. Focus on relevant personnel, i.e., architects, contractors, maintenance personnel.
   3. Plan for inspection to be done in off-hours, unoccupied times.
   4. Develop a complete understanding of typical building activities.
   5. Reconfirm complete cooperation and complete access.
   6. Confirm preinspection walk-through (with Maintenance Director is best).
   7. Confirm inspection time.
   8. Assemble needed equipment:

      Sampling Kit: There are many different items which may be included into a sampling kit. Individual bulk sampling kits are usually a result of adding or exclud ing particular items based on the individual's needs and style of bulk sampling. A bulk sampling kit may be modified daily based on the anticipated sample areas and types of samples to be collected. A well outfitted bulk sample kit may consist of the following:

      - A rubber of plastic fishing tackle box with shoulder strap
      - Brass corers and plunger
      - Small hammer and chisel
      - Plastic flashlight
      - Spare batteries
      - Sharp pocket knife
      - Spare pocket knife blades
      - Scotch tape

- Duct tape
- Sprayer water bottle
- Small container of amended water mixture
- Straight razor
- Red pen
- Black pen
- Ball Point Pen
- Mechanical pencils with spare leads
  "Sharpie markers"
- Large ziplock bags
- Sponge
- Assorted rubber bands
- 1" x 2" yellow memo pads
- Ample sampling twirl bags or rigid containers
- Writing pad
- Plastic sheeting
- Camera and film
- Dictaphone and tape
- Minimum Respiratory protection

9. Prepare a unique numbering system or sampling scheme.

10. protective clothing

11. Respiratory protection

12. Helpers

H. The inspection for and assessment of friable and non-friable ACM:

1. Assemble equipment and supplies.
2. Obtain copies of the floor plans for the building or draw plans approximately to scale.
3. Locate any materials specified as asbestos-containing in the construction documents.
4. Walk through the building starting at the lowest floor and proceed to the highest floor. (The assistance of someone familiar with the building is usually very helpful.)
5. Enter every room and utility space, including crawl spaces, to look for suspect materials. Included: mechanical rooms (boiler/chiller, generator, elevator equipment, telephone/ electrical rooms, air-handling and fan rooms, cable and equipment vaults), loading docks, attached garages, attics, air shafts and pipe chases, and special use area (laundries, kitchens and dining areas, conference rooms, pools, gyms, locker rooms, and auditoriums). Also, be sure to inspect above suspended ceilings wherever observed.
6. Test (touch) all surfaces (walls, ceilings, structural members) for friability.
7. Record the location and description of all suspect materials assumed to be ACBM.
8. For all suspect material to be sampled, identify and draw homogeneous sampling areas.
9. for all friable suspect materials and thermal system insulation, identify (with an I.D. code) and locate appropriate functional spaces on the floor plans.
10. Assess friable suspect material and thermal system insula tion and record assessment information.

I. BULK SAMPLING

a. Design appropriate sample plans

1. homogeneous area
2. functional space
3. sample diagrams
4. number of samples
5. random sample locations
6. I.D. the samples
7. TSI
8. Miscellaneous materials

b. Sample collection

1. equipment
   -personal protection
   -sampling equipment
   -administration supplies
2. chain of custody
3. quality assurance

c. Analysis

1. PLM
2. approved labs
3. complete reports

K. RECORDKEEPING

a. Sample recording

1. unique number scheme
2. chain of custody
3. shipping samples

b. Reporting

1. Laboratory Report
   a) name and address of lab
   b) date of analysis
   c) name and signature of the person performing analysis
   d) results

2. Inspection Report -- within 30 days

   a) dates of inspection
   b) name, signature and accreditation of inspector
   c) Location of each homogeneous area, exact sample location, date, locations of suspect and assumed ACBM and clear drawings or diagrams.

   d) A written discussion of random sampling technique and how sample locations were chosen.

   e) A list of homogeneous areas and classifications --
      1) surfacing material
      2) thermal system insulation
      3) miscellaneous material

   f) Laboratory results correlated back for each sample, to each homogeneous area and designated as ACM or non-ACM.

   g) Assessment into one of the seven AHERA catergories--
      1) Damaged or significantly damaged thermal system insulation ACBM.
      2) Damaged friable surfacing ACBM.
      3) Significantly damaged friable surfacing ACBM.
      4) Damaged or significantly damaged friable miscellaneous ACBM.
      5) ACBM with potential for damage.
      6) ACBM with potential for significant damage.
      7) Any remaining friable ACBM or suspect friable suspect ACBM.

NOTE: The contents of the Building Inspector's Report will be incorporated in the Management Plan.