



From

To

KAREN M. KRALL

SEE DISTRIBUTION

PITTSBURGH OFFICE

September 15, 1995

RE: ASBESTOS AWARENESS TRAINING INSTRUCTOR MANUAL

Attached is an update to the Asbestos Awareness Instructor Manual. Because slides were added, the page numbering has changed along with the Table of Contents. For this reason, the entire file is being sent.

Minor changes have been made to the new file for slide numbers 1, 21, 22, 23, 29 and 47 to reflect corrections/clarifications that OSHA has made. Slides 28, 33, 34, 36, 37, 38, 39 and 48 have been added for more description.

KAREN M. KRALL

KMK:mlf
(00108.DOC)

Distribution:

Mark Jackson, ATC
Jodi Price, Arkansas Operations
Anita Patton, Badin Works
Steve Robuck, Cleveland Works
Doug Dunbar, Cleveland Works
Sid DeGarmo, Davenport Works
Bob Slack, Lafayette Works
Mauricio Born, Pittsburgh Office - 20
Tim Fitzpatrick, Pittsburgh Office - 20
Joan Karas, Pittsburgh Office - 20
Denise Richardson, Pt. Comfort Operations
Dan Pierce, Rockdale Works
Susan McKinney, Tennessee Operations
Barry Hopper, Vidalia Works
Mike Brown, Warrick Operations
Ken Karsten, Warrick Operations
Chris Janzer, Wenatchee Works

Attachment

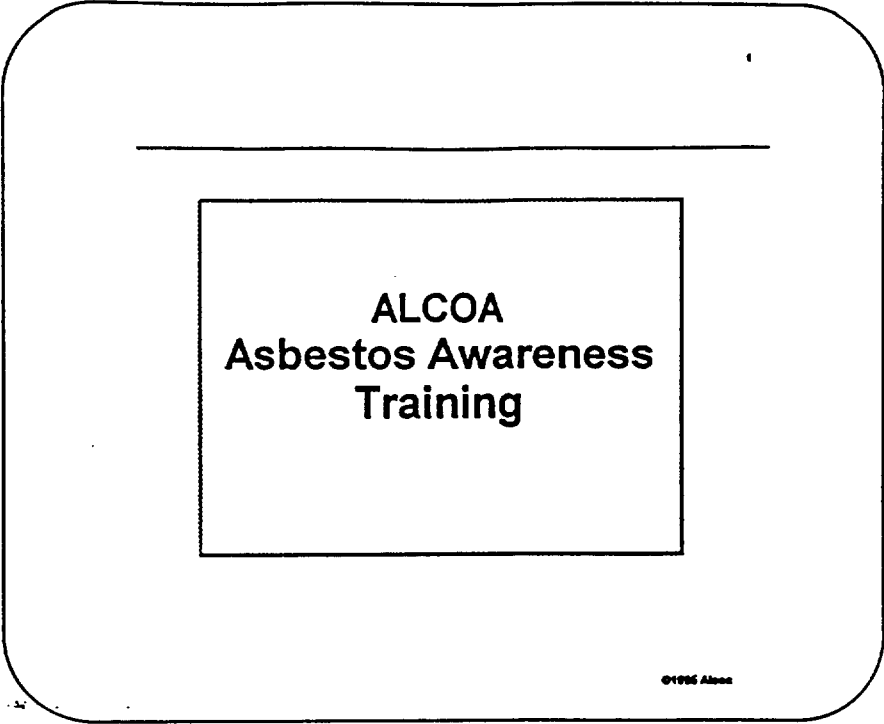


ARD 002349

	Page
Course Information	iii
Instructor Tips	v
Course Planning Checklist	vii
LESSON PLAN	
Section 1: Introduction	1
Why Am I Here? (Course Objectives)	2
Agenda	3
My Roles and Responsibilities	4
Section 2: Potential Health Effects	5
Routes of Entry	6
Chronic Health Effects	7
Conclusive Studies	8
Health Effects/Symptoms	9-10
Other Studies	11
Stop Smoking!	12
Smoking Cessation Programs	13-15
Section 3: Identifying Asbestos	16
Asbestos Was Used Extensively	17
Asbestos at Our Facility	18
Section 4: Overview of Requirements	19
Asbestos Standards-Alcoa Engineering Standard 18.18	20
OSHA Construction Standard	21
Four Classes of Construction Work	22
OSHA General Industry Standard	23
Changes in the Requirements	24
Overview of Requirements	25
Permissible Exposure Limits	26
Exposure Monitoring	27-28
Regulated Areas	29-30
Engineering Controls and Work Practices	31-32
Housekeeping Operations	33-34
Housekeeping Procedures	35-37
Brake & Clutch Repair	38-39
Waste Disposal Procedures	40
Personal Protective Equipment	41
Respiratory Protection	42
Hygiene Facilities and Practices	43
Communication of Hazards	44
Warning Signs and Labeling	45-46
Medical Surveillance	47-48
Other Asbestos management Practices	49
Section 5: Job Specific Information	50
Specific Job Requirements	51-52
Wrap Up	53

Appendix

Course Forms (Attendance Sheet, End-of-Course Evaluation Form Assessment/Answer Key)

The logo consists of a large rounded rectangle containing a smaller rectangle. Inside the smaller rectangle, the text "ALCOA Asbestos Awareness Training" is centered. A horizontal line is positioned above the smaller rectangle. In the bottom right corner of the large rounded rectangle, the text "©1995 Alcoa" is visible.

ALCOA Asbestos Awareness Training

©1995 Alcoa

☞ WELCOME / INTRODUCTIONS (if participants don't know each other).

☞ EXPLAIN safety procedures (e.g., emergency exit, etc.)

☞ EXPLAIN why participants are in this training class - Or **ASK** them why they think they are in the class.

☞ Note: This program is designed for the 2-hour Initial Awareness training required under the OSHA Construction Standard (CFR1926.1101) for Class IV operations. General Industry (CFR1910.1001) regulations require Awareness Training, but no time element is specified. This program is designed to be supplemented with location specific data, i.e., areas where asbestos-containing materials may be encountered, job-specific information, etc. Refresher training is required annually (1 hour minimum under Construction Class IV; no time element under General Industry).

This type of training is also required by Alcoa Engineering Standard 18.18. Non-U.S. locations may want to delete/modify the few references to OSHA.

↘ TRANSITION:

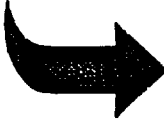
Why are we here today? What is this training session about?

1



Intro

Why Am I Here?



To protect you from the potential exposure hazards of asbestos.

- What are the hazards of exposure to asbestos?
- What type of jobs/work areas may have potential asbestos exposure?
- What's required to manage asbestos?
What are my responsibilities?
- What job specific procedures do I need to follow?

©1995 Alcoa

- You need to know the answers to these questions in order to work with asbestos safely.
- *For your information: OSHA Construction Standard Class IV training must include:*
 - *methods of recognizing asbestos, including requirement for presumed asbestos-containing material; instruction in recognition of damage, deterioration and delamination of asbestos containing building materials*
 - *health effects associated with asbestos exposure; information on smoking cessation programs*
 - *relationship between smoking and asbestos*
 - *nature of operations that could result in exposure to asbestos, including importance of protective controls to minimize exposure*
 - *purpose, proper use, fitting and limitations of respirators*
 - *appropriate work practices for performing asbestos work*
 - *medical surveillance program requirements*
 - *content of the standard*
 - *requirements for signs/labels*

➤ **TRANSITION:**

The course is divided into 5 sections which includes a job specific portion.



Agenda



Introduction



Potential Health Hazards of Asbestos



Identifying Asbestos Containing Materials



Overview of Requirements



Job Specific Procedures

©1995 Alcoa

☞ *Give the participants an idea of the course agenda -*

Estimates—(please customize based on needs)

- Introduction (10 Minutes)
- Potential Health Hazards (20 minutes)
- Identifying Asbestos Containing Materials (15 minutes)
- Overview of Requirements (30 minutes)
- Job Specific & Hands-on training (45 minutes) (describe how you'll do this portion)
- These icons will be used to identify what section we're in. For example, as you can see, we're currently in the "Introduction" section.

✂ **TRANSITION:**

First let's review what your roles and responsibilities are with regard to work involving potential exposure to asbestos.



My Roles and Responsibilities

- ✓ Ask questions if I'm not sure.
- ✓ Know the areas/tasks where I might encounter asbestos containing materials.
- ✓ Ensure safe work procedures are developed and followed for jobs involving potential asbestos exposure.
- ✓ Wear protective clothing when needed.
- ✓ Wear monitoring equipment if I'm asked, and make sure I understand what the results mean.
- ✓ Be actively involved in training.



©1995 Alcoa

- If you're unsure whether a material contains asbestos, or if you're unsure about how to proceed when working with known or suspected asbestos-containing material, ask! Remember . . . unless you positively know otherwise, fibrous materials must be presumed to contain asbestos.
- Know what procedures you should follow to protect yourself and to protect others by proper disposal of asbestos-containing materials.
- Know when to wear protective clothing and how to dispose of it properly.
- Cooperate if asked to wear equipment to monitor exposure to asbestos. When the results are provided, make sure you understand what the results mean. Ask questions if you're unsure.
- Take an active part in training. Ask questions when a point isn't clear. Share information based on your experience.
- We'll overview what Alcoa is doing to protect you from exposure during Section 4, "Requirements."

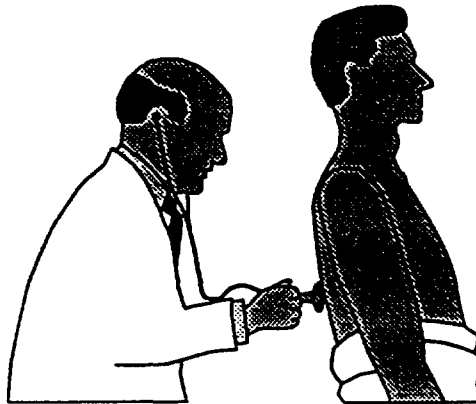


TRANSITION:

Now let's move on to Section 2, Health Hazards.



Section 2: Potential Health Effects



©1995 Alcoa

- In this section, we'll review the health effects of asbestos.
- Unfortunately, asbestos was used quite extensively prior to knowledge that it caused many harmful effects.
- Millions of workers were exposed occupationally between 1940 and 1979, and it is estimated that between 2 and 2.5 million are presently exposed. (US only)
- Also, significant exposures to the families of asbestos workers have occurred as a result of contaminated clothing brought home from the workplace prior to our knowledge of the hazards. That's why such care is taken to wear and dispose of protective clothing properly.
- Non-occupational exposure to asbestos occurs in buildings where friable asbestos has been applied as an insulating material to piping, ceilings and walls. However, airborne fiber levels in such buildings tend to be more than two orders of magnitude less than recommended safe occupational exposure limits. Fiber levels may be higher following removal of asbestos.



TRANSITION:

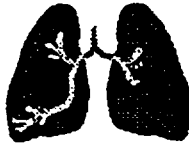
How can asbestos enter the body?



Routes of Entry

Asbestos can enter the body in two ways:

Inhalation (primary concern)



Ingestion



©1995 Alcoa

Asbestos can enter the body if you inhale it, or ingest it.

- The most important clinical effects of asbestos follow long-term respiratory exposure. We'll discuss these effects in a minute.
- Ingestion of asbestos in drinking water or in the diet has not been reported to cause adverse health effects.
- Skin exposure may cause a local reversible irritant reaction (although not commonly).

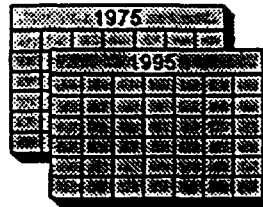
➤ **TRANSITION:**

The health effects of asbestos are *chronic* in nature.



Chronic Health Effects

The health effects from asbestos exposure are chronic in nature. The disease may not appear until 20 years following exposure.



There are no known acute (immediate) effects associated with inhalation of asbestos fibers.

©1995 Alcoa

- There are no acute (immediate) symptoms associated with inhalation of asbestos fibers.
- There may be an acute, reversible irritation associated with skin contact to asbestos.
- Asbestos diseases are *chronic* in nature. They have a long *latency period*—that's the time between exposure until harmful effects occur. The latency period may be 20 - 40 years.

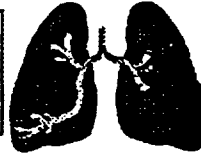
TRANSITION:

There are many studies that confirm the harmful effects of asbestos exposure.



Conclusive Studies

Studies have shown a direct association between exposure to asbestos and certain health effects.



What are these health effects?

- Lung cancer
- Asbestosis
- Mesothelioma
- Gastrointestinal cancer

©1995 Alcoa

- *Ask: Does anyone know someone who has had any of these diseases as a result of exposure to asbestos? How did it affect their life?*
- The strange thing about asbestos is it doesn't affect everyone the same way. Some people who have had very little exposure have had problems, while others with relatively high exposures have not. The exposure limits established by the government and Alcoa have been designed to protect nearly everyone. It's not worth taking a chance.

Continue



Health Effects/Symptoms

Lung Cancer (not unique)

- > Chest X-Ray may show pleural plaques, calcification, or fibrosis.
- > Latency period of about 20 years

Mesothelioma

- > Shortness of breath
- > Pain in the walls of the chest or abdomen
- > Long latency period (30-40 years)
- > Always fatal

©1995 Alcoa

● Lung Cancer -

- There is a relationship (dose-response) between development of lung cancer and exposure to asbestos. (This is not the case with the next disease on the overhead, Mesothelioma.) The higher and longer the exposure to asbestos - or in other words - the more fibers you breathe, the more likely you are to develop lung cancer. Usually it takes about 20 years before the cancer occurs.

● Mesothelioma -

- rare tumor associated almost uniquely with asbestos exposure
- usually with a latency of 30-40 years
- malignant Mesothelioma can develop after either high-level or low-level exposures (there is not a direct relationship between exposure and probability of getting Mesothelioma)
- has been seen in spouses and children of asbestos workers whose only exposure resulted from contaminated work clothing brought into the home
- highest (but not only) risk has been associated with exposure to crocidolite, a type of asbestos
- typical symptoms include chest pain, dyspnea (shortness of breath), weight loss and cough
- fatal

Continue



Health Effects, cont'd.

Asbestosis

- Shortness of breath (even at rest in later stages)
- Coughing
- Fatigue
- Often a progressive disease
- In severe cases, death may result from respiratory or cardiac failure

Gastrointestinal Cancers

- No consistent dose-response relationship

©1995 Alcoa

● Asbestosis-

- latency period of about 20-30 years from first exposure
- onset of radiographic changes often occurs before clinical symptoms
- like lung cancer, but unlike Mesothelioma, there appears to be a correlation between the amount of fibers inhaled and the probability of getting the disease, asbestosis.
- Typical signs/symptoms: progressive shortness of breath, cough (with or without sputum). Tightness of the chest may also occur.

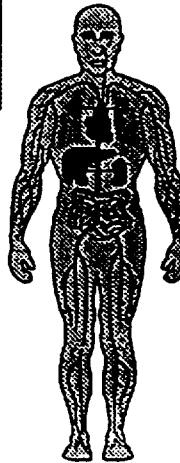


Other Studies

Exposure to asbestos has been *suggested* to cause increased incidence of other cancers:

What are these cancers?

- Esophageal
- Kidney
- Laryngeal
- Pharyngeal
- Buccal Cavity



©1995 Alcoa

[Optional Slide]

- The studies on these cancers are not as conclusive.
- ☞ *Note: There is much disagreement on the carcinogenic effects of asbestos other than lung cancer and Mesothelioma. The list on the overhead includes those identified by the OSHA Standard where it has been suggested that such cancers may occur as a result of exposure to asbestos. You may see variations of this list in other documents, such as the Alcoa TEMIS document.*
- ☞ *Esophageal = throat; pharyngeal = voice box; buccal = mouth*

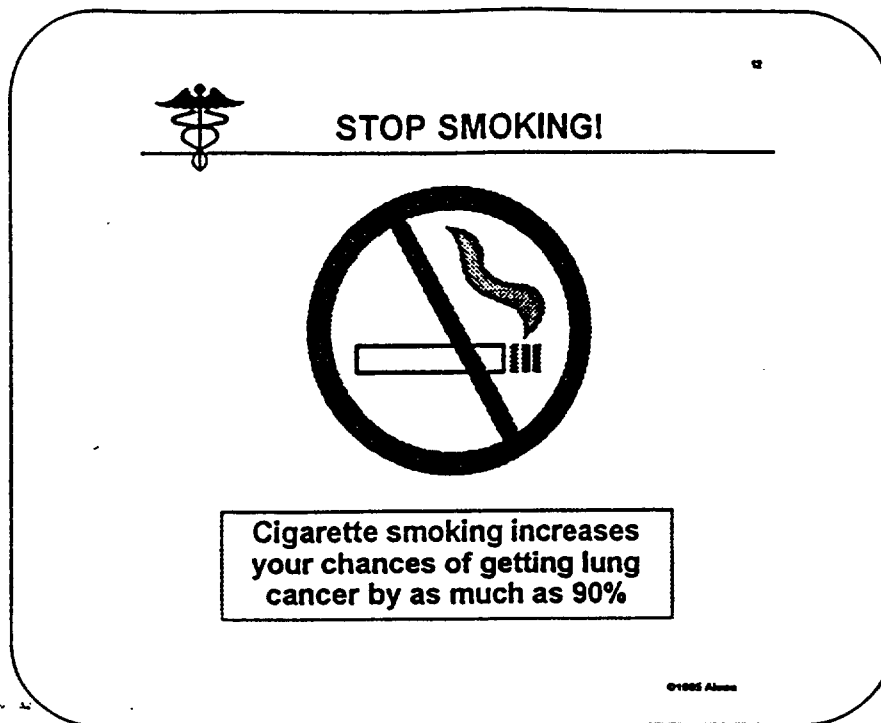
↘ **TRANSITION:**

The correlation between asbestos workers who smoke and end

up with lung cancer is very strong.

11

ARD 002362



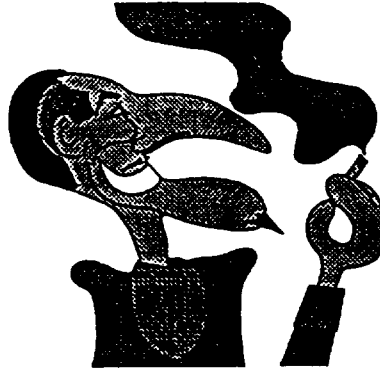
- If you are exposed to asbestos, smoking cigarettes increases your chances of getting lung cancer by as much as 90% .
 - One reason is due to "tired cilia" - Cilia are tiny hairs that have a thrashing motion which helps filter contaminants from getting into the lungs. In smokers, these cilia do not function very well and therefore, more fibers make their way deep into the lungs.
 - Another reason is the combined effects of asbestos and other carcinogens in cigarettes, such as PAH's (polycyclic aromatic hydrocarbons).
- Studies suggest that cessation of smoking *will reduce the risk* of lung cancer for a person exposed to asbestos, but will not reduce it to the same level of risk as those who never smoked.
- It makes good sense to STOP SMOKING. That includes cigarette, cigar or pipe smoking.

↘ **TRANSITION:**

If you are interested in quitting the habit, assistance is available through the medical department.



Smoking Cessation Programs



Our Medical Department would
like to help you butt out!

©1995 Alcoa

☞ Add specific information for your location, or data you might have available on success rates of smoking cessation programs.

✦ **TRANSITION:**

More information on smoking cessation programs is available from these organizations.



Smoking Cessation Programs

For more information. . .

☐ **National Cancer Institute**

➤ Call 1-800-4-CANCER

☐ **American Cancer Society**

➤ Call 404/320-3333

➤ "Great American Smokeout" every November

☐ **American Heart Association**

➤ Call 214/750-5300

☐ **American Lung Association**

➤ Call 212/245-8000

☐ **Office on Smoking and Health**

➤ Rockville, MD



©1995 Alcoa

[Optional Slide]

- **National Cancer Institute**

- Operates a toll-free Cancer Information Service with trained personnel to help you.
- Call 1-800-4-CANCER to reach the CIS office serving your area
- Write Office of Cancer Communications, National Cancer Institute, National Institutes of Health, Bld. 31 Room 10A24, Bethesda Maryland 20892

- **American Cancer Society**

- Voluntary organization
- Helps people learn about the health hazards of smoking and become ex-smokers:
 - "Great American Smokeout" in November
 - Annual Cancer Crusade in April
 - Numerous Educational Materials
- Write: 3340 Peachtree Rd., N.E., Atlanta, Georgia, 30026
- Call: 404-320-3333

Continue. . .



Smoking Cessation Programs

- [slide 10 continued]

- **American Heart Association**
 - Voluntary organization
 - Produces a variety of publications and audiovisual materials about the effects of smoking on the heart including a guidebook for incorporating a weight-control component into smoking cessation programs.
 - Call 214-750-5300
 - Write: 7320 Greenville Ave, Dallas, Texas, 75231
- **American Lung Association**
 - Voluntary organization
 - Conducts numerous public information programs about the health effects of smoking
 - Actively supports legislation and information campaigns for non-smokers' rights and provides help for smokers who want to quit
 - Write: 1740 Broadway, New York, New York, 10019
 - Call: 212-245-8000
- **Office on Smoking and Health**
 - Lead agency of Dept. and Health & Human Services in smoking control
 - Sponsors distribution of publications on smoking-related topics
 - Consult local directory for listings of local chapters
 - Write: U. S. Dept of Health and Human Services, 5600 Fishers Lane, Park Bldg, Room 110, Rockville, Maryland 20857

➤ **TRANSITION:** Any questions about potential health effects before we move on to the next section?



Section 3: Identifying Asbestos



©1995 Alcoa

✦ **TRANSITION:** In this section, we'll review how to identify asbestos containing materials.



Asbestos was Used Extensively

Used extensively until 1980 in:

- ✓ Fireproofing structures
- ✓ Thermal insulation systems
- ✓ Plaster
- ✓ Acoustical surfacing
- ✓ Floor and ceiling tiles
- ✓ Brakes, clutches, etc.

Asbestos is a
naturally
occurring
mineral.

Unless positively known otherwise, assume
these types of materials constructed prior to
1980 contain asbestos.

©1995 Alcoa

- The term asbestos includes several minerals: chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite, as well as any of these minerals which have been chemically treated and/or altered.
- Asbestos containing materials (ACM) are those which contain 1.0% asbestos by weight.
- Asbestos has found widespread industrial use due to its heat resistance and durability:
 - greatest quantity use in asbestos-cement products for roofing, building and water pipes
 - widely used in insulation and fireproofing (pipe covering; sprayed-on walls, ceilings)
 - asbestos textiles-fire-protective clothing, fire barriers, oven and autoclave packing
 - asbestos paper-millboard, roofing felts, wall coverings, engine gaskets, cooking mats
 - continues to be an important component of auto brake linings, clutch facings, pipeline gaskets
 - in the past, used to produce shingles, sidings and floor tiling (no longer common practice)
- "Presumed asbestos-containing materials" (PACM) refers to any fibrous material you are not sure about (such as fiberglass, and refractory ceramic fiber (RCF). *Unless you positively know otherwise, assume that it contains asbestos.*
- Although asbestos-containing materials may have been installed in small quantities after 1980, according to U. S. OSHA, their installation is unlikely after that date. (Other countries will need to check their sources on this.)



TRANSITION: Where are you likely to encounter asbestos containing materials at our location?



Asbestos at Our Facility



Add location
specific
information:

- List job tasks where potential asbestos exposure could occur.
- If possible, take pictures (and make into slides) of the processes, showing where the asbestos is and what the asbestos containing product looks like.

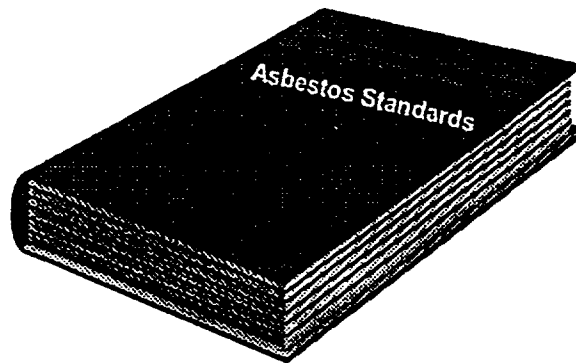
©1995 Alcoa

 Add location specific information which describes the nature of the work which may result in potential asbestos exposure. It is highly recommended that you add picture slides which illustrate where the asbestos is located and what the asbestos containing products look like. Also, how to recognize damage, deterioration, and delamination of asbestos containing materials. Rockdale has put together an Employee Handbook which contains pictures of asbestos containing materials likely to be found at the plant, how these materials are labeled, etc.

- *Ask:* Are there any questions about where asbestos may be found at the plant, or what jobs you might get involved with where asbestos could potentially be present?
- *Ask:* What type of activities off-the-job might involve potential exposure to asbestos?
- *Ask:* What should you do in the event that you encounter asbestos exposure off-the-job? (Perhaps some things you learn in class today could be applied at home; for big jobs, call a certified contractor—don't put yourself and your family at risk.)

 **TRANSITION:**

In the next section, we'll overview the requirements of the Alcoa/OSHA standards.



©1995 Alcoa

- This section will present an overview of the general requirements (Both Alcoa Engineering Standard 18.18 and the OSHA General Industry and Construction Standards).
- ☞ *Note that the Alcoa Engineering Standard and the OSHA Standards are very detailed, particularly for the Type I, II, and III Construction Work. It is not the intent of this training module to go into all the detail.*
- Copies of the OSHA Standards (and Appendices) and Alcoa Engineering Standard 18.18 are available. (*Explain where or how to get them. Note that the Engineering Standard is currently undergoing revision.*)

 CFR

Asbestos Standards

① Alcoa Engineering Standard 18.18

Scope: Applies to Alcoa locations worldwide.



- Mandatory Standard
- Tracks U. S. OSHA Standards closely

©1995 Alcoa

☞ *There are special provisions allowed for non-U.S. locations for the Alcoa Engineering Standard so that these locations can apply the Standard according to their local conventions and also a practical approach. You don't need to go over this with the class, but as an instructor, you should be aware of it in case questions arise.*

☞ *Explain how employees can get a copy of the Engineering Standard.*

✍ **TRANSITION:**

The OSHA regulations for Asbestos have recently been updated. Let's take a quick look at the recent changes in the OSHA regulations and what they mean for us.



Asbestos Standards

② OSHA Construction Std (1926.1101)

Scope: Broad application; includes activities that *intentionally* remove/disturb asbestos.

- Removal, repair, demolition and salvage, encapsulation, etc.
- Construction, alteration, repair, maintenance, renovation
- Installation of new products containing asbestos
- Emergency clean up of spills
- Storage, transportation, disposal, containment of and housekeeping activities

Continue ©1995 Alcoa

Coverage under the OSHA Standards are based on the type of activity, e.g., most Alcoa locations are covered by the construction standard and in some cases, the general industry standard in addition to construction.

Construction examples:

- electrician is installing cable above a suspended ceiling which contains asbestos
- using asbestos in the manufacturer of ingot

☞ *Describe in simple terms the type of activities at your location which would fall under the construction standard.*

☞ *Note to MSHA plants: where OSHA has made rules and MSHA doesn't have the same rules, MSHA can impose the OSHA rules if they deem necessary.*

☞ *Explain how employees can get a copy of the OSHA Standards and the Appendices.*

✂️ TRANSITION:

OSHA further defines 4 classes of work under the Construction Standard. These classifications further define training requirements and work practices which must be followed.



Four Classes of Construction Work

@ OSHA Construction Std (1926.1101), cont'd.

Involve removal:

- ✓ Class I - TSI and surfacing material
- ✓ Class II - other materials (e.g., floor tile, roofing panels, etc.)

Do not involve removal:

- ✓ Class III - repair and maintenance work where ACM or PACM are likely to be disturbed
 - ➔ disturbance means "disrupt the matrix"
- ✓ Class IV - maintenance and custodial work (including disposal) that involve contact with ACM or PACM

⚠ Removal vs. Disturbance vs. Contact

©1995 Alcoa

● ACRONYMS:

- ACM = asbestos containing material
- PACM = presumed asbestos containing material (unless you positively know otherwise, fibrous materials must be presumed to contain asbestos.)
- TSI = thermal system insulation
- Lft = linear feet
- ft² = square feet

● Coverage under the standard is based on the nature of the work:

- Class I - involves ACM or PACM *removal* of TSI and surfacing materials (such as sprayed or troweled materials). These are generally the larger jobs, (>25 Lft or 10 ft² ; or > than standard asbestos waste bag or glove bag).
 - Class II - involves *removal* of asbestos-containing materials that are not TSI or surfacing. Examples: roofing panels, floor tiles, (>25 Lft or 10 ft² or > standard waste or glove bag).
 - Class III - involves mainly *repair and maintenance* where asbestos-containing materials or presumed asbestos-containing materials are disturbed (i.e., by being cut into). For example, drilling into transite panels, cutting into roofing or siding, gasket work where ACM is cut into (for the purpose of removal), (less than 25 Lft or 10 ft² , or less than standard asbestos waste or glove bag)
 - Class IV - includes custodial and maintenance activities (including disposal) that involves contact with ACM or PACM as a result of construction related activities.
- OSHA has recently changed training requirements for individuals involved in all classes. This Awareness training is specifically designed for employees who do Class IV work or are covered under the general industry standard.

✂ **TRANSITION:** Some job tasks fall under the "General Industry" Standard.



Asbestos Standards

③ OSHA General Industry Std (1910.1001)

Scope: Narrow application; includes activities that are not related to construction activities.

- ✓ Removal of brake linings/clutch repair
 - Exclusively for automotive industry
 - Does not include forklifts, construction equipment, etc. (Construction Std.)
- ✓ Manufacturer of asbestos
- ✓ Custodial work
 - Moving furniture and accidentally smash a hole into a wall containing asbestos
 - Buffing asbestos floor tile

©1995 Alcoa

Coverage under the OSHA Standards are based on the type of activity, e.g., most Alcoa locations are covered by the Construction Standard and in some cases, the General Industry Standard in addition to Construction.

☞ *Describe in simple terms the type of activities at your location which would fall under the general industry standard.*

☞ *Tell the participants that they don't need to worry about memorizing what activity is covered by what standard—we just want them to realize that both standards may apply at the same work site depending on the activity being performed and that each standard has slightly different requirements. Describe the how the specific procedures required by these job tasks are documented (e.g., standard operating procedures, JSA's, etc.)*

☞ *Explain how employees can get a copy of the General Industry Standard.*

➤ **TRANSITION:**

You might be wondering what the differences are between the “new” and the “old” requirements.



Changes in the Requirements

What's the difference between the "old" and "new" ?

- Lowering of the PEL (permissible exposure limit)
- Changes in classification of asbestos work
- New training certification requirements
- More flexibility in methods of compliance
- New medical surveillance requirement
- New notification requirements
- New regulated area requirements



©1995 Alcoa

- On August 10, 1994, OSHA released final rules on occupational exposure to asbestos. These final rules amend the 1986 Asbestos Standards for General Industry and the Construction Industry. While there are numerous changes in this standard for asbestos applications, most operations are mainly impacted under the Construction Standard 29 CFR 1926.1101. This overhead highlights the major changes which we'll review in more detail.
- Lowering of the PEL [from .2 f/cc to 0.1 f/cc, TWA; with no action level]
- Changes in classification of asbestos work [i.e., new Construction classification is Class I, II, III, IV. Used to be small scale, short duration vs. demolition.]
- New training/certification requirements that tighten the requirements and lengthen training time. [dependent on work classification]
- More flexibility in the methods for controlling exposure.
- New medical surveillance requirements [may require including employees not previously covered].
- New notification requirements- notify OSHA in you change work practices, e.g., if you vary from using a negative pressure enclosure.
- New regulated area requirements- expanded under Construction Standard (e.g., Always for Class I, II, III. Class IV if PEL or EL potentially exceeded.).

➤ **TRANSITION:**

These are the major areas we'll be reviewing in this section . . .

- Permissible Exposure Limits
- Regulated Areas
- Engineering Controls and Work Practices
- Housekeeping Procedures
- Waste Disposal Procedures
- PPE, including Respirators
- Hygiene Facilities
- Communication of Hazards
- Medical Surveillance
- Other Management Practices

©1995 Alcoa

- These are the major areas which we'll be reviewing in this section.
- We are all accountable to follow safe work procedures in these areas.

✦ **TRANSITION:**

Let's start with reviewing the occupational exposure limits for asbestos.



Permissible Exposure Limits

- ◆ PEL = 0.1 f/cc [fiber per cc of air] as an 8 hour TWA [time weighted average]
- ◆ EL (Excursion Limit) = 1.0 f/cc averaged over 30 minute sampling period



©1995 Alcoa

- Asbestos fibers are microscopic in size. One asbestos fiber per cc is comparable to one blade of grass on a football field. So one *tenth* of an asbestos fiber per cc would be comparable to one blade of grass in an area as big as *ten* football fields.
- An 8 hour Time Weighted Average means that the sampling time is averaged over an 8 hour workday. The OSHA standards are based on an 8 hour day.
- Excursion limit means that this level may not be exceeded for any 30 minute period.

☞ *For your information, the average person breathes 20 m³/day or 0.8 m³/hour.*

↘ **TRANSITION:**

We conduct Industrial Hygiene Monitoring to check to see what levels of asbestos are generated during specific job tasks.

- ✓ Why it's done
- ✓ When it's done
- ✓ How it's done
- ✓ How results will be communicated
- ✓ Past findings

©1995 Alcoa

- **Why it's done** - to protect employees by determining what the actual levels of exposure are. Please cooperate if you are asked to wear a sampling pump.
- **When it's done** -
 - 8 hour TWA and 30 minute Excursion Limit monitoring
 - Periodic monitoring when exposures are expected to be greater than the PEL
 - Monitoring at intervals sufficient to determine that the exposure assessment is still valid.
- **How it's done** -
 - Very briefly - Air samples are taken to mimic a person's breathing. The filter is examined under a microscope and the number of asbestos fibers counted.

 *Insert past findings of monitoring at this location.*

 TRANSITION:

How can we control exposures to these very low limits? Let's review the main elements of the standard, starting first with Regulated Areas.



Exposure Monitoring

- ◆ Objective Data - data to conclude that an activity will not exceed PEL
 - require basic statistical analysis or assessment based on reasonable potential for fiber release
- ◆ Annual monitoring required for jobs involving significant amounts of TSI and SM
- ◆ Initial exposure assessment must be based on jobsite monitoring unless a NEA made

NEA = Negative Exposure Assessment

©1995 Alcoa

If an employer has monitored certain jobs in the past and has collected sufficient data to conclude that an activity will not result in fiber levels in excess of the PELs even when improper work practices and lesser trained personnel are used, it may be concluded that the objective data criteria have been met, in which case, further monitoring is not required.

"Objective data" determinations require basic statistical analysis. At the least, the prior data depended on cannot be the result of chance. Data reflecting the results of many jobs and/or employees are likely to provide adequate data on which to base "objective data" determinations.

The extent to which objective data documents the effectiveness of controls will vary depending upon the potential for fiber release. A job with very low exposures, for example, less than 0.01 f/cc, with simple work practices and little potential for control failure, will need minimal data.

However, due to the high potential for fiber release from thermal system insulation and surfacing ACM, OSHA has found that the objective data exemption from monitoring of Class I operations may not be relied on, regardless of the control method used.

Annual monitoring is required to assure the continued effectiveness of control of fiber levels in jobs involving removal of significant amounts of thermal system ACM and surfacing ACM. OSHA has not specified the number of personal monitoring data points required to make these determinations. Rather, it relies on the training and experience of the competent person to use good judgment in assessing each operation to determine the ability of the data to predict potential exposure of workers in that specific job.

CFR

Regulated Areas

Refers to:

- ✓ Any work area with a reasonable possibility of exceeding the PEL or EL, or
- ✓ Areas where Class I, II and III asbestos work is done, or
- ✓ Adjoining area where asbestos waste and debris accumulate



©1995 Alcoa

- Regulated area needed for Class I, II and III work and also for Class IV work where the PEL may be exceeded or where ACM waste/debris may accumulate.
- At Alcoa the need for regulated areas under under Construction Class IV work is not typical (i.e., for the normal Class IV jobs at Alcoa, the PEL or EL will likely not be exceeded and we generally dispose of waste and debris immediately).
- If work is performed by properly trained and informed workers in areas where no other workers have access, then a regulated area does not have to be established.

CFR

Regulated Areas, cont'd.

Requirements:

- ✓ Marked
- ✓ Limited access (authorized only)
- ✓ Respirators used
- ✓ No smoking, eating, drinking, chewing gum or tobacco, or applying cosmetics
- ✓ Supervision of work by competent person



©1995 Alcoa

- These are the requirements of work within the regulated area.

➤ *TRANSITION:*

Engineering Controls and Work Practices are another important asbestos control mechanism.

> Requirements

- ✓ Vacuum cleaners, local exhaust with HEPA filters
- ✓ Wet methods or wetting agents unless infeasible (e.g., electrical hazards)
- ✓ Prompt cleanup and disposal of wastes in leak-tight containers



©1995 Alcoa

- HEPA (High Efficiency Particulate Air) filter
 - Use vacuum cleaners or wet methods to clean up asbestos to avoid creating dust. Promptly clean up spills or wastes.
-  *Hands-on training is not required for Class IV work but we recommend that you consider devoting some of the required two hours training time to hands-on training to demonstrate proper work practices (See Job Specific section).*

 TRANSITION:

What are some specific work practices to avoid?

CFR

Controls and Work Practice No-No's

**DO NOT
USE:**

- X High speed abrasive disc saws without LEV or enclosures without HEPA exhaust**
- X Compressed air to remove asbestos (unless used in conjunction with enclosed ventilation system)**
- X Dry sweeping or other dry cleanup methods**
- X Employee rotation as the way to reduce exposure levels**

©1995 Alcoa

- These are unacceptable work practices.
- Stress that employees are NOT to dry sweep asbestos or use dry cleanup methods since this creates airborne fibers which are hard to control, and can thus be inhaled.

◆ Housekeeping covered in all standards

☐ custodians in public and commercial building = General Industry

☐ related to construction activity = Construction

☐ examples = cleaning up debris from cable running above suspended ceiling; sweeping; mopping; dusting; cleaning; vacuuming of ACM/PACM; stripping/buffing of flooring

©1995 Alcoa

The logo consists of a stylized building or structure with the letters 'CFR' prominently displayed on its side.

CFR

Housekeeping Operations

Housekeeping Characterization

- ◆ Presence of ACM installed products
- ◆ Visual clues of damaged ACM/PACM
- ◆ Reasonable potential for exposure
- ◆ Accessibility

©1995 Alcoa

- ✓ HEPA vacuuming equipment
- ✓ Special floor care for vinyl and asphalt tile
 - Sanding prohibited
 - Stripping - wet methods, low abrasion, low speed
 - Burnishing, dry buffing - pad can't contact ACM
- ✓ Proper waste disposal

©1995 Alcoa

- A HEPA (High Efficiency Particulate Air) filter is required for vacuum equipment so that the fibers cannot escape into the environment.
- ☞ *Add location-specific information about how to get the HEPA filter vacuum.*
- Floor care regulations:
 - Sanding is prohibited
 - Stripping finishes - use wet methods, low abrasion pads and slow speeds
 - Burnishing or dry buffing permitted when the pad does not come in contact with the asbestos (We normally accomplish this with special products used during burnishing/buffing.)
 - ACM flooring that is visibly deteriorated may not be swept or dry dusted. Use HEPA vacuum.
- There are some additional special requirements which depend on the specific type of work.
- ☞ *Cover decontamination procedures in the Job-Specific section.*

Continue . . .



Housekeeping Procedures

Housekeeping Requirements

- ✓ Maintain surfaces free of accumulations of ACM dust and waste
- ✓ Clean spills and releases ASAP
- ✓ HEPA vacuuming
 - ✓ shoveling, dry sweeping, dry clean-up only where wet cleaning or vacuuming not feasible
- ✓ Dust/debris in an area with TSI or surfacing ACM/PACM, or visibly deteriorating ACM
 - X cannot be dusted or dry swept
 - ✓ vacuum with HEPA filter

©1995 Alcoa

Housekeeping, cont'd.

- X Do not use compressed air
- ✓ Dispose of contaminated materials in labeled, closed impermeable bags/containers
- > Care of ACM flooring material:
 - X sanding prohibited
 - ✓ strip using low abrasion pads, <300 rpm; wet methods
 - ✓ burnish or dry buff only on floors with sufficient finish so pad cannot contact ACM

©1995 Alcoa

CFR

Brake and Clutch Repair

General Industry

- ✓ Preferred methods
 - ☐ low pressure/wet cleaning
 - ☐ NPE/HEPA vacuum system
- ✓ Equivalent methods (can be used with proper work practices) (need written procedures)
 - ☐ solvent spray
 - ☐ wet methods
- ✓ Infrequent work (five or fewer per week)
 - ☐ wet method is "preferred method"

✦ Exposure monitoring does not have to be conducted for preferred or equivalent methods

©1995 Alcoa

Solvent spray used to first wet brake/clutch parts; wipe clean with a cloth; contaminated cloth in proper container/proper disposal or laundered in a manner to prevent >PEL; immediate cleanup of spilled solvent or dispersed asbestos.

General Industry

✓ Prohibited methods

- use of compressed air to remove asbestos residue from surface of brake drum
- use of a dry brush
- use of wetted brush as only wet method control

©1995 Alcoa

Acceptable Methods

A special HEPA vacuum system is available in limited wheel sizes to control airborne asbestos. However, its use can be limiting to mechanics and it can be costly. A compressed air hose fitted at the end with a bottle of solvent can be used to loosen the asbestos-containing residue and to capture the resulting airborne particles in the solvent mist. The mechanic should begin spraying the asbestos-contaminated parts with the solvent at a sufficient distance to ensure that the asbestos particles are not dislodged by the velocity of the solvent sprayer.

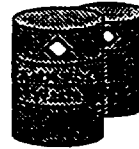
After the asbestos particles are thoroughly wetted, the spray may be brought closer to the parts and the parts may be sprayed as necessary to remove grease and other material. The automotive parts sprayed with the mist are then wiped with a rag which must then be disposed of as asbestos. Rags should be placed in a labeled six (6) mil plastic bag or other container while they are still wet. This ensures that the asbestos fibers will not become airborne. A variant of this compressed air/solvent mist process offers advantages over the compressed air/solvent mist technique discussed above, both in terms of costs and employee protection. The variant involves the use of spray cans filled with any of several solvent cleaners commercially available from auto supply stores. Spray cans of solvent are inexpensive, readily available, and easy to use. These cans will also save time because no solvent delivery system has to be assembled; i.e., no compressed air hose/mister ensemble. OSHA and Alcoa believe that a spray can will deliver solvent to the parts to be cleaned with considerably less force than the alternative compressed air delivery system described above, and will thus generate fewer airborne asbestos fibers than the compressed air method.

CFR

Waste Disposal Procedures

What to collect:

- ✓ Scrap, waste, debris
- ✓ Bags, containers
- ✓ Equipment
- ✓ Clothing



What to do with them:

- ✓ Double lined bags
- ✓ Follow location procedures
- ✓ Special landfills
- X Do NOT put in regular trash!

©1995 Alcoa

- The material must be disposed of promptly and properly in double lined bags and in a certain type of landfill so that the fibers don't leach into our drinking water or become airborne.
- Waste, scrap, debris, bags, containers, equipment and clothing contaminated with asbestos consigned for disposal, shall be collected, recycled and disposed of in sealed impermeable bags or other closed impermeable containers.
- Proper disposal includes:
 - ☞ *Insert location-specific information on how to dispose of ACM, PACM.*
- The waste must go to special landfills. NEVER put ACM or PACM into the regular trash under any circumstances.

➤ **TRANSITION:**

Next, we'll review personal protective equipment.

- ✓ **Protective clothing required**
when exposure is at or above the
PEL of 0.1 fiber/cc for all classes of
work
- ✓ **Respirators required**
for all classes of work when
exposure may be at or above
the PEL

©1995 Alcoa

- Protective clothing, such as respirators and coveralls, is required when exposures may be at or exceed the PEL.
- ☞ *Provide location-specific information - Will the training participants need to use protective clothing for the type of work they do? If so, what type of protective clothing used for what, how to obtain it, etc. What if the employee is not required to wear protective clothing, but prefers to wear it?*

↘ **TRANSITION:**

How do we know what type of respirator to use?

CFR

Respiratory Protection

Type of respirator based on exposure potential



Location specific information:

- Location Respirator Program
- Types of respirators used based on jobs/exposures
- How to obtain respirators

Employee can "upgrade" to PAPR

©1995 Alcoa

You may choose to replace this slide with a location-specific slide indicating the types of job tasks where respirators may be required, the exposure level (if known), and the type of respirator required. Describe how your location addresses issues when employee may wish to wear respirator even though not required.

- Employees medically unable to wear respirator must be given equivalent assignment if available.
- Fit testing required every 6 months for anyone wearing a respirator due to asbestos exposure (otherwise 12 months). Fit testing is done to ensure the respirator fits properly to ensure adequate protection.
- Respirator Selection based on potential exposure:

<u>TYPE</u>	<u>FACTOR x PEL</u>
Non-disposable half mask w/HEPA	10
Full face w/HEPA	50
PAPR w/HEPA	100
Continuous flow supplied air	100
Full face pos. press. demand supplied air	1000
as above w/ auxiliary SCBA	unknown or >1000

➤ **TRANSITION:**

Hygiene facilities and practices are also required.

CFR

Hygiene Facilities and Practices

For Class IV work - When exposure exceeds the PEL

- ✓ Equipment room
- ✓ Lunchrooms
- ✓ No smoking in work area

©1995 Alcoa

- Where the PEL is exceeded, an equipment room (clean room) must be established adjacent to the regulated area, and appropriate listed work practices and clean up procedures followed. Notice the overhead says for Class IV Work when the PEL may be exceeded. These requirements exist for all Class I, II and III work regardless of exposure.
- This is done so that we don't take asbestos home on our clothes and expose our families.
- Smoking is not allowed. Obviously, you can't wear a respirator and smoke, and you risk ingesting fibers. Besides, you shouldn't be smoking anyway!

✚ *TRANSITION:*

There are also requirements for communicating the potential hazards of asbestos.



Communication of Hazards

☐ Information and Training

- ✓ Asbestos Standards available
- ✓ Type and length of required training dependent upon type of asbestos work

☐ Warning Signs

☐ Product Labeling

©1995 Alcoa

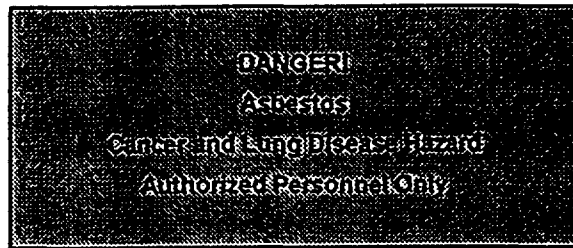
- There are various ways to communicate about the potential hazards of asbestos exposure. One example is this training program. Training is required on an annual basis for employees who are potentially exposed to asbestos. The type and length of training is dependent on the type of work.
- Copies of the Asbestos Standards (e.g., Alcoa Engineering Standard 18.18, OSHA Construction and General Industry) are available for you to review if you'd like.
- Another method for communicating potential hazards about asbestos is through warning signs and labeling.

✍️ *TRANSITION:*

The next slide provides more details about warning signs.

Warning Signs

- ✓ Posted at entrance to mechanical rooms/areas containing ACM or PACM
- ✓ Identify the material and its location



©1995 Alcoa

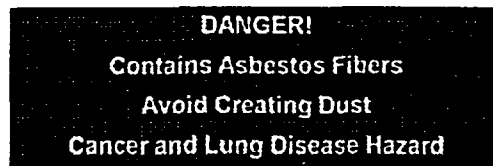
- **Required wording for signs**
- **You would use warning signs on entrances to areas where asbestos containing materials are present, such as boiler rooms.**
- **Exceptions:**
 - You may provide the information on blue prints or diagrams (rather than posting signs) if employees who might enter the area are familiar with these blue prints or diagrams.
 - You may label pipes, etc. with simply "Asbestos" or other coding system if employees are familiar with these methods for warning of the hazards.
 - Signage not required if ACM/PACM is modified by bonding, coating or other means that can be demonstrated to prevent airborne concentrations below PEL and EL during foreseeable use.
 - Signage not required if asbestos content is less than 1%.

➤ **TRANSITION:**

In addition to signs, products containing asbestos or containers with ACM or PACM waste must carry labels.

Labels -

- ✓ Must be placed on all products and containers that contain ACM or PACM
- ✓ Must be clearly seen



©1995 Alcoa

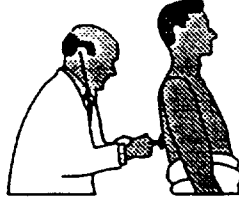
- **Required wording for labels**
- **You would find these labels on manufacturers products containing asbestos, waste bags with asbestos-containing materials, etc.**
- **Exceptions:**
 - Labels not required if asbestos content is less than 0.1%.

 TRANSITION:

And employees who work with or around asbestos may be included in a medical surveillance program under certain conditions.

CFR

Medical Surveillance



Required for employees who:

- ✓ Are exposed at or above the PEL or EL for 30 or more days/year, **Or**
- ✓ Perform Class I, II or III work for 30 or more days/year regardless of exposure, **Or**
- ✓ Wear negative pressure respirators

©1995 Alcon

- Medical examinations must be performed by or under the direction of a licensed physician:
 - Prior to an employee's assignment to an area where negative pressure respirators are used
 - Within 10 working days of the 30th day of exposure when assigned to an area where exposures may be at or above the PEL for 30 or more days per year
 - At least annually after that. Or more frequently if:
 - Employee requests
 - Excursion limit is exceeded; for example in an emergency release of fibers.

✂ *TRANSITION:*

In addition, here are some other asbestos management practices implemented at our plant.

♦ Reduction of requirements for two groups of workers

□ Occasional wearers of respirators - comprehensive physical exam not required for NPR for Class I, II, III work for <30 days/yr.

□ Occasional Class II and III work below PEL - 30 day requirement to exclude days in which less than one hour spent

©1995 Alcoa

OSHA is clarifying paragraph (m) (1) (i) to reduce requirements for medical surveillance for two groups of workers. For the first group, occasional wearers of respirators, the more comprehensive physical examination required by the asbestos standards is not necessary for workers who are required to wear negative pressure respirators while performing Class I, II, or III work for less than 30 days per year.

The second group are workers who perform Class II and Class III operations very briefly and occasionally, and are exposed below the permissible exposure level (PEL). The standard provides medical surveillance for all workers below the PEL who are engaged in Class II or III operations for 30 or more days per year. However, OSHA now clarifies that the 30 day requirement should be corrected to exclude days in which less than one hour is spent in Class II or III work when work practices that fully comply with the standard's requirements are followed.

CFR

Other Asbestos Management Practices

- Recordkeeping
- Procurement Practices
- Contractor Selection
- [add other specific practices for your location]

©1995 Alcoa

- Recordkeeping
 - Exposure monitoring
 - Medical records
 - Training records
- Procurement Practices:
 - Notes on purchase orders
 - Describe if asbestos is currently bought for any ongoing applications and what is being done to find replacements
- How are contractors used on asbestos abatement projects?
- Discuss any other asbestos management practices at your location that haven't already been covered.

✈ **TRANSITION:**

To Job Specific Procedures Section



Section 5: Job Specific Information



©1995 Alcoa

- ☛ This section is location/job specific. After reviewing the questions on the next overhead, *demonstrate* how to do the things you've discussed (e.g., don protective clothing, use HEPA vacuum equipment, etc.). Have participants actively involved in the demonstrations and provide feedback to them.

✈ **TRANSITION:**

Here are some specific questions you may have . . .



Specific Job Requirements

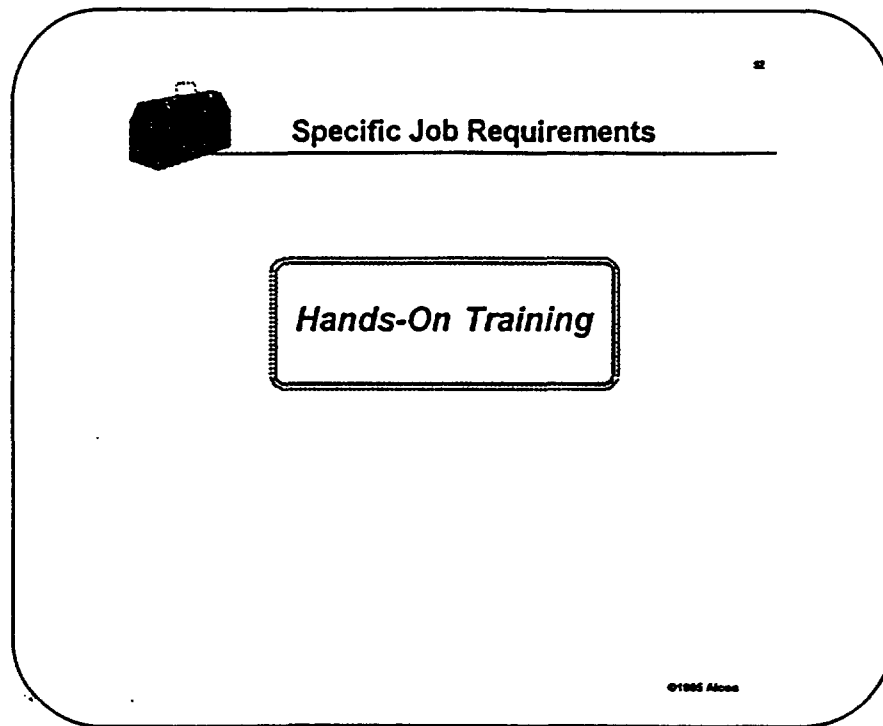
- What should I do if I believe a material may be asbestos?
- What should I do if I'm aware of a accidental release of asbestos?
- Where can I get more information on how to perform my job safely?
- What other reference materials are available?

©1995 Alcoa

- ☞ *Provide specific information on who to contact if an employee is not sure whether a material is asbestos.*
- ☞ *Explain that they may talk to their supervisor, Industrial Hygienist, Occupational Nurse for more information.*
- ☞ *Explain that in case of an accidental asbestos release/emergency cleanup (not routine housekeeping):*
 - *a competent person (identify who that is at the plant) should evaluate the situation to what should be done based upon the type, condition and extend of dislodged material.*
- ☞ *Provide specific information (what and where) on written reference materials such as:*
 - *Safe work instructions-JSAs or standard operating procedures*
 - *Engineering Standard, etc.*
 - *(Note: Alcoa TEMIS document on Asbestos is being developed. Engineering Standard 18.18 is currently being revised.)*

➤ **TRANSITION:**

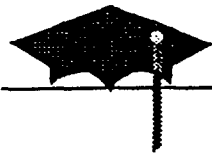
Do you have other questions before we go to the actual demonstrations?



- ☛ *This part of the training is highly recommended, but not required if you have already provided the information to meet objectives covered on page 2 of the Instructor Guide.*
- ☛ Describe how the hands-on training portion will be conducted.
- ☛ Demonstrate proper work practice controls.
- ☛ Demonstrate proper personal protective equipment usage (be sure to cover Respiratory Protection if you haven't already done so: purpose, fitting, limitations as per 29CFR1910.134).

➤ **TRANSITION:**

After the "hands-on portion" you can go to the course wrap-up.



Wrap Up

- What type of jobs may have potential asbestos exposure?
- What are the hazards of exposure to asbestos?
- What are my responsibilities?
- What is the company doing to protect me from exposure?

©1995 Alcoa

- REVIEW the questions/summarize answers.*
- PROVIDE the optional quiz and review answers.*
- THANK participants for attending.*
- DISTRIBUTE and collect evaluation forms.*
- DISTRIBUTE and collect the attendance sheet. File according to location procedures.*

NOTE — Consider doing informal follow-ups (or job observations) with attendees to check their understanding and implementation of the safe work procedures outlined in the class and during the job-specific hands-on portion.