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REFINING DEPARTMENT
BATON ROUGE REFINERY

November 8, 1982

Mr. Jim Reed
Refractories Division
Anco Insulations, Inc.
P. O. Box 66596
Baton Rouge, LA 70896

Dear Jim:

I am enclosing three (3) copies of my paper on "Asbestos Removal - A New Industry," as you requested yesterday.

I thoroughly enjoyed the Energy Seminar, and thank you for inviting me to participate.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Fred".

FRED S. VENABLE

FSV:nh
Enclosure

ASBESTOS REMOVAL - A NEW INDUSTRY

To someone such as myself who has spent over 30 years in the occupational and environmental health field, one of the more interesting changes that has come about has been our increasing knowledge of and concern over the effects of human exposures to toxic agents. Those agents receiving such attention are largely chemical substances and other materials which have been widely used in industry for many years and indeed, many are also found in our home environment. The number of these materials of concern is already large and is steadily increasing. The list includes carbon tetrachloride (solvent - fire extinguishing agent) and PCB (transformer fluid) - formerly considered safe because they were nonflammable; vinyl chloride (raw material for plastics), which we thought only had anesthetic and combustible properties at high levels; formaldehyde, which is widely used as a preservative and as a component of bonding agents in plywood permapress fabrics and paper; and of course, asbestos, a very common and almost indispensable insulating and fireproofing material. Much, if not most, of our increased concern over the health effect of these substances has resulted from new data derived from the testing of animals. However, the cases against some materials have been compiled from human experience - that branch of public health we call epidemiology. Epidemiology is the science of comparing illness or death rates in an exposed population to the rates in a nonexposed population. The capacity of asbestos to produce a rather rare and unusual form of cancer called mesothelioma has enabled epidemiologists to pinpoint the cause to this specific material in the workplace. What we will discuss today are the stringent requirements for safe handling of asbestos materials on the job; more specifically, the removal of asbestos insulation, all of which have resulted from our epidemiological findings.

HISTORICAL

The word asbestos evolved from a Greek word meaning inextinguishable or incom-
bustible. In addition to this important property, asbestos also does not
decay, break down or otherwise change except possibly to become more frag-
mented. Canada, Russia and South Africa furnish most of this interesting
mineral. Six different types are found. As early as 1927, a lung disease
resulting from the inhalation of asbestos fibers was recognized. This disease,
called asbestosis, resulted in a diffuse scarring of lung tissue and shortness
of breath somewhat similar to the silicosis dust disease earlier recognized in
miners. This disease was disabling but not necessarily fatal. For many
years, including many within my own experience, it was felt that controlling
asbestos dust levels to 5 million particles per cubic foot of air or less
would essentially prevent asbestosis. At the same time, this level did not
impose serious restrictions on many practices which were commonly used by
insulators and other asbestos workers.

In the 1960s, Selikoff pointed out the striking incidence of lung cancer and
mesothelioma in asbestos workers, and it became apparent that much lower fiber
levels must be achieved in order to prevent these diseases. In 1972, the
Occupational Safety and Health Administration imposed a standard for an 8-hour
work period of 5 fibers greater than 5 microns in length per cubic centimeter
of air which was, later in 1976, reduced to 2 fibers per cc. Ceiling or
maximum levels for any 15-minute period shall not exceed 10 fibers per cc.
Almost simultaneously with OSHA's actions, the Environmental Protection Agency
imposed certain requirements prohibiting the release of asbestos fibers from
the exhaust stacks of manufacturing establishments, established requirements
for the disposal of asbestos waste and the required prenotification of EPA of
demolition jobs.

OSHA's requirements, in addition to the permissible level of asbestos fibers in air, are more detailed and burdensome. They include a series of actions ranging from early identification of exposed employees through final medical followup. To illustrate the complexity of compliance procedures, we will refer to the following slides.

OSHA STANDARD ON ASBESTOS (29 CFR 1910.1001)

ENGINEERING CONTROLS Isolation/Enclosure/Exh. Vent/Dust Collection

Local Exhaust Ventilation Must meet ANSI Z 9.2 - 1971

Power Tools Saws/Abrasive Wheels/Drills

WORK PRACTICES

Wet Methods Asbestos Handled/Mixed/Applied/Removed

Products/Operations

• Bags/Cartons Not removed unless wetted/enclosed/ventilated

Spraying/Demolition

Respiratory Protection Refers to Paragraph (d)(2)(iii) Type "C"
supplied Air Respirators

Special Clothing

PERSONAL PROTECTIVE EQUIPMENT May Not Be Used Except:

Interim Periods

Eng. Cont. Not Feasible

Emergencies

Respirators

Air Purifying

Powered Air Purifying

Type "C"

Respirator Program ANSI Z 88.2 - 1969

No employee required to wear respirator if medically limited

Special Clothing Ceiling Level of Fibers

Employer shall provide and require

Whole body clothing

Head covering

Gloves

Foot covering

Change Rooms Exposure Limits

Clothes Lockers Separate

Laundering

Notification of Laundry

Transportation Sealed containers/labeled

Method of Measurement/Monitoring

Initial Determinations within 6 months

Personal Monitoring 6 months/each typical operation

Environmental Monitoring Areas of work environment

Employee Observation/Access to Records

Posting We use oil fiber/cc

Medical Records

Maintenance/Retention

Employee Access

Identification

One of the first decisions involved in the removal of insulation is: does the insulation contain asbestos? While this seems to be a simple and basic question, a lot of money rides on the answer. Insulation materials such as glass fibers, mineral wool, organic fibers, etc. are not subject to the costly asbestos regulation. At the same time, these materials may be difficult to differentiate from one or more of the varieties of asbestos. Sometimes the age of the insulation will provide a clue, since most high temperature insulation materials manufactured and installed prior to 1972 contained varying amounts of asbestos ranging from 7-10% up to 90%. In very recent years, asbestos substitutes have been used, so that the interim period of 1972-80 is a time when we are uncertain of the composition.

Some familiarity with insulation materials will be useful in the visual identification of asbestos and non-asbestos products.

Chemical identification can be useful as a screening procedure. One commercially available test kit makes use of the magnesium component of chrysotile and the iron content of amosite to identify about all common types. Some false positive results may be obtained with this kit, however.

The most certain identification procedures involve immersion techniques or staining of fibers under the microscope. These techniques can seldom be carried out outside rather sophisticated laboratories, although consultants in this specialty are usually available.

What Can the Employer Do To Satisfy the OSHA Requirements?

1. He can assign a responsible person to the task of evaluating asbestos removal projects and coordinating and training members of his organization on the various requirements of the law.
2. He can decide just what specific requirements of the regulation his organization will perform and what requirements he will arrange for others to do.
3. He can make compliance more cost-effective by performing the more routine requirements such as monitoring, training, respirator testing and record keeping.

In summary, the actions necessary to comply with OSHA's regulations on asbestos removal indeed creates a new industry. An employer whose plans include the removal of asbestos insulation or materials must become familiar with these requirements and prepare compliance plans accordingly. In the final analysis, the protection of our employees from the dire effects of asbestos exposure should be our primary goal. If the prevention of such diseases can be accomplished by proper work practices, personal protection programs and medical surveillance of employees-at-risk, then the cost to the employer and to the industry is in reality a bargain.

FSV:nh

October 26, 1982

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PERMISSIBLE LEVELS FOR ASBESTOS EXPOSURES

	<u>Fibers</u> Cubic Foot of Air	<u>Fibers > 5 U</u> Cubic Centimeter of Air
Prior to 1972	5,000,000	176*
1972-1976	142,045*	5
After 1976	56,818*	2

* *Equivalent*

Medical Examinations

General

Preplacement

Annual

Termination

Medical Records

Maintenance/Retention

Employee Access

Recordkeeping
Exposure Records
Employee Access
Employee Notification

Method of Measurement/Monitoring

Initial Determinations

Personal Monitoring

Environmental Monitoring

Employee Observation

Posting

Labeling

Housekeeping/Waste Disposal

PERSONAL PROTECTIVE EQUIPMENT (cont'd)

Special Clothing

Change Rooms

Clothes Lockers

Laundering

Notification

Transportation

PERSONAL PROTECTIVE EQUIPMENT

Interim Periods

**Eng. Cont. Not Feasible
Emergencies**

Respirators

Air Purifying

**Powered Air Purifying
Type "C"**

Respirator Program

OSHA STANDARD ON ASBESTOS (29 CFR 1910.1001)

ENGINEERING CONTROLS

Local Exhaust Ventilation

Power Tools

WORK PRACTICES

Wet Methods

Products/Operations

Bags/Cartons

Spraying/Demolition

Respiratory Protection

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