

Asbestosis Symposium -
Western Health Conference
San Francisco September 29, 1967



Histology (*Microscopic Studies of Tissue*)

Ferruginous Bodies - Positive Without Known Exposure

San Francisco - 42%
Montreal - 48%
Pittsburgh - 41%

Lung Cancer - Asbestos Workers

2 to 1 for Silicosis Workers
3 to 1 and 6 to 1 for Workers in Insulation
Lower lobe most affected in Asbestosis

Time and Dust concentrations determine

Synergism between Asbestosis and smoking - The smoker has 92 times the chance of lung cancer compared with expected lung cancer among non-smokers.

Average Asbestosis victim has 20 or more years in trade - at least 10 years.

Out of 31,000 cancer deaths only one could be directly attributed to Asbestosis. Many of these cases had never had an occupational exposure.

Carriers or carcinogenic? Asbestosis fibers have been found in routine post mortems showing that a very large percent of the population has asbestos fibers located in their lungs.

Future Methods for Field Sampling Techniques - (See method used by U. S. Public Health Service for enumeration of Asbestos Dust on Membrane Filters).

Reduction of Dust Counts immediately reduces the incidence of

disease. *With Age, Persons who have shown no effects previously, may suddenly develop extreme sensitivity!*

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World production of asbestos has grown much more rapidly than the incidence of disease associated with asbestos. Measuring natural health status of workers over any period less than 20 years in an asbestos dust environment fails to provide a true picture. The Impinger is ineffective for collecting fibers. Ratios of fiber counts by method/membrane filter -

	<u>Impinger</u>	<u>Optical</u>	<u>Electron</u>	<u>Microscopic</u>
	1	8	32	100
Membrane Filter Total Fibers	1	4	0	13

In the electronic count only fibers more than 3 microns in length were counted.

TLV may not be low enough at 5,000,000 particles per cubic foot of air and TLV may need to go as low as 1,000,000 particles per cubic foot of air.

Impinger-Membrane Filter Equivalence -

Type of count - number of fibers per cc equivalent to 5,000,000 particles per cubic foot of air by Impinger.

Total Fibers	-	50
Longer than 5 Microns	-	30
Longer than 10 Microns	-	15

We need greater sensitivity and greater relevance.

Respirable Mask Sampler to be worn by worker -

Weighing - *VS Counting*

Analytical System needed

Measuring these dusts depends upon sampling.

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Cancer Causation

Asbestos Fibers alone

Something else in dust besides asbestos

Something occurring with asbestos

Asbestos plus process additives

Asbestos plus non-process additives

Relative-corralate well

Look at the specific thing

Reach lower levels

Lower personal samples

Weight methods may become practical with analytical break through - at present the electron counter is best.

Normal finishing and mixing operations of insulation workers expose them to above TVL. TVL should be reduced to between 1-5 million particles per cubic foot of air.

Attention to Asbestos as a basis of material data studies increases rapidly.

Dose response evaluation is needed. *Believe To vary in the individual.*
Entire public is threatened because asbestos is in forefront of air pollution problem - some say this is - speculation - fantasy - fact. Since people from all over the world have asbestos bodies in their lungs whether they have had an industrial exposure or not and the epidemiological factors are lacking to prove existence, the outstanding question remains unanswered.

Selection of matched controls is impractical. Asbestos in ambient

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air is a product of natural phenomena. Wind erosion of out-breaks in various geological stratas.

Dose of ³ asbestos which increases susceptibility a carcinogenic factor?

Smokers exposed to asbestos have 90% higher incidence of lung cancer over those smokers who do not have the asbestos exposure.

Dose and exposure in relation to disease expectation may be determined - there is no way at present for determining this threshold level.

Histology of asbestos body only clear basis for diagnosis:

Biological exposure to asbestos. (Can probably be found in every lung tissue autopsied if searched for long enough).

Fibroid development shows evidence of extensive exposure.

Function for Study:

Lung smear - autopsy of lung tissue

STRICT CONTROL OF INDUSTRIAL ENVIRONMENT IS ESSENTIAL.

Starting with the tearing out of the rock formations, this environment can be controlled.

Air conditioned cab enclosure for drill operators ✓

Planning work so workers can stay windward ✓

Processing ore~~s~~ and/or materials so operators are in atmosphere controlled booths. ✓

Preparation of materials in a booth ✓

Mixing of materials in a booth - mixed and trucked to job in slurry or wet mass. ✓

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Use of personal respiratory devices with filter that has low resistance to breathing and fits properly. Hoods which completely cover the head and shoulders can be used satisfactorily where there is a fresh air supply furnished direct to the hood. ✓

Appropriate respiratory protection, use of water supply to control dust. ✓

Vacuum cleaning ✓

Mix in plastic bags or other confined package ✓

Substitution of materials ✓

(Worker in more hazardous insulation jobs is also exposed to Amorite, fibrous glass and adhesives 45% of his working hours).

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