

ASARCO

Department of Environmental Sciences

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Manager

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In response to your query regarding the probability of a worker getting asbestosis after 20 years following exposure provided no evidence has surfaced indicating any asbestosis during the initial 20-year period, I offer the following extractions from an interview conducted by Mr. Ed Farrell of Dr. George Wright on November 6, 1976, in Denver coupled with my supplemental comments:

Page 9

Dr. Wright - "I personally believe that if someone is not exposed to a level higher than even 5 fibers per cc, to say nothing of 2, in a working lifetime, I believe he would not get pulmonary fibrosis of an extent and a severity that would in any way impair him, or that would merit the word 'disease.'"...

"Pleural plaques is another story. I don't know what level keeps people from getting these. I don't think we have the data on that. The development of pleural plaques still is somewhat of a mystery. They appear to develop in some groups at what appeared to be rather low levels of exposure, and they don't appear at all in some people that are heavily exposed."

Ed Farrell - "Now, are we still talking of what is generally termed asbestosis?"

Dr. Wright - "Yes. I don't foresee asbestosis being a problem of the future."

Practice of Medicine by Tice, Volume 5 (Informational insert)

Chapter 10, pp. 5-6 - Pleural involvement is common after asbestos exposure. Greater solubility of asbestos leads to migration of the fibers to the pleura after deposition in the lung. Pleural fibrotic plaques are formed and may become calcified.

PLAINTIFF'S EXHIBIT

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Chapter 12, p. 62 - If a diffuse parenchymal abnormality is associated with pleural calcification it is, in all probability, asbestosis. Patients with pleural calcification are usually asymptomatic and the calcification is usually found on chest x-ray. (Underlining added to attract attention and initiate thought).

Page 12

Dr. Wright - "There is no question but that also the development of pulmonary fibrosis is related to the total exposure. There is a level below which no pulmonary fibrosis attributable to the asbestos occurs, in MacDonald's study."

Page 16

Ed Farrell - "I would presume nobody could work in heavy asbestos exposure without getting at least pleural plaques."

Dr. Wright - "Quite the contrary. There are people who have worked in heavy exposure who don't have any pleural plaques. That is the peculiar thing about pleural plaques, pleural fibrosis and calcification."

Page 19

Ed Farrell - "...presumably they could trace and find out what they did die of...Does Johns Manville have enough data on this?"

Dr. Wright - "We have the same problem that Johns Manville and that anybody else has, and that is that the x-rays that are available for study of this kind pretty much cease at the time of employment."

Page 26

Dr. Wright - "I put that together with the rarity of the tumor (mesothelioma), even in the presence of asbestos. It's still a rarity. And I have to ask myself, what else besides the asbestos does this, because if asbestos were a potent carcinogen we should have a lot more cases...a sampling of the cases from the U.S.A.... did not involve more than 15 or 20 percent that had a clearcut exposure to asbestos. And the same thing is true in Switzerland, and it is true in Italy."

Page 27

Dr. Wright - "But I keep coming back to the point that it's a bizarre tumor (mesothelioma), because it is such a rarity. And you see, the statement that bothers us, both from a health point of view and from a medical-legal point of view is that, in those

circumstances where mesothelioma appears to occur associated with occupational exposure, it appears in people who do not have asbestosis...and...in people who have relatively light exposure."

Discussion

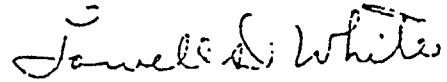
Dr. George Wright, formerly Medical Director of Johns Manville, conducted some of the finest quality research ever done on the question of potential health effects of worker exposure to asbestos. His answers, as procured during this interview, constituted the consolidated wisdom of decades of research and the insight of an honest and objective scientist.

Basically, his testimony and brief summaries of the scientific literature indicated that asbestosis should not be a problem of the future because exposures have been sufficiently reduced and can be maintained at levels which cannot induce any known pulmonary disease. The primary question which needs resolution is "Were exposures at Asarco's and/or CAPCO's plants markedly higher 10 to 20 years ago than they are now at high enough airborne concentrations capable of potentially causing asbestosis?" The environmental measurements currently in Asarco's files would indicate that asbestosis should not be observed at Asarco's domestic (U.S.A.) plants. This should also be true of CAPCO's plants provided that worker exposures were not significantly higher between plant startup dates and the date of affiliation with Asarco.

As judged by Dr. Wright's comments, little is known about whether pleural plaques will develop suddenly many years after cessation of employment or exposure, provided exposures of sufficient magnitude were originally suffered. There is also the problem of false positives; namely, a certain number of people develop pleural plaques and calcification without having had any exposure to asbestos. Also, as Dr. Wright pointed out, many heavily exposed asbestos workers never develop pleural plaques or calcification. These general statements appear to hold also for mesothelioma, with the possible exception that increased mesothelioma incidences have not been observed in workers heavily exposed to asbestos. In summary, of the various diseases attributed to asbestos exposure, only asbestosis appears to have a dose response relationship with the magnitude of exposure to asbestos.

Further, in my professional opinion, asbestosis will soon become a mostly forgotten historical relic; particularly as the "expected" new asbestosis cases fail to appear because of the drastic reductions in worker exposures which have been made over the past 20 years. Any future problems which Asarco may have regarding asbestos exposures will revolve primarily around the alleged association with cancer with all the attendant

fear and hysteria, in my professional opinion, despite the fact that causal or dose-response relationships have not been established objectively or scientifically.



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