

1946 Fleisher-Drinker on Cement Mixing (page 2)

Source: "A Health Survey of Pipe Covering Operations in Constructing Naval Vessels." Journal of Industrial Hygiene and Toxicology 28(1): 9-16

TABLE 2
ANALYSES OF SETTLED DUST AND AIR SAMPLES

OPERATION	PER CENT LESS THAN 10 MICRONS BY COUNT	ASBESTOS (BELOW 100 MICRONS)	PER CENT LESS THAN 10 MICRONS BY COUNT							DUST COUNTS (MPPCF)*				
			Diatomaceous earth	Serpentine	Other fibers (or- ganic & glass)	Iron oxide (opaque)	Carbonates and oxides	Others	Number of sam- ples	Total dust		ASBESTOS DUST		PER CENT ASBESTOS (range)
										Range of counts	Aver- age	Range of counts	Aver- age	
Cement mixing														
Navy Yard A.....								16	5.4- 30+	31+ 0.	-0.52 0.2	0. - 0.7		
Navy Yard B.....								2	67. -100+	84+ 1.6	-1.7 1.7	1.4- 2.5		
Contract Yard C.....								2	33.8- 48.7	41.3 1.6	-4.7 3.1	4.7-10.0		
Contract Yard D (on board ship).....								5	19.6- 40.0	32 0. - .02	.01 0. - .001			

1946 Fleisher-Drinker on Cement Mixing (page 1)

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Quote: "For protection and to give a neat appearance the insulation on board ship is usually covered with cement containing a high percentage of asbestos fibers. In mixing, the proper amount of water is added to the dry asbestos cement and thoroughly agitated with a hoe... Considerable dust is raised when the asbestos cement is dumped into the mixing trough and during the early stages of mixing. Ordinarily this process is done in a separate room and only one operator is exposed. The dustiness of this operation warrants the use of exhaust ventilation or respiratory protection or both, though neither is generally used."

Fleischer/Drinker Definition of "Safe" Medical Findings

"Since only three workers out of the 1074 X-rayed had asbestosis, and each of the three had been a pipe coverer for more than 20 years, it would appear that asbestos pipe covering of naval vessels is a relatively safe occupation. However, it must be remembered that these men rotated among the various operations of pipe covering and were not continually exposed to high concentrations of asbestos dust as found in band saw cutting and cement mixing. The suggestions made relative to exhaust ventilation and respiratory protection are therefore of value in maintaining this low incidence of asbestosis."



1946 Fleischer/Drinker Conclusions

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Quote: "It seems likely to us that if the pipe coverers studied had worked steadily at any of the above operations where the amount of asbestos dust in the air was consistently high, the incidence of asbestosis among these workers would have been considerably greater. In view of the varied character of the environmental dust exposure in the pipe covering industry on naval vessels, it is manifestly impossible to set a threshold."

VI. Conclusions

1. "The character of asbestos pipe covering industry on board naval vessels is such that conclusions drawn from other asbestos industries such as textiles, cannot be applied.
2. The operations of band saw cutting, grinding, cement mixing, and installation on board ship should be equipped with exhaust ventilation to keep the total dust concentration low.
3. The incidence of asbestosis among pipe coverers in the shipyards studied was low, 0.29 per cent or 3 cases out of 1074. In view of the nature of shipyard pipe covering work, this low incidence is not surprising.
4. Since each of the 3 cases of asbestosis had worked at asbestos pipe covering in shipyards for more than 20 years, it may be concluded that such pipe covering is not a dangerous occupation." (p. 16)

Fleischer/Drinker Definition of "Safe" Sewing and Preparation of Boots and Jackets

"Considerable dust is raised when the asbestos cement is dumped into the mixing trough and during the early stages of mixing ... The dustiness of this operation warrants the use of exhaust ventilation or respiratory protection or both, although neither is generally used."



Fleischer/Drinker Definition of "Safe" Analysis of Settled Dust and Dust Counts

"Dreesen et al. in their study of asbestosis in the asbestos textile industry suggested 5 million particles of total dust by impinger as a threshold for that industry."

