

Table IV. Age-Adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI) for Insulation Workers and Shipbuilders by History of Brake Work

Exposure Group	No History of Brake Work		History of Brake Work	
	OR	CI	OR	CI
Insulators	4.14	2.55–6.77	1.74	0.69–4.46
Shipbuilders	5.16	2.94–9.23	4.36	1.36–14.8

Note: Brake work included both occupational and nonoccupational brake work.

brake work was 0.62 (95% CI: 0.01–4.71) based on one exposed case and nine exposed controls.

The age-adjusted OR for insulation workers who had no history of brake work was 4.14 (95% CI: 2.55–6.77), and for insulators who were also brake workers, the OR was 1.74 (95% CI: 0.69–4.46) (Table IV). For shipbuilders with no employment as brake workers the OR was 5.16 (95% CI: 2.94–9.23) and for shipbuilders with employment as brake workers, the OR was 4.36 (95% CI: 1.36–14.8).

4. DISCUSSION

The present analysis focused on the question of the potential risk of mesothelioma associated with brake work, while considering other activities involving potential asbestos exposures. The results were consistent with the available literature that demonstrates no apparent risk. The present analysis used occupational histories evaluated as reliable by the interviewers. The results changed little and no conclusions differed when all respondents were included, regardless of the quality of the work history. Similarly, including nonwhites had no discernable effect.

The study was limited by the relatively small numbers of brake workers, especially in the analyses that excluded those with other potential asbestos exposures. The confidence intervals were reasonably narrow for the overall analyses, but those for the interaction terms were quite broad. In the stratified analysis, only one case and nine controls with occupational brake work did not hold one of the other jobs involving asbestos exposure. The original study⁽¹⁶⁾ excluded from the control group those who died from cancer and respiratory disease because the researchers felt that they might be related to asbestos exposure. If these diseases were positively associated with asbestos exposure in this population, the risk estimates

for occupations with asbestos exposure may have been overestimated.

The results indicated no excess risk of mesothelioma among brake workers when the analyses were controlled for exposures in occupations with known risk of mesothelioma. Further, there was no evidence of an exposure-response relationship between brake work and mesothelioma. This was evident in the analysis by duration of occupational brake work and the fact that the ORs for occupational brake work were indistinguishable from those for nonoccupational brake work. It is assumed that, on average, those with occupational brake work would have had higher exposures than those with nonoccupational brake work.

These findings are consistent with no increase in risk of mesothelioma associated with short chrysotile fibres (<5 μ m in length). There is increasing evidence that such fibres may not be carcinogenic.^(4,17) Explanations for the observed results may include the following: (1) time-weighted average exposures are low in this occupational group;^(5,7) (2) most of the fibers are short;^(6,7) (3) chrysotile asbestos is used almost exclusively;⁽¹⁷⁾ (4) the fibers are embedded in resin; (5) much of the asbestos is transformed to forsterite (a nonfibrous substance) during the braking process; and (6) only a small percent of "brake dust" is asbestos.⁽⁵⁾ The findings for brake mechanics reinforce the caution that direct inferences from one occupational setting to another without consideration of the key determinants of risk are to be avoided.⁽¹⁸⁾

ACKNOWLEDGMENTS

The authors thank Dr. Aaron Blair from the National Cancer Institute for providing the data. They also thank Dr. Robert Spirtas for helpful comments. The project was funded by Daimler Chrysler, Ford Motor Company, and General Motors Corporation. Drs. Hessel, Teta, and Goodman have provided scientific consulting services to these companies in the area of friction brakes.

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