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ACKNOWLEDGMENT TO REVIEWERS

The Board of Editors of the *American Journal of Industrial Medicine* is grateful to its referees for their careful and judicious reviews of scientific contributions to the *Journal* during the past year. Their judgments have not only guided us in our selection of papers for publication, but their advice and critical analyses have, we believe, also been valuable to authors in preparing more complete and pertinent reports. Not that the investigators have always agreed — we've had some vigorous debates — but even these have served to sharpen and clarify the points being made. The authors have the last word, of course. They bear the ultimate responsibility for what they write. However, the review process, in maintaining the academic rigor of the *Journal*, serves both readers and authors in the intimate interweaving that is the fabric of science.

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LETTER TO THE EDITOR

Corruption of Occupational Medical Literature: The Asbestos Example

Key words: medical ethics, lung cancer, asbestos hazards

Recently the issue of medical conflict of interest in research has been much discussed in the literature and in the courts [Chalmers, 1990]. We would like to discuss another type of misbehavior associated with research in occupational health. This issue is that for the past several decades some researchers working for the asbestos industry have suppressed and altered research results to protect their sponsors.

We have become aware of the fact that a quote taken from a paper written by one of us (H.H.), which confirmed previous reports that established a causal connection between asbestos exposure and lung cancer, is being misinterpreted in the current discussion of asbestos-related disease [Garrard, 1987]. The paper states that "Experience has led to the acceptance of five million particles per cubic foot of air, of small enough size to be respirable, to be the safe working concentration" [Isselbacher et al., 1953].

A thorough reading of the paper indicates that this reference was meant to apply to animal studies that had been conducted at the Saranac Laboratory. Taken in context of the whole report, which included information on two cases of lung cancer, the paper indicated that the exposure limit for asbestos then recommended either was not being properly implemented or was inadequate to protect the worker against the cancer hazard from asbestos exposure. Therefore, readers of the paper were put on notice that asbestos-exposed workers had a specific risk of contracting both asbestosis and lung cancer from their exposure.

Of course, none of this discussion goes to the real point. Asbestos manufacturing companies were aware of the risk to product users such as insulators no later than 1930 when Merewether and Price in their seminal paper specifically mentioned insulator work as a profession likely to result in asbestos-related disease. In addition, Merewether put these companies on notice of the need to utilize ventilation and to educate workers to have a "sane appreciation of the risk" of exposure to the dust.

Another article written in 1946 has also been misinterpreted in recent times

All work researched at Brown University.

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[Fleischer et al., 1946]. Since one of us (H.H.) knew several of the now deceased authors, we would like to clear the record for them as well. Here again an attempt has been made to take part of a conclusion out of context to misrepresent the facts of the paper as they were understood in 1946 [Garrard, 1987]. The facts that were demonstrated by this paper include: 1) a specific notice that exposures to insulators were well above 5 million particles per cubic foot of dust containing asbestos (the then relevant standard) even with ventilation in place; 2) a recommendation that "safe" insulation work required ventilation and respirator use; and 3) that "safe" meant that, despite the implementation of some of these controls, the insulators with 10 or more years in the trade still suffered a 6% incidence of moderate and advanced asbestosis. Finally, the authors stated that the exposures, if maintained for an 8 hr day, 40 hr per week, were not safe. Their tentative conclusion of insulating work being a "relatively safe occupation" was based on the rotation of workers. To 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" [Fleischer et al., 1946].

Furthermore, it is ironic that in a paper commissioned by the Asbestos Information Association, Dr. Enterline maintained that the asbestos cancer hazard was not known until 1964 [Enterline, 1978a]. In his unpublished draft, with reference to mesothelioma, Dr. Enterline conceded that "few authors ever expressed doubt about the relationship between this rare tumor and asbestos exposure and by 1953, the issue was fairly well resolved" [Enterline, 1978b]. In his published paper, Dr. Enterline, citing company consultants (Lanza and Vorwald), stated that American experts of the 1930s through the mid 1960s did not believe that asbestos caused cancer due to the absence of published positive animal studies. One of us (H.H.) was with Dr. Gardner at the Saranac Laboratory in 1946 during the last months of his life. He had performed animal studies on cats and mice indicating that asbestos was a lung carcinogen. Unfortunately, the studies had been funded under an agreement with several asbestos manufacturing companies that granted them control over the publication of results. The companies sought to suppress the publication of this information that was unfavorable to them [Brown, 1936]. Dr. Gardner's animal data were included in a draft of Vorwald's 1951 paper [Vorwald, 1948; Vorwald et al., 1951]. Dr. Lanza directed that Vorwald strike this from the paper at the request of the controlling companies [Lanza, 1948]. A second positive animal study was performed by Dr. Vorwald for the Quebec Asbestos Mining Association [Vorwald, 1952]. This remains unpublished. The asbestos tragedy is one that need not have occurred. It is one that research workers and other companies must learn from.

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