

ASBESTOS AIR POLLUTION RESULTING FROM THE WEAR OF BRAKE LININGS

INTRODUCTION

Recent interest in asbestos and the realization of its health hazard have raised the question of the extent to which people are exposed to asbestos on a non-occupational basis. Measurements have been made on urban background levels and it has been shown that small but definite concentrations are to be found in areas quite remote from any apparent source.

Since virtually every motor vehicles carries several pounds of asbestos contained in its brake linings and since these are worn away to some degree every time the brakes are applied then it is reasonable to expect that they could present a significant emission source. This is especially acceptable when one considers the 100 million or so vehicles on the nations roads.

The paper investigates the possible extent of such emissions and presents an estimate of the contribution to urban asbestos concentrations. Possible means of reducing such emissions by use of an alternative or sealing the system are briefly reviewed.

The Extent of the Emission

The best information available at the present time^{1,2} indicates that the percentage of asbestos contained in the dust normally emitted from brake linings is of the order of 1%. However, under conditions of severe breaking, this may rise to 15%.

The average brake friction material contains of the order of 50% asbestos, thus an explanation is necessary to account for the discrepancy between the measured and theoretical values. The most likely explanation results from the known facts with regard to heat generated at friction surfaces. The work of Bowden and Tabor³ has shown that when two surfaces are placed together the contact area is dramatically less than the apparent area.

MIT RESEARCH INSTITUTE