Thomson *et al.* (1963) in Capetown and these workers reported bodies in more than 30% of cases. Later, Thomson and Graves (1966) found a similar prevalence in Miami; Cauna, Totten, and Gross (1965) found bodies in 40% of a series of lungs from Pittsburg and Anjilvel and Thurlbeck (1966) found them in 45% of their cases in Montreal. Meurman (1966) reported finding bodies in 70% of a group of lungs from Finland and finally, Utidjian, Gross, and De Treville (1968) using a new technique, reported that the lungs of 97 out of 100 consecutive autopsies from Pittsburg contained bodies. However, Davis, Gross, and De Treville (1970) showed that the production of ferruginous bodies was not specific for asbestos as had been previously believed and it therefore became necessary to undertake new studies by which asbestos could be identified by precise methods. This is still a very difficult problem, although Langer *et al.* (1970) and Pooley *et al.* (1970) have shown that chrysotile asbestos can be positively identified in a large proportion of the lungs of town dwellers.

The initial concern over generalized atmospheric pollution by asbestos involved the possibility of tumor production but the problem was given a new dimension by the work of Jagatic (1967). Jagatic reported that chrysotile heated to high temperatures was acutely toxic to mice and found that after the injection of heated chrysotile into the peritoneal cavity, 60% of mice died within 48 hr. Since chrysotile is the type of asbestos usually used in brake linings and since, during braking, the linings are heated to very high temperatures, it became necessary to consider the possible acute hazards of the inhalation of brake lining dust.

In order to study the biological effects of heated chrysotile and brake lining dust in more detail it was decided to undertake a series of experiments in which samples of these dusts were injected into the pleural and peritoneal cavities of mice. In later studies it is hoped to undertake inhalation experiments with these minerals to see whether they should be considered as dangerous atmosphereic pollutants.

MATERIALS AND METHODS

The mineral samples used in these studies were prepared as follows:

Samples of high grade Cassiar chrysotile asbestos were heated in an electric tube furnace for 4 hr at temperatures of either 400°C, 600°C, 800°C, or 1,000°C. After cooling, the chrysotile was ground in a mechanical mortar and pestle and half of each sample was sieved through a 250-mesh copper sieve. With normal chrysotile and chrysotile heated to no more than 400°C many long fibers remained in the dust after grinding and since most of these were removed by sieving it was possible to produce samples both with and without long fibers. With chrysotile heated to more than 800°C, however, the dust fibers became extremely brittle and grinding was found to break most of these into relatively short lengths. With these samples, therefore, sieving made little difference to the size distribution of the dust particles although experiments were conducted with both sieved and unsieved samples to test their effects on tissues.

The thermal decomposition of chrysotile follows a two-stage sequence of dehydroxylation and breakdown, and the mechanism has been studied by several authors including Ball and Taylor (1963) and Brindley and Hayami (1965). The dehydroxylation of chrysotile takes place in the temperature range 600–780°C and