

POTENTIAL HEALTH EFFECTS FROM ASBESTOS EXPOSURE

The human toxicological significance for the inhalation of chrysotile asbestos fibers is well documented; and instances of mesothelioma in auto repair workers have been identified.^{16,17,18} In a detailed examination of 90 union vehicular maintenance workers in New York City,¹ with 10 or more years of shop work, 29% had decreased vital capability; the percentage increased with age and most markedly after 20 years from the outset of auto work. Many of the workers examined showed signs consistent with asbestosis, with observed changes noted in chest x-rays and indication of restrictive pulmonary function. The prevalence of these changes was significantly higher after 20 years exposure, a result expected after occupational exposure to asbestos.¹⁹

Unlike chrysotile, the health effects of exposure to forsterite, or transition series fibers (chrysotile/forsterite) with altered crystalline structures are not well documented. In studies by Davis and Coniam,²⁰ and Koshi²¹ in which fibers of chrysotile, chrysotile/forsterite, and forsterite were injected into the pleural and peritoneal cavities of mice, the results suggested varying degrees of toxic effects. Fiber implantation animal studies conducted by Pott, et. al.^{22,23} and Davis, et. al.²⁴ suggest that the morphology and size of a fiber, regardless of fiber type, are responsible for its carcinogenicity. Likewise, Stanton, et. al.²⁵ suggests that fibers $<1.5 \mu\text{m}$ in diameter and $>8 \mu\text{m}$ in length pose the greatest risk in producing pleural sarcomas. These studies tend to suggest that the physical morphology (size dimensions) and to a lesser degree chemical and surface characteristics of a fiber are the determining factors for inducing