

**EVALUATING THE SUBCHRONIC
INHALATION TOXICITY OF
POLYPROPYLENE FIBERS IN RATS**

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Abstract

Health effects of synthetic vitreous fibers (SVFs, e.g., fiber glass) have been thoroughly tested in rodent inhalation studies, which demonstrate that the primary toxicologic determinants of SVFs are dose, dimension, and durability. In contrast, most synthetic organic fibers (SOFs) have not been tested, and it is not known whether the SVF toxic determinants and criteria for respirability apply to SOFs. To investigate the toxicity of one SOF, rats were exposed nose-only to 48 polypropylene fibers (PPF) per cc for 6 h/d, 5 d/w, for 90 days and then maintained for 30 days recovery. Compared to an SVF lung burden (refractory ceramic fibers, RCF) after 90 days exposure to 200 fibers/cc, PPF lung burdens were similar in numbers but larger in dimensions, suggesting a greater proportion of respirable fibers for PPF. Minimal, reversible effects were observed with PPF exposure. In contrast, equivalent lung burdens of refractory ceramic fibers induced more severe lung effects including minimal fibrosis; thus, lung burden alone did not determine toxicity. During 30 days of recovery, PPF did not decline in number/lung but did show structural deterioration.