

## Occupational Exposure to Airborne Asbestos from Phenolic Molding Material (Bakelite) During Sanding, Drilling, and Related Activities

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*In this study, a historical phenolic (Bakelite) molding material, BMMA-5353, was tested to determine the airborne concentrations of asbestos fibers released during four different activities (sawing, sanding, drilling, and cleanup of dust generated from these activities). Each activity was performed for 30 min, often in triplicate. The primary objective for testing BMMA-5353 was to quantitatively determine the airborne concentration of asbestos fibers, if any, in the breathing zone of workers. Uses of this product typically did not include sawing or sanding, but it may have been drilled occasionally. For this reason, only small quantities were sawed, sanded, and drilled in this simulation study. Personal (n = 40), area (n = 80), and background/clearance (n = 88) air samples were collected during each activity and analyzed for total fiber concentrations using phase contrast microscopy (PCM) and, for asbestos fiber counts, transmission electron microscopy (TEM). The raw PCM-total fiber concentrations were adjusted based on TEM analyses that reported the fraction of asbestos fibers, to derive a PCM-asbestos concentration that would enable calculation of an 8-hour time-weighted average (TWA). The estimated 8-hour TWAs ranged from 0.006 to 0.08 fibers per cubic centimeter using a variety of worker exposure scenarios. Therefore, assuming an exposure scenario in which a worker uses power tools to cut and sand products molded from BMMA-5353 and similar products in the manner evaluated in this study, airborne asbestos concentrations should not exceed current or historical occupational exposure limits.*

**Keywords** asbestos, Bakelite, industrial hygiene, occupational exposure, phenolic molding materials