Diisocyanates are common components in spray-paint hardeners used in automotive refinishing industry and are a major cause of occupational asthma. The contribution of work-related factors to the breathing-zone concentrations of 1,6-hexamethylene diisocyanate (HDI) monomer and its oligomers uretidone, biuret, and isocyanurate was investigated in 25 spray-painters in 19 auto-repair shops. The most important factor contributing to the breathing-zone concentrations of HDI monomer and its oligomers was the concentrations of these compounds in the paint (for all p < 0.05). Paint time (p = 0.017) and the amount of paint used (p = 0.020) also significantly increased HDI monomer exposure. HDI isocyanurate exposure was only affected by its paint concentration (p = 0.003). Because HDI isocyanurate exposure constitutes the largest amount of spray painters’ exposure in the automotive spray-painting environment (≈300-fold greater than HDI monomer), selection of paints containing less isocyanurate could significantly reduce spray painters’ exposure.

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