

Urinary and air phthalate concentrations and self reported use of personal care products among minority pregnant women in New York city

Journal of Exposure Science and Environmental Epidemiology **20**, 625-633 (November/December 2010) |

doi: 10.1038/jes.2010.13

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Abstract

Diethyl phthalate (DEP) and di-n-butyl phthalate (DnBP) are used extensively in personal care products, including fragrances (DEP) and nail polish (DnBP). Between May 2003 and July 2006, we gathered questionnaire data on the use of seven product categories (deodorant, perfume, hair spray, hair gel, nail polish/polish remover, liquid soap/body wash, and lotion/mist) over 48h during the third trimester of pregnancy from 186 inner-city women. A 48-h personal air sample was collected and analyzed for DEP and DnBP; a maternal spot urine sample was collected and analyzed for their monoester metabolites, monoethyl phthalate (MEP) and mono-n-butyl phthalate (MnBP), respectively. In all, 97% of air samples and 84% of urine samples were collected within ± 2 days of the questionnaire. During the 48h, 41% of women reported perfume use and 10% reported nail polish/polish remover use. In adjusted analyses, no association was seen between nail product use and air DnBP or urine MnBP concentrations. Women reporting perfume use had 2.3 times higher (95% CI 1.6, 3.3) urinary MEP concentrations. Personal air DEP increased by 7% for each 25% increase in a composite indicator of the six other product categories ($P < 0.05$), but was not associated with perfume use. Air DEP was correlated with urine MEP concentrations only among non-perfume users ($r = 0.51$, $P < 0.001$). Results suggest that perfume use is a significant source of DEP exposure.