Title *

In silico analysis of phthalate exposure associated with urban particulate matter in the central region of Mexico City

Abstract *
Endocrine disruptive properties have been described for phthalates, and little is known regarding the exposure to these components at outdoor environments. We aim to assess on different age groups and genders the exposure levels to seven phthalates present in PM_{10} and $PM_{2.5}$ at different times, dates and seasons in Mexico City. PM_{10} and $PM_{2.5}$were sampled in La Merced, Mexico City (November-May). The particles were pooled by month and characterized for seven phthalates content (DiBP, DnBP, BzBP, DEHP, DINP, DID and DPHP). Using the official hourly report of PM_{10} and $PM_{2.5}$, we assessed the possible exposure to phthalates considering respiratory flow rates for different ages and genders. We assessed the levels of exposure for 24 hour exposure, working hour exposure and at specific times of the day (when outdoor activities are more frequent). We found that DEHP and DPHP are the most abundant phthalates among those measured. The concentration of these molecules was higher during the warm months (March-May). The levels of PM_{10} and $PM_{2.5}$ on the other hand, are higher during the cold months (Nov-Feb). When analyzing the possible levels of exposure, we found that during December, the levels of exposure to DEHP are as high as for the warm months, when the concentration of DEHP is up to 5 times higher. Characterization of PM content is important to understand the possible toxicity of particles, but the exposure to different components has a much complex profile when other variables are considered.

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