# Size distribution of particulate n-Alkanes and Polycyclic Aromatic Hydrocarbons in urban and industrial areas in Algiers, Algeria.

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The distribution of ambient air *n*-alkanes and polycyclic aromatic hydrocarbons (PAHs) associated to particles with aerodynamic diameters lesser than10 µm ($PM_{10}$) into six fractions (five stages and a backup filter) was studied for the first time in Algeria. Investigation took place during September of 2007 at an urban and industrial site of Algiers. Size-resolved samples (<0.49µm, 0.49–0.95µm, 0.95–1.5 µm, 1.5–3.0µm, 3.0–7.2µm and7.2–10µm) were concurrently collected at the two sampling sites using five-stage high volume cascade impactors.

Most of *n*-alkanes (~72%) and PAHs (~90%) were associated with fine particles ≤1.5 µm in both urban and industrial atmosphere. In both cases the *n*-alkane contents exhibited bimodal or weakly bimodal distribution peaking at the 0.95–1.5 µm size range within the fine mode and at 7.3–10 µm in the coarse mode.

Low-molecular-weight PAHs displayed bimodal patterns peaking at 0.49–0.95 µm and 7.3–10 µm, while high-molecular- weight PAHs exhibited mono-modal distribution with maximum in the <0.49 µm fraction. While the mass mean diameter (MMD) of total n-alkanes in the urban and industrial sites was 0.70 and 0.84µm, respectively, it did not exceed 0.49 µm for PAHs.

Carbon preference index (CPI ~1.1), wax% (10.1–12.8%) and the diagnostic ratios for PAHs all revealed that vehicular emission was the major source of these organic compounds in PM10 during the study periods, and that the contribution of epicuticular waxes emitted by terrestrial plants was minor. According to benzo[a]pyrene-equivalent carcinogenic power rates (BaPE), ca. 90% of overall PAH toxicity across PM10 was found in particles ≤ 0.95µmin diameter which could induce adverse health effects to the population living in these areas.