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A rapid low-consuming solvent extraction procedure for simultaneous determination of 34 multiclass pesticides associated to respirable atmospheric particulate matter (PM 2.5) by GC-MS

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ABSTRACT

A miniaturized and low-consuming solvent extraction procedure has been developed for the simultaneous determination of 34 multiclass pesticides in PM_{2.5} samples, using sample masses as low as 321 µg. A central composite design was applied in order to establish the optimal extraction conditions: the solid-liquid extraction was done under sonication using 500 µL of a solvent mix 70/30 acetonitrile/ethyl acetate and an extraction time of 17 minutes at 39 °C. It was followed by injection in a GC-MS system. Recoveries ranged from 72.1 % (endrin aldehyde) to 120% (sulfotep) with RSD ≤ 20 % for most of pesticides. The method accuracy was assessed by determinations of organochlorine pesticides such as 4,4'-DDT, 4,4'-DDE and 4,4'-DDD in NIST SRM 1649b. PM_{2.5} samples were collected in Salvador city, State

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