

EXPOSURE TO FORMALDEHYDE INCREASES THE INCIDENCE OF LOWER RESPIRATORY INFECTIONS IN INFANTS – FINDINGS FROM THE PARIS BIRTH COHORT

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Background and Aims: Lower respiratory tract infections (LRI) are common in infants, and are mainly induced by viral exposure. Association between exposure to certain chemical pollutants and LRI has been previously described. Although formaldehyde is ubiquitous indoors, its impact on infant health is uncertain. The aim of this study was to determine the impact of formaldehyde exposure on the incidence of LRI during the first year of life of babies from the PARIS (*Pollution and Asthma Risk: an Infant study*) cohort.

Methods: The PARIS cohort enrolled 3840 healthy newborns. Formaldehyde exposure was assessed by modeling in an environmental investigation including formaldehyde repetitive measurements into a random sample of 196 infants' homes from the cohort (at 1, 6, 9, 12 months) and data about potential formaldehyde level determinants (particleboard, varnished parquet floor, wall coating), home characteristics (number of inhabitants, construction date), aeration (mechanical ventilation, length of window opening). Health data were collected by regular self-administered questionnaires (at 1, 3, 6, 9 and 12 months). Multinomial logistic regression model was used to examine relations between formaldehyde exposure and the occurrence of (wheezy) LRI adjusting for potential confounders/risk factors.

Results: Around 40% of infants were exposed all the first year of life to formaldehyde levels above $19.5\mu\text{g}/\text{m}^3$.

Well-known risk factors associated with LRI were confirmed in our study (child gender, parental history of asthma, presence of older siblings, day-care attendance, signs of humidity, prenatal/postnatal exposure to environmental tobacco smoke, and the protective effect of breastfeeding and furry pets). After adjustment for these risk factors, an interquartile increase of FA levels (P_{25} - P_{75} : 14.4 - $26.8\mu\text{g}/\text{m}^3$) was associated with a 32% increase in risk of LRI (adjusted OR[95%CI]= 1.32 [1.11 - 1.55], $p=0.001$), and the strength of the association was slightly higher for wheezy LRI (aOR= 1.41 [1.14 - 1.74], $p=0.002$).

Conclusion: Infants exposed to formaldehyde are more likely to have an increased incidence of LRI.