

Publication**Long-term exposure to ambient air pollution and asthma symptom score in the CONSTANCES cohort****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4651655**Author(s)** Keirsbulck, M.; Savoure, M.; Lequy, E.; Chen, J.; de Hoogh, K.; Vienneau, D.; Goldberg, M.; Zins, M.; Roche, N.; Nadif, R.; Jacquemin, B.**Author(s) at UniBasel** [de Hoogh, Kees](#) ; [Vienneau, Danielle](#) ;**Year** 2023**Title** Long-term exposure to ambient air pollution and asthma symptom score in the CONSTANCES cohort**Journal** Thorax**Volume** 78**Pages / Article-Number** 9-15**Keywords** asthma; asthma epidemiology; submitted work: grants or contract from GSK, Boehringer Ingelheim, Pfizer and; Novartis in the past 36 months, and relationship with Boehringer Ingelheim,; Novartis, Pfizer, Teva, GSK, AstraZeneca, Chiesi, Sanofi and Zambon for; consulting fees and payment or honoraria for lectures, presentations, speakers; bureaus, manuscript writing or educational events in the past 36 months.

BACKGROUND: The asthma symptom score allows to consider asthma as a continuum and to investigate its risk factors. One previous study has investigated the association between asthma score and air pollution and only for nitrogen dioxide (NO₂). We aimed to study the associations between particulate matter with an aerodynamic diameter lower than 2.5 microm (PM_{2.5}), black carbon (BC) and NO₂ and the asthma symptom score in adults from CONSTANCES, a French population-based cohort. **METHODS:** Asthma symptom score (range: 0-5) was based on the number of five self-reported symptoms of asthma in the last 12 months. Annual individual exposure to PM_{2.5}, BC and NO₂ was estimated at participants' residential address using hybrid land-use regression models. Cross-sectional associations of each pollutant with asthma symptom score were estimated using negative binomial regressions adjusted for age, sex, smoking status and socioeconomic position. Associations with each symptom were estimated using logistic regression. The effect of BC independent of total PM_{2.5} was investigated with a residual model. **RESULTS:** Analyses were conducted on 135 165 participants (mean age: 47.2 years, 53.3% women, 19.0% smokers, 13.5% ever asthma). The ratio of mean score was 1.12 (95% CI 1.10 to 1.14), 1.14 (95% CI 1.12 to 1.16) and 1.12 (95% CI 1.10 to 1.14) per one IQR increase of PM_{2.5} (4.86 microg/m³), BC (0.88 10⁻⁵ m⁻¹) and NO₂ (17.3 microg/m³). Positive and significant associations were also found for each asthma symptom separately. BC effect persisted independently of total PM_{2.5}. **CONCLUSION:** Exposure to each pollutant was associated with increased asthma symptom score in adults. This study highlights that BC could be one of the most harmful particulate matter components.

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