Background: The role of air pollution in the development of adult onset asthma remains uncertain. The objective was to assess the impact of long-term exposure to traffic related air pollution on adult onset asthma in six previously established European cohorts (ECRHS, EGEA, E3N, NSHD, SALIA, SAPALDIA) using the newly developed and standardized ESCAPE exposure estimates.

Methods: Annual concentrations of NO2, NOx, PM2.5, PM10 and PM_coarse and traffic exposure at the home addresses were estimated using land-use regression models. In each cohort, logistic regression models were adjusted for age, sex, BMI, education and smoking. Cohort-specific results were meta-analysed.

Results: In total, 23’701 subjects with NO2 and 16’662 subjects with PM annual concentration estimates were available from the six cohorts. We observed 1,257 cases of incident asthma, with asthma incidence rate varying between 2.9 and 8.3 per year per 1’000 subjects in SAPALDIA and EGEA respectively. In the meta-analyses, the associations between air pollution and asthma incidence were not statistically significant OR: 1.05 (95%CI: 0.97,1.14) per 10µg/m3of NO2 and 1.04 (95%CI: 0.88,1.22) per 10µg/m3 PM10). We did not either observe statistically significant associations with the traffic indicators OR: 1.04 (95%CI:
0.97,1.12) per 5000 vehicles/day on the nearest road and OR: 1.05 (95%CI: 0.86,1.29) per 4 million vehicles/day on major roads in a 100m buffer.

**Conclusion:** This meta-analysis did not show statistically significant associations between traffic exposures and adult onset-asthma, with point estimates lower than the ones already published. Further analyses will be needed to address the rather substantial time difference between exposure measurements taken as part of ESCAPE, using back-extrapolated exposure data, and the health assessment of the original studies, as well as the limitations in exposure contrasts or precision in the exposure models.

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