

Chronic burden of near-roadway traffic pollution in 10 European cities (APHEKOM network)

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Abstract

Recent epidemiological research suggests that near road traffic–related pollution may cause chronic disease, as well as exacerbate related pathologies, implying that the entire “chronic disease progression” should be attributed to air pollution, no matter what the proximate cause was. We estimated the burden of childhood asthma attributable to air pollution in 10 European cities by calculating the number of cases of 1) asthma caused by near road traffic–related pollution, and 2) acute asthma events related to urban air pollution levels. We then expanded our approach to include coronary heart diseases in adults.

Derivation of attributable cases required combining concentration–response function (CRF) between exposures and the respective health outcome of interest (obtained from published literature), an estimate of the distribution of selected exposures in the target population, and information about the frequency of the assessed morbidities.

Exposure to roads with high vehicle traffic, a proxy for near road traffic–related pollution, accounted for 14% of all asthma cases. When a causal relationship between near road traffic–related pollution and asthma is assumed, 15% of all episodes of asthma symptoms were attributable to air pollution. Without this assumption, only 2% of asthma symptoms were attributable to air pollution. Similar patterns were found for coronary heart diseases in older adults.

Pollutants along busy roads are responsible for a large and preventable share of chronic disease and related acute exacerbation in European urban areas.

<http://erj.ersjournals.com/content/early/2013/03/20/09031936.00031112.abstract>