Detailed review finds stronger links between adverse health effects and traffic pollution

June 27 2022

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A comprehensive new scientific review released today by the Health Effects Institute (HEI) found growing confidence in the links between several adverse health effects and traffic related air pollution (TRAP).

The review, the largest of its type to date, was conducted by a panel of thirteen renowned experts who evaluated 353 published scientific reports on traffic pollution and related health effects between 1980 and 2019.

Following HEI's widely cited 2010 TRAP report, HEI appointed a new panel in 2018 to evaluate evidence of long-term exposure to TRAP and selected adverse health outcomes. The panel found a high level of confidence that strong connections exist between TRAP and early death due to cardiovascular diseases. A strong link was also found between TRAP and lung cancer mortality, asthma onset in children and adults, and acute lower respiratory infections in children. Of the studies reviewed, 118 examined respiratory effects in children and included populations residing in a wide range of countries, with a majority based in Europe and North America.

"Traffic pollution clearly remains an important public health concern across the globe," said Hanna Boogaard, HEI Consulting Principal Scientist and member of the review panel. "This report provides the evidence to inform policymaker actions to mitigate the consequences of traffic pollution."

Many higher-income countries around the world have seen tailpipe emissions and ambient concentrations of some air pollutants drop steadily over the past several decades, and air quality regulations and improvements in vehicular emission-control technologies which contributed to these decreases will continue. However, those improvements do not fully offset the growth and increased congestion of the world's motor vehicles due to population growth, urbanization, and economic activity, especially in low- and middle-income countries. Older higher emitting vehicles also remain on the roads of many of those poorer countries. The introduction of new technologies such as electric vehicles promises reductions of some components of TRAP, especially if the electric grid is decarbonized.

Emissions from traffic affects air quality at the local, neighborhood, urban, and regional scale. The panel found that epidemiological studies that focused on exposures at the local level (less than one kilometer) and neighborhood level (one to five kilometers) offered the greatest potential in determining TRAP impacts. The panel found that TRAP will continue to have important health effects globally, especially in urban settings and areas close to busy roadways.

Traffic-related air pollution is a complex mixture of gases and particles resulting from the use of both heavy-duty and light-duty vehicles, buses, passenger cars, and motorcycles. Motor vehicles emit a variety of pollutants including nitrogen dioxides (NO_2), elemental carbon (EC), and particulate matter ($PM_{2.5}$). Vehicles also produce non-tailpipe emissions resulting from re-suspension of road dust, abrasion of the road surface, and the wear of brakes and tires which leads to emissions of heavy metals such as iron and copper. To date, almost all traffic pollution regulations are targeting tailpipe emissions.

More information: www.healtheffects.org/publicat … erm-exposure-traffic

Provided by Health Effects Institute

Citation: Detailed review finds stronger links between adverse health effects and traffic pollution (2022, June 27) retrieved 22 September 2024 from https://phys.org/news/2022-06-stronger-links-adverse-health-effects.html