

For Release: Noon, March 29, 2019

For More Information: Dan Greenbaum 617 488 2331 dgreenbaum@healtheffects.org

New Study from HEI:

Vehicle Emissions Have Dropped Significantly Over the Past 2 Decades *Measuring Progress in Hong Kong and Baltimore, Maryland, Tunnels*

(Boston, MA) A detailed and systematic study published today by the Health Effects Institute (HEI)¹ at www.healtheffects.org has found that pollution emissions from both cars and trucks using tunnels in Baltimore, Maryland and Hong Kong have declined steeply over the past 20 years. The study, *Real-World Vehicle Emissions Characterization for the Shing Mun Tunnel in Hong Kong and Fort McHenry Tunnel in the United States*, was conducted by Xiaoliang Wang and colleagues from the Desert Research Institute. They tested the emissions from a wide range of cars and trucks entering and exiting the tunnels, and compared them to similar tests from studies 25 years earlier (Baltimore) and 12 years earlier (Hong Kong).

Traffic emissions are a significant source of urban air pollution, and exposure to traffic-related air pollution is associated with some adverse health effects. Emissions from motor vehicles have decreased over the past few decades because of new fuels, changes in engine designs, and improved emission-control technologies. One approach to test whether those declines are occurring in the real world is to repeatedly measure air quality in traffic tunnels, where atmospheric influences are minimal, and relate the emissions changes over time to changes in vehicle fleets.

Wang and his team characterized real-world mobile-source emissions of more than 300 pollutants in the two tunnels. About 55,000 vehicles pass through each tunnel per day. By measuring different proportions of the various vehicle types at different times

¹ The Health Effects Institute is an independent, nonprofit research institute funded jointly by the U.S. Environmental Protection Agency, industry, foundations, and development banks to provide credible, high-quality science on air pollution and health for air quality decisions.

and in different tunnel bores, investigators estimated diesel versus non-diesel emissions. In addition, the investigators conducted source apportionment to tease apart various source contributions (such as from brake and tire wear).

Wang and colleagues found that average emissions from gasoline and diesel vehicles for most pollutants were lower in both tunnels compared with earlier studies in the same tunnels (Figure 1). A notable exception for the Hong Kong tunnel was that average emissions of certain pollutants related to LPG were higher for the non-diesel fleet because the fraction of the fleet that uses LPG fuel had increased since the earlier study.

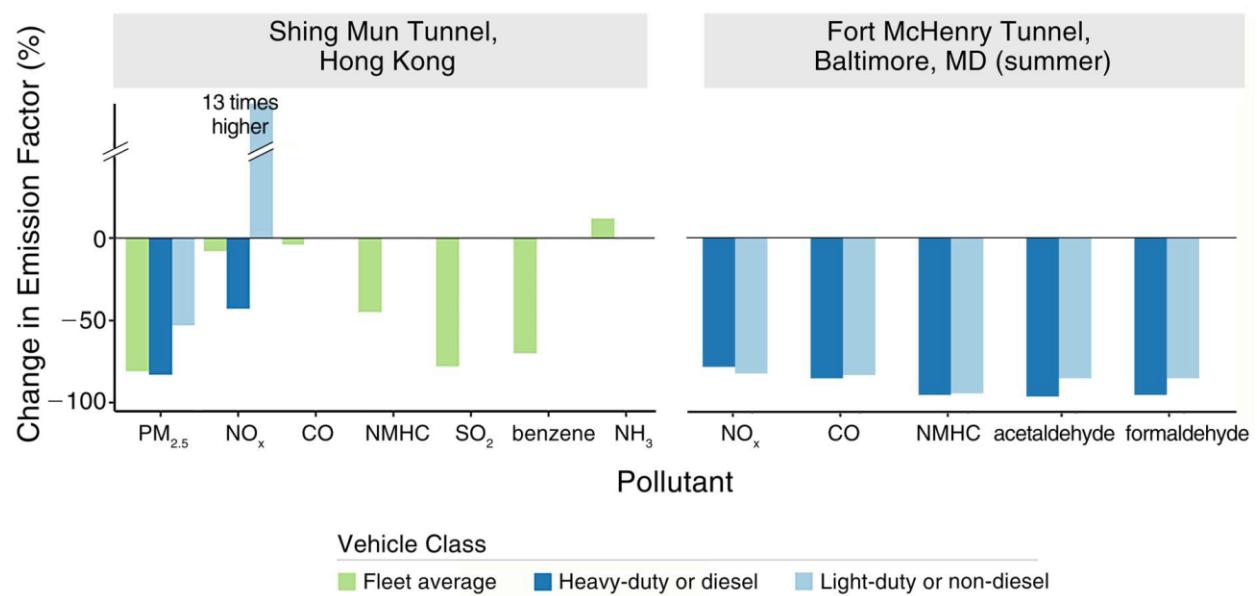


Figure 1. Percent change in emission factors between 2003-2004 and 2015 in the Shing Mun Tunnel in Hong Kong and between 1992 and 2015 in the Fort McHenry Tunnel in Baltimore, Maryland over time. Not all pollutants were measured in each study.

The results of this study were subject to intensive, independent review by the HEI Review Committee; in its Commentary, the Committee cited many strong aspects of the study and, despite some limitations, concluded that the main results — that motor vehicle emissions as a whole are declining — were sound.

The data collected in the current study is now available online. Any researcher who is interested can download and use them to track changes in motor vehicle emissions and to update emissions models used in the regulatory process.

Research Report 199 is available for downloading, free of charge, at www.healtheffects.org/publications. For more information on the study, and how to access the data, contact Allison Patton (apatton@healtheffects.org).