Research encourages the consideration of air pollution when planning housing near transit

July 7 2015

Credit: Alfred Palmer/Wikipedia

Policymakers and developers planning high-density housing near public transit with the goal of reducing automobile use and greenhouse gas emissions that contribute to global warming need a clearer understanding of the health risks from air pollution that may be created if that housing

is also built near busy roads and freeways, according to new research by Keck School of Medicine of the University of Southern California (USC) scientists.

The study is one of the first to focus on the burden of heart disease that can result from residential exposures near major roadways in a large urban area. According to the researchers, the effects of the near-roadway component of air pollution is generally underappreciated and not included in estimates of air pollution-related heart disease. These near-roadway exposures are largely unregulated.

The study estimated the current impact of near-roadway pollution and of likely future exposure under proposed urban redevelopment plans for Southern California in response to landmark California legislation passed in 2008 to reduce greenhouse gases by 2035. Senate Bill 375, the Sustainable Communities and Climate Protection Act, sets regional targets to decrease vehicle traffic, in part by promoting urban redevelopment with multifamily homes in corridors with good public transportation. The anticipated result is less reliance on private automobiles, reduced greenhouse gas emissions and corresponding reduced levels of air pollution hazardous to health.

"The health benefits of these reduced emissions are partially offset by increased exposure to high concentrations of near-roadway pollutants among a larger population living next to major traffic corridors," said Rob McConnell, professor of preventive medicine, Keck School of Medicine of USC and corresponding author.

"The response to SB 375 is a historic opportunity to optimize the health co-benefits of policies to reduce greenhouse gas emissions. An appreciation of the health risks of near-roadway pollution would strengthen the argument for proposals to zone buffer areas between busy roadways and new high-density housing and to develop a zero-emission

or near-zero-emission vehicle fleet."

"Near-roadway pollutants are rapidly diluted over short distances," said Rakesh Ghosh, first author and research associate, Department of Preventive Medicine, Keck School of Medicine of USC. "Residential exposure reduces markedly within a few hundred feet of even the busiest roadways."

The investigators noted that the population is aging and that older persons are more vulnerable to the effects of pollution. Therefore, the number of heart attacks caused by air pollution is likely to increase over the next two decades even though pollution is decreasing.

More information: Ghosh, R., Lurmann, F., Perez, L., Penfold, B, Brandt, S., Wilson, J., Milet, M., Kunzli, N & McConnell, R. (2015). Near roadway air pollution and coronary heart disease: Burden of disease and potential impact of a greenhouse gas reduction strategy in Southern California. *Environmental Health Perspectives* Published online July 7, 2015; DOI: 10.1289/ehp.1408865

Provided by University of Southern California