

Vehicular emissions may rise 19 times by 2020

Study By IIT-Roorkee, Universities Of Surrey & Minnesota Has Startling Data

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Agra: An eight-year study, from 2008-2015, conducted by IIT-Roorkee, University of Minnesota, US, and University of Surrey, UK, has shown that emissions from vehicles in Delhi have increased up to three times between 1991 and 2011; these could rise by up to 19 times by 2020.

Researchers said the study has now been accepted for publication by the international science journal "Atmospheric Environment".

Private vehicles' (two-wheelers and cars) emissions—carbon dioxide, hydrocarbons, PM10 (particulate matter), carbon monoxide, nitrogen oxide and toxic substances like butadiene, acetaldehyde, benzene, formaldehyde, total aldehyde, and total poly aromatic hydrocarbons have increased by 2-13 times in 2011 and 2-16 times in 2015 over 1991 levels, the researchers have found.

Two-wheelers were found, at present, to be the dominant source of emissions of what

are termed Mobile Source Air Toxics (MSATs)—formaldehyde (37%), hydrocarbons (35%) and acetaldehyde (64%). Private cars were found to be responsible for the majority of the carbon monoxide (34%), benzene (48%), and total aldehyde (40%) emission. Heavy-duty commercial vehicles (HCVs) were found to have emitted nearly 46% of all particulate pollutants in 2015. Diesel cars were responsible for 10% of such pollution in Delhi.

The study attempted to record variations in various vehicular pollutants over 20 years, and offered projections for the future.

It was conducted by Ajay Nagpure, post doctorate associate at the Centre for Science, Technology, and Environmental Policy, University of Minnesota, B R Gurjar and Vivek Kumar from IIT-Roorkee and Prashant Kumar from University of Surrey.

Nagpure told **TOI** that pollution levels in Delhi had already reached dangerous levels. If action was not taken immediately, it would become render ir-



Anindya Chattopadhyay

HER FIGHT AGAINST POLLUTION HAS SANTA'S THUMBS UP

reversible damage, he warned.

Researchers developed their own model, the Vehicular Air Pollution Inventory (VA-PI), for measuring time-series emission analysis (1991-2011) of on-road vehicles. The research included pollution caused by non-exhaust sources like worn-out brake, poor roads or tyres and road dust. PM10 (particulate matter) emissions from tailpipe and non-exhaust sources contribute 16% of the total pollution; road dust is the big chunk of PM10 emissions, at 77% and brake wear (6%) in

2015. The study anticipates that the share of road dust in PM10 pollution would be 79% in 2020.

Nagpure said according to United Nations Environment Programme (UNEP) and World Health Organization, Delhi is the second-most populous city in the world after Tokyo, and the most polluted in the world. Air-pollution deaths have gone up two-fold between 1991 and 2010 in Delhi.

MSATs can cause a wide range of serious health effects from birth defects, cancer, damage to kidneys, lungs and

nervous system. Estimates from the US Environmental Protection Agency show that on-road vehicles are responsible for about half of all cancers attributed to outdoor air pollution.

Nagpure said that although action is being taken by governments to reduce pollution, much of this is focused on exhaust emissions. But no action is taken to reduce non-exhaust emissions like brake wear, road wear, tire wear and road dust.

The study projected greater pollution from buses. Cars (30-34%) were found to be producing the highest CO2 emissions during 2011 to 2015; there is likelihood that buses could dominate in the years after 2015, the researchers said.

Mono-nitrogen oxide emission has also grown significantly, with an annual rate of growth of 14%.

Two-wheelers played a dominant role in hydrocarbon emissions from 2011; buses are expected to be the biggest source of this pollutant from 2018 onwards.

Odd-even policy: No offs for DTC staff for 15 days

TIMES NEWS NETWORK

New Delhi: In the latest review of the implementation of the odd-even policy, transport minister Gopal Rai on Friday announced that leaves of all DTC staff stand cancelled from January 1 to 15 to enable the department to provide optimum bus services.

"Staff will only be permitted to take their weekly off. All other leaves have been cancelled. We are also starting a drive to recruit additional bus conductors. For this, we are reaching out to retired conductors. When we are able to acquire more buses, they will get priority for permanent recruitment in case they want to continue. We are looking for additional staff of 4,000," said Rai.

The minister said that tenders were going to be called for e-ticketing and by the end

of December, at least 200 buses would have e-ticketing facility. This would extend to all buses by May 2016.

Meanwhile, a four-member committee comprising the chief secretary, secretaries of the environment and transport departments and the divisional commissioner has been set up to determine

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under what law people can be punished for violating the odd-even formula.

After the poor show on the first day for registration of private buses—only 90 were registered—the government has extended the date. They will also allow registration of buses across all depots. "Now, we will do it (registration) at all depots and have extended deadline from December 20 to 26," said Rai.

The government is also in the process of recruiting 5,000 civil defence volunteers for whom field camps will be set up across the city.

Rai said that in case there are colonies where there is a substantial number of people working in the same office, the government will try to provide direct bus services from there to the place of work. Information related to public transport will be available on Twitter and Google.

"We will set up remote sensing cameras across the city to determine the change in the number of vehicles when the odd-even system is enforced. The education department will also hold meetings in each zone to channelise the new buses into routes. If a bus is damaged during this period, the government will reimburse the owner at approved rates," Rai added.