

# Dust, fuel combustion among city's chief summer pollutants

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**NEW DELHI:** Breaking down the suspended particulate matter of the size of 2.5 microns or PM2.5 — the primary air pollutant in Delhi — into three components, a new study by Indian Institute of Technology (IIT), Kanpur has identified dust, solid fuel combustion, vehicular emissions, garbage burning and cooking as some the leading sources of pollution in the city during summer.

The study, titled 'Realtime quantification and source apportionment of fine particulate matter including organics and Elements in Delhi during summertime', will be released on Monday. HT has seen the report.

This is the first real-time pollution source apportionment study in the Capital. Experts say such studies are important to understand and identify the sources of pollution in a particular area and help authorities plan specific interventions in real-time.

Instead of treating PM2.5 as one entity, the researchers broke it down into several sub-categories — organic aerosols, elements, black carbon, sulphates, nitrous oxides, chlorine and nitrates. They said this helped in quantifying more accurately the proportion of each source in the total pollution mix.

Professor SN Tripathi, head of department (civil engineering), IIT-Kanpur, and member of



Road dust is one of the major contributors to air pollution in Delhi.

RAJ K RAJ/HT PHOTO

National Clean Air Programme, said highly advanced equipments were used for this study that helped the researchers not only understand the sources of pollution, their share, but even their location.

"The technology used for this study has given us data every hour, which has helped us better understand the sources and how these are impacting Delhi's air. We have also been able to identify more sources, such as cooking that were ignored in earlier source apportionment studies," said Tri-

pathi.

The study showed that secondary oxidised pollution particles, which are formed as a result of pollutants reacting with the molecules in the atmosphere, had a share of 64% in the city's organic aerosols (pollutants released from combustion of organic matter such as vehicular fumes, cooking etc), and 27% elements (metal particles suspended in the air emanating from power plant emissions, industrial waste burning, etc) during June and July.

The study showed that three

major factors contributed organic aerosols in Delhi's air during summers—vehicular emissions had 12.3% share, solid fuel 16.2% and cooking, both in-house and in the open, released 7.3% of such aerosols.

Elements or metals came mostly from dust (52.5%), emissions from power plants (16.2%), garbage burning and emissions from steel industries (10.7%), solid fuel combustion (10.5%), non-exhaust pollution from reasons such as road dust, industrial waste burning (1.5%) and emissions from

metal processing industries (1.4%).

Scientists said government agencies and pollution monitoring bodies focus on air pollution in winters when Delhi faces a public health crisis each year. But, it is also important to understand pollution patterns during summer so that a holistic pollution control plan can be implemented.

In 2016, IIT-Kanpur conducted a similar source apportionment study for Delhi, giving a year-round analysis of sources contributing towards the city's pollution levels.

The study has also marked the different areas from where pollutants come into the Capital.

For instance, the study highlighted that small and medium metal processing units located in Punjab, Haryana and Pakistan were contributing significantly to chlorine in Delhi's PM 2.5 levels.

Anumita Roychowdhury, executive director (research and advocacy), Centre for Science and Environment said that updated and real-time data on pollution contributors in Delhi were needed to formulate plans to tackle the sources.

"If we know details of what are the pollutants, what is its contribution and from where they are coming in, our preparedness to plug this will be much better. Seasonal analysis is also necessary because meteorology plays a very important role in changing the pollution profile of a region," Roychowdhury said.