Blame crop burning for fog: IIT study

A report on air quality, released during the conference, said Varanasi and Allahabad have not seen a single 'good' air quality day in the past one year.

Written by Mallica Joshi | Varanasi | Published:December 13, 2016 3:43 am

Delhi and major cities in Uttar Pradesh have been reeling under a prolonged spell of fog for the past two weeks.

Burning agricultural residue doesn't just bring down air quality, but also leads to longer spells of dense fog, scientists at the Indian Institute of Technology, Kanpur

While the concentration of oxidised organic carbon that is produced after burning biomass — crop stubble, forest residue and vegetation — is only 9 per cent on non-fog days, it rises to 35 per cent on days that see fog, says a study conducted by scientists at IIT.

Delhi and major cities in Uttar Pradesh have been reeling under a prolonged spell of fog for the past two weeks. This is also the first time in six years that fog has descended in the capital so early on in December.

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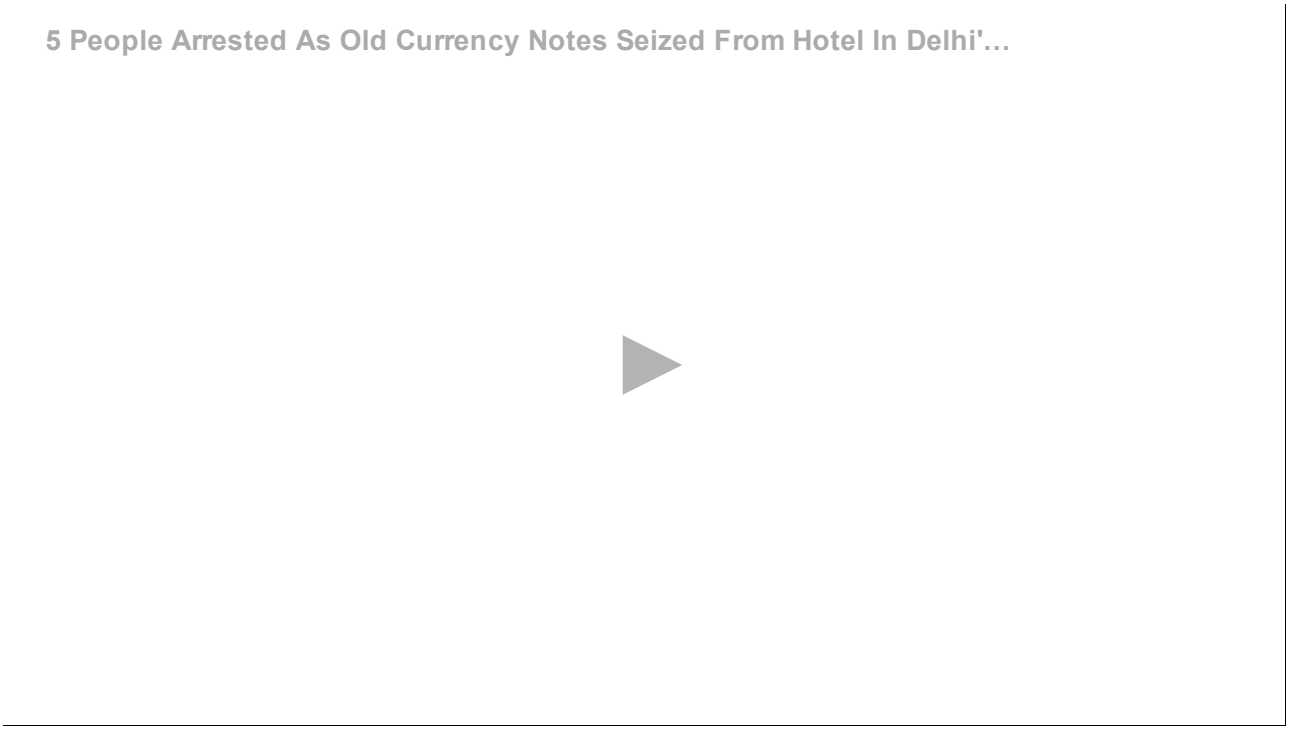

The study — titled 'Combined Effects of Organic Aerosol Loading and Fog Processing on Organic Aerosols Oxidation, Composition, and Evolution' — was published in the peer-reviewed journal, Science of the Total Environment, in August. The study was conducted at Kanpur — one of the most polluted cities in India.

The presence of these particles in the air also poses a long-term problem. "If they remain in the air for a longer time, they get oxygenated and become more hygroscopic, leading to more affinity towards water and hence the formation of

The presence of particulate matter gives water droplets a medium to become suspended and aids the formation of fog.

PhD students Abhishek Chakraborty and Tarun Gupta have co-authored the study. Tripathi was speaking at a conference — particulate matter trends and increasing respiratory ailments — in Varanasi on Monday.

According to several source apportionment studies in Delhi, biomass burning is one of the leading causes of pollution in the Indo-Gangetic Plains. Particulate matter has the tendency and capability to travel over long distances. Scientists at IIT-Kanpur and the National Physical Laboratory have found in separate studies that they can travel to Delhi, Kanpur and Varanasi from as far as Afghanistan, Pakistan, Punjab and Haryana.

Oxidised organic carbon compounds that are formed due to biomass burning also lead to longer spells of fog, Tripathi said. “Once fog is formed, these particles change and attract more water droplets and lead to more fog. This becomes a vicious cycle where one instance of dense fog leads to a second instance of denser fog,” he said.

According to experts at the conference, air pollution cannot be Delhi’s problem alone and cannot be solved by taking action only in the capital. “We need to experiment and see what kind of impact is seen on fog if biomass burning is strictly stopped for a year. Our study says the impact will be immense,” Tripathi said.

A report on air quality, released during the conference, said Varanasi and Allahabad have not seen a single ‘good’ air quality day in the past one year. Data from the Central Pollution Control Board has been analysed in the report.