

Ammonia in London: is it increasing and what is the relevance of urban ammonia for air quality impacts?

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Emissions of ammonia affect both rural and urban air quality primarily via reaction of ammonia in the atmosphere forming secondary ammonium salts in particulate matter (PM). Urban ammonia emissions come from a variety of sources including biological decomposition, human waste, industrial processes and combustion engines. In the UK, the only long-term urban ammonia measurement is a UK National Ammonia Monitoring Network site at London Cromwell Road, recording monthly average concentrations. Short term measurements have also been made in the past decade at Marylebone Road, North Kensington and on the BT Tower. Cromwell Road is a kerbside site operational since 1999. The Cromwell Road data indicates that ammonia concentrations may be increasing since 2010-2012 after a long period of decreasing. Data from the National Atmospheric Emissions Inventory indicates ammonia emissions from diesel fleet exhausts increasing over this time period but an overall net decrease in ammonia emissions. With changes in engine and exhaust technology to minimise pollutant emissions and the importance of ammonia as a precursor gas for secondary PM, there is a challenge to understand urban ammonia concentrations and subsequent impacts on urban air quality. In this paper the long term measurements are assessed in conjunction with the short-term measurements. The challenges to assess the relative importance of local versus long range ammonia emission are discussed.