Assessment of emerging contaminants including organophosphate esters and pyrethroids during DISCOVER-AQ in Houston, Texas, United States.

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DISCOVER-AQ (Deriving Information on Surface conditions from Column and Vertically Resolved Observations Relevant to Air Quality) is a NASA-funded air quality research program that focused on Houston, Texas, United States in September 2013. In conjunction with DISCOVER-AQ, particulate matter was collected for the month of September from four ground-based sampling sites across the Houston metropolitan area. The Houston metropolitan area is one of the most populous cities in the United States. Sampling sites included an upwind and downwind site as well as an urban (i.e. downtown) and industrial/port areas (i.e. Houston Ship Channel). Particulate matter samples were collected to examine both spatial and temporal trends (including day versus night). Particulate matter was collected on quartz fiber filters, which were analyzed for emerging classes of concern including organophosphate esters (OPEs; including flame retardants) and pyrethroids. OPEs have in recent years increased in both use and production as they replaced polybrominated diphenyl ethers flame retardants. Permethrin is one of the most commonly used mosquito adulticides in the United States.