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Title:	Study of amides and organic acids over the north-west Indo-Gangetic plain in the monsoon season
Authors:	<a href="#">Gandhi, Hiral.</a>
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Abstract:	<p>Isocyanic acid, a potentially harmful organic acid, was measured in the ambient air a decade ago. While its primary sources include biomass burning and traffic emissions, it is formed photochemically from amides reacting with the hydroxyl (OH) radical. This study aims at further investigating the production of isocyanic acid from these precursor compounds and look into the possible sinks during the monsoon season at a suburban site in the NW-IGP. The VOCs were measured using an online Proton Transfer Reaction – Mass Spectrometer and the data for the period 06-07-2019 to 08-08-2019 (n&gt;12000 measurements) at a 4-minute temporal resolution was analyzed in this study. The average VOC concentrations during this period were 0.86 ppb, 5.4 ppb, 0.65 ppb, 0.23 ppb, 0.13 ppb for isocyanic acid, formamide, acetamide, Sum of C3 Amides and Sum of C4 amides respectively. Diel profiles of isocyanic acid and the amides showed a daytime peak indicating a strong photochemical source. Average daytime peak of isocyanic acid reached ~1 ppb which is believed to be a concern as it might pose health risks. Sources and sinks were investigated by calculating the rates of formation of isocyanic acid. The calculated rate of formation (<math>32.99 \times 10^{-6}</math> ppb/sec) was found to be ~ 3 times the observed rate of formation (<math>10.7 \times 10^{-6}</math> ppb/sec) from 6:00am to 13:00 pm. This is because observed rate of formation comprises of both sources and sinks while calculated rate of formation doesn't account for the sinks. By comparing this value with the observed rate of isocyanic acid formation and applying mass balance the sink was determined to be <math>22.29 \times 10^{-6}</math> ppb/sec. Our results suggest deposition could be a major sink of isocyanic acid during the monsoon season over north-west IGP.</p>
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