

# ***Interactive comment on “Evidence of ketene emissions from petrochemical industries and implications for ozone production potential” by Chinmoy Sarkar et al.***

## **Anonymous Referee #1**

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The manuscript presents aircraft measurements of PTR-ToF-MS from a petrochemical facility in South Korea. It applies a horizontal advective flux approach adapted from the top-down emission rate retrieval algorithm (TERRA) to estimate emission strength. It focuses on a single species, Ketone, and its emissions and impact on OH reactivity and tropospheric ozone formation. The idea about an understudied VOC could be exciting and potentially point to new areas to explore. However, it appears that there are several weaknesses that the paper would need to address.

1. For a study addressing a single species, I'd hope that authors could do a better job in the quantification than just using a proton transfer reaction rate coefficient to estimate

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its concentration. The rate coefficient could easily go wrong by more than 200%, and all conclusions would depend on the quality in quantification. Why not do a calibration of ketene in the laboratory? It could also help with the compound identification question raised by Dr. Armin Wisthaler in the Interactive Comment.

2. Specie identification needs to be better addressed, which should be easy to check as a correlation to  $m/z$  87.044, and other potential ions. Again, laboratory experiments could help. Again, I refer to the interactive comment.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-1103>, 2020.

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