

Interactive comment on “Low temperatures enhance organic nitrate formation: evidence from observations in the 2012 Uintah Basin Winter Ozone Study” by L. Lee et al.

L. Lee et al.

ottawanrc@gmail.com

Received and published: 9 September 2014

We thank referee #1 for his/her comments.

The comments are addressed as follows:

Specific comments

1. Page 17409, line 20: Are the amounts of aromatics reacted high enough that this source of alkyl nitrates could be significant if the alkyl nitrate yields from reactions of the ring-opened products (which are typically > 90% of the OH reaction products) are a few percent?

C6693

Author reply: The total OH reactivity of aromatic compounds measured by GC-MS is generally 10% of the total OH reactivity due to alkanes (Table 1). Given the overall alkyl nitrate yield from alkanes of 22% (Table 2) and assuming an upper limit to the nitrate yield from aromatic compounds of ~35% (as a C7 secondary peroxy radical at 273K), the organic nitrate contribution from aromatics is only 14% of the contribution from alkanes. Therefore, organic nitrate production from alkanes still dominates.

2. Page 17415, line 1–4: It might be useful to remind the reader that small and large alkanes have different effects on the ratio because alkyl nitrate yields increase with carbon number.

Author reply: Add to page 17415, line 1: This is consistent with the understanding that alkyl nitrate yield increases with the carbon number of the precursor alkane.

Technical Comments

1. Page 17408, line 25: I believe there should be “constant” after “rate”.

Author reply: Corrected

2. Page 17411, line 1: Should either be “calculations proceed” or “calculation proceeds”.

Author reply: Corrected

3. Page 17419, line 23: It looks like the subscript 4 is a typo.

Author reply: Corrected

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 17401, 2014.