

Author response to Anonymous Referee #3

We thank the reviewer for the comments - the clarifications have improved the quality of our paper. Our author responses are indented and italicized below.

The authors describe measurements of four commonly used pesticides using chemical ionization time-of-flight mass spectrometry (CIMS), using iodide (water clusters) as chemical reagent ion. The limits of detection of the four pesticides are relatively high, suggesting that the method is adequate for laboratory experiments and, potentially, ambient near-source measurements, but not for more remote measurements. The manuscript is generally well written and the techniques used are sound. I recommend publication of the manuscript after my following comments have been addressed:

Major comments:

(R3.1) In section 3.2 the authors list three assumptions made in their measurements and quantification. An additional assumption seems to be that the species (pesticides) are not lost to the inlet or any other internal surfaces of the instrument. I am especially worried about this for the species analyzed as they have low vapor pressure and are therefore more likely lost to surfaces, and request that the authors address this concern in a revised version of the manuscript.

Response: We used only 13 cm of PEEK tubing from the filter to the entrance of the instrument. Each region in the instrument is under progressively higher vacuum, where contact with surfaces inside the CIMS is minimal to nonexistent.

We added:

***“(4) negligible analyte loss to connection between the filter and the CIMS.....
Finally, to mitigate potential loss of analyte between the filter and instrument, we use the shortest possible piece of unreactive PEEK tube (13 cm) to connect the filter to the iodide ToF-CIMS entrance. There was no evidence of a previously injected pesticide desorbing off the tube wall in ensuing experiments.”***

(R3.2) An additional challenge to applying the methods to field measurements (discussed in the conclusion) seems to be the limit of detection. This should probably be mentioned again in the conclusion.

Response: Done.

Organizational comment:

(R3.3) The section on fitting peaks (lines 307-320) seems too much discussion for a conclusion section. I suggest that (most of) this discussion be moved to section 3.

Response: This comment is consistent with Reviewer 2, and as a result we have moved into section 3.2 where we introduce and discuss the possible use of CIMS for field measurements and discuss the limitations.

Editorial comment:

(R3.4) In line 308 “identify” should be replaced with “identity”

Response: Corrected.