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SUBJECT: REVIEW OF THE "GENERIC VERIFICATION PROTOCOL FOR THE VERIFICATION OF PESTICIDE SPRAY DRIFT REDUCTION TECHNOLOGIES FOR ROW AND FIELD CROPS"

The Generic Verification Protocol (GVP) was prepared to provide guidance in planning, conducting, and reporting results for testing of new application technologies in order to verify that a reduction in off-site drift is achieved by the new application technologies. The ultimate objective is to speed to general use of promising, proven, new application technologies.

A letter outlining "Guidance for Reviewing the Annotated Generic Verification Protocol" was included in the package sent to reviewers. Nine key questions are listed in the guidance letter. My review will provide responses only to questions that are in my area of expertise. For example, I am not familiar with the specifications of setting up a wind tunnel so any questions about dimensions, humidity or temperatures are not addressed in my review.

Response to comments:

2. Comments 4-7, 10, 12, 14, 16-20 and 22 highlight a key issue. We were not able to achieve the Data Quality Indicator Goals (DQIGs) for inter- and intra-nozzle spray variation. The DQIGs need to be relaxed, but by how much.

In order to quantify how much the DQIGs should be relaxed, more runs should be made to characterize the expected variation in the DQIGs. Apparently that has not been done. The low wind speed runs seems to be most problematic. The variance in the measured $D_{v0.5}$, $D_{v0.1}$, and $D_{v0.9}$ should be characterized.

3. We identified a correlation of air speed in the low-speed wind tunnel, coarseness of the spray, and the amount of material that reaches the 2-meter flux plane. For the LSWT validation test, an air speed of 1 m/s was used and we identified a problem of not having enough material reaching the 2-meter plane to meet the DQIGs. The protocol indicates that we can use an air speed up to 10 m/s. Can we select a single air speed for the protocol such that the medium-fine reference spray does not overload the monofilament used for flux

measurement and will carry enough material from the (coarser) test nozzle to the 2-meter flux plane to characterize size distribution and flux accurately?

Due to the correlations present it may not be possible to choose a single air speed.

7. In comments 24-26 and 28-29, we raise the issue of the value of the horizontal deposition measurements in the low-speed wind tunnel. It does not appear that these data are needed as inputs to WTDISP and cannot be used to confirm the quality of flux and droplet size distribution measurements at the 2-meter flux plane. They also add 30% to the cost of the test. What is your opinion of whether or not these measurements should be deleted and, if so, why?

I agree with this suggestion. I do not see the added value in collecting these samples. Deposition under field conditions is more important. Resources should be directed to either more inter-nozzle variability characterization or collecting field deposition data instead.

8. Comments 11 and 21 raise the issue of variability within a group of nozzles of the same model number and vendor. Should the protocol call for the characterization of several samples of each nozzle model to gauge the potential impact of inter-nozzle variability? During high speed wind tunnel testing at USDA-ARS, spray size distribution data were showing inter-nozzle variability.

Yes, it is important to sufficiently characterize the inter-nozzle variability.

9. Comments 1, 3, 23, 30, 31, and 34 raise the issue of whether drift modeling should be included within the protocol and the ETV effort. The EPA must confirm its decision about this very soon, but your input is welcome. Currently, modeling is not part of the ETV/testing portion of the DRT effort, but rather that it is the responsibility of the EPA's pesticide scientists evaluating the reduction of drift provided by the verified technology. Use of the ETV protocol should result in a verification data set that includes 2-meter flux and spray droplet distribution at the several heights for both the reference and tested nozzles. These data would then be used by a non-ETV entity (i.e., OPP) to quantify drift (risk) reduction. Does the protocol generate sufficient information for the modelers to characterize drift?

I believe that once the DQIG issue are resolved and adequate characterization of inter-nozzle variability is included that this protocol will generate data sets that are adequate to characterized primary drift through modeling.