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MEMORANDUM

SUBJECT: Comments on Stauffer's Recent Letter to Doug Campt Concerning Sulfosate

FROM: Matthew Lorber, Acting Team Leader
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TO: Robert Taylor, Product Manager
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Stauffer has not provided evidence that the TMS cation moiety will not leach. EPA's concern is with this degradate, and not the parent sulfosate, nor the CAP moiety (which is equivalent to glyphosate, a pesticide with known low leaching potential). In fact, the evidence they have presented would tend to show just the opposite: that the TMS cation moiety does have the potential to leach. However, they claim that there were some problems with some of the tests (see more detailed explanations below). EPA is requiring further testing to conclusively determine whether or not the TMS moiety will leach. The following describes EPA's comments on submitted tests, including field testing and soil TLC testing.

Soil TLC Two studies were available on soil TLC - one on aged pesticide and one on unaged pesticide. For the unaged test, it is the mobility of the parent which is being tested. We agree with Stauffer that this test indicated that the parent product was immobile. However, EPA is concerned with the degradate, TMS, and not the parent. For this reason, this unaged test is irrelevent to the question at hand. The second study submitted was an aged study, which did test the mobility of the TMS moiety. The results of this are on Attachment 1. The results indicated a K_d less than 1.0 in two of three extracts, and an R_f of 0.54-0.66, also in two of three extracts, for the TMS moiety. The R_f places the TMS in Class 3/4 (and not Class 2, as Stauffer claims), which is defined as "intermediately mobile" to "mobile". Cohen's leaching criteria for K_d implied that leaching pesticcides had K_d less than 5.0, usually less than 1.0 or 2.0, which also classifies the TMS moiety as a "leacher". Stauffer attempts an explanation as to why these results are invalid. If they are, in fact, invalid, the objective should be to redo the tests to obtain valid results.

Field Studies Six field studies have been submitted. Four were submitted earlier and two only recently. The first four only sampled to a depth of six inches, and for this reason, cannot be considered to evaluate leaching potential. Results of these tests are in Attachment 2. The Virginia test went only to a depth of 3 inches. The California and Iowa results show TMS moiety in the 3-6" layer at the last day of the study, which indicate two important factors related to leaching: 1) that the residue is very persistent to have significant levels at days 91 and 189 of a field study, 2) that when significant residues appear consistantly in the lowest depth of sampling, it is likely that some residues leached further - at least, evidence that they did not leach further is unavailable, which would invalidate the study as a leaching study. It is interesting that residues did not appear in the Florida 3-6" layer after day 30. Given the sand soil condition in the Florida field site (in contrast to silty clay loam and sandy loam of the other two sites), I would conclude that the residues had a high probability of leaching below the depth of sampling.

The results of the most recently submitted field sites are inconclusive. The registrant's explanation of the depth of penetration of residues being due to sampling problems for the early sampling dates is plausible and has been seen elsewhere in different studies. Otherwise, both studies seem to indicate that the residues remain in the surface six inches of the study (for the most part - on day 52, Mississippi study, residues of TMS are in the 6-12" layer - neither CMP or AMP residues were below 3" on the same date). There are three problems with these two studies:

1) for a leaching residue (K_d < 1.0), in-situ soil water concentrations are roughly 2-8 times higher than in-situ soil concentrations. Therefore, a soil concentration of 50 ppb can correspond to 100 ppb soil water concentration and higher. When the soil method has a limit of detection of 50 ppb and the residue of concern is a potential leacher, there is a finite probability that residues of concern will leach and not be detected in soil samples,

2) the registrants admit to faulty soil sampling. The integrity of the rest of the tests must then also be questioned, and

3) the tests were conducted on a non-leaching soil (silt loam of Mississippi), and a moderately leaching soil (sandy loam of California). For leaching studies, at least one of them must be a leaching sand soil, and the other should preferably be a sandy loam or other representative soil.