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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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CHICAGO, IL 60604-3590

DEC 15 1999

REPLY TO THE ATTENTION OF:

DW-8J

Ms. Christine Freeman
Naval Surface Warfare Center
EPD, Code 095 B-3260
300 Highway 361
Crane, IN 47522-5001

Re: Comments on the Audit Demonstration Report - Field Test Kits and Wiley Mill/Riffle Splitter March 1999

Dear Ms. Freeman:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the Audit Demonstration Report - Field Test Kits and Wiley Mill/Riffle Splitter dated March 1999. Attached please find U.S. EPA's comments.

If you have any questions regarding this matter, please contact me at (312) 886-7890.

Regards,

Peter Ramanauskas
Environmental Engineer
Waste Management Branch
Corrective Action Section

Enclosure

Filename: AuditDemo NOD Dec99.wpd

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cc: Bill Gates, SOUTHDIV (w/ encls)
Tom Brent, NSWC (w/o encls)
Doug Griffin, IDEM (w/ encls)

Comments On
Draft Audit Demonstration Report - Field Test Kits and Wiley Mill/Riffle Splitter
Dated March 1999
Naval Surface Warfare Center
Crane, Indiana

A. Wiley Mill/Riffle Splitter Study

1. Referring to Table 2-1, note how in a large set of cases the standard homogenization technique produces lesser analyte concentrations than the procedure involving the Wiley Mill/Riffle Splitter (WM/RS). Also, this table should also reflect the standard deviation in data associated with the reported averages for each analyte concentration. A more definite indication of analytical reporting limit should also be shown here. (One can infer from the presented information that the RL is about 12.5 ppm for most analytes, however.)

2. After reviewing Table 2-1 data, one might conclude that the WM/RS is affecting the samples. The WM/RS may be increasing the surface area of the samples relative to samples prepared using the standard homogenization technique. This could have the effect of permitting more solvent penetration during soil extraction, with the result of higher analyte concentrations in environmental samples. Such a phenomenon would have an impact on the Day 0 samples especially, upon which an objective standard for % bioremediation/degradation is founded. (It might take a few days longer to degrade the contaminants to below the 90% removal/detoxification level if the WM/RS procedure is utilized.)

3. On page 2-6, the techniques used for rinsing equipment are stated. It should be clarified as to whether or not the WM/RS device was also decontaminated in this manner as well. Were any blanks taken as an indication of how effectively the WM/RS was cleaned? Note that in the last paragraph on page 2-14 it is mentioned that the approved technique for decontaminating field equipment is inappropriate for the WM/RS due to its delicate construction.

4. In Table 2-2, page 2-9, given that a result was recorded for RDX (2,960P ug/kg), why is there a 0% RPD indicated for this analyte?

5. Referring to page 2-10, 3rd full paragraph, (and Table 2-3 as well), it should be clarified whether the MS/MSD samples were prepared using the WM/RS, or through standard homogenization. How did WM/RS QC data compare to analogous data prepared using the standard homogenization method? Also, in this same paragraph, there is a reference to the Day 5 sample, when shouldn't this refer to a Day 0 sample from S-005 instead? (I thought that Day 5 samples were not included in this study.)

6. Referring to the Summary, I am skeptical about conclusions stated in the 3rd paragraph concerning the perceived lack of bias between results generated from WM/RS samples versus samples derived using standard homogenization. SWOK doesn't perform a laboratory homogenization step which grinds the samples to particularly finer size upon arrival in the lab. It is apparently more of a disaggregation step, leading to the proportioning of a more representative sample. But it may be the case that the WM/RS does produce a finer particle size in the field, which increases the efficiency of solvent extraction in the lab. The ratio of 78% to 22% higher results achieved using the WM/RS does strike me as a "biased" value. Perhaps some discussion of the importance of the consequences should be initiated (and inserted into the document).

7. There are a couple of typos in the final paragraph of the Summary presented on page 2-14. Note the word "extended" in the 4th from last line. In the 3rd line from end of page the word "be" should be deleted.

8. Text should be added explaining why the RDX MSD data in Table 2-3 is so poor.

B. <u>Field Test kit Analysis</u>

1. Referring to Table 3-1, the 11 out of 12 false negatives resulting for the field use of the RDX test kit for Day 60 samples does seem to be a highly significant outcome. This implies that a "nondetect" field result almost certainly means it will be detected in the laboratory on Day 60. Why even bother to use the test kit under these circumstances? Please clarify the text to indicate why the test kit would still be useful under these circumstances, referring to reporting limits (field vs. lab) and pertinent screening levels.

2. Are RDX matrix 8330 column interferences a commonly experienced difficulty in day 60 samples? Why can't the laboratory adjust column conditions to circumvent this problem?

3. On page 3-5, it is mentioned that the LCS and LCSD samples may consist of either clean soil or water spiked with known amounts of target analytes. It should be clarified which type of matrix was selected for this (soil) study by SWOK.

4. Referring to page 3-15, 2nd paragraph, the text should be revised to indicate whether reanalysis of samples for RDX incorporated reextraction steps. There is a typo in this paragraph. The word, "inferring" should be changed to "interfering".

5. The statement, "In cases where the laboratory detected either TNT or RDX below the level achievable by the appropriate field test kit, results were deemed to be in agreement...." is a bit confusing. Is this concept incorporated into data presented in Table 3-1? Does this mean that a false negative would not be recorded if the lab detected an analyte below the reporting limit of the (respective) field test kit?

C. Appendices

1. Just some random questions. In several injection reports, there is mentioned that the Calibration file was last modified on April 27, 1982. Can this be correct?

2. Also, it does appear if several other columns were used for both studies other than those identified in the approved QAPP & SWOK - method 8330 SOP. This creates difficulty in resolving the alleged RDX matrix contamination in the field Test Kit study noted for Day 60 samples. What were the accepted retention time windows for RDX in this study?

3. Why are there two separate or multiple injection reports provided for the confirmation column result when all the resulting peaks appear to have been resolved on one injection?

4. It would be helpful if the sample name, designation, or scheme for naming samples (such as BIO-S-001-00-05-2-R2) would be inserted near the beginning of the Appendix such that one could envision more readily where in the pile the samples were taken from for each study.

5. In Appendix E, Form 1 for EPA sample no. BIOS00515031R2, the result for SWOK is given as "1,000 U ug/kg". However information on the associated injection report indicates the result should have been 1,994 ug/kg. Please explain (or resolve) this apparent discrepancy.

6. In Appendix P, injection report for sample BIO-N-30%-60-A1, isn't the peak for RDX a little outside the retention window for RDX, as deferred to the calibration data associated with this study? (Please explain.)

7. Referring to Appendix P, injection report for sample BIO-N-30%-60-A1, please clarify which is the confirmation data for samples & calibration? What are the accepted RDX windows for both primary and confirmation columns for this run? Note that some of the retention times do not correspond to page 13 of 16 (p. C2-43) in the approved QAPP. In order to evaluate the claim that matrix interferences were at large in the case of the Day 60 RDX samples, more information must be provided concerning QC acceptance criteria for RDX.