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NWS EARLE
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May 13, 1992

Project Number 4367

Naval Facilities Engineering Command
Northern Division Code 1423/TG
Building 77-L, United States Navy Yard
Philadelphia, PA 19112-5094

Attention: Dr. Thomas Georgian

Reference: CLEAN Contract No. N62472-90-1298
Contract Task Order (CTO) 55

Subject: Transmittal of Revised Organic Data Validation Report
Soil Sampling and Analysis
NWS Earle
Colts Neck, New Jersey

Dear Dr. Georgian:

HALLIBURTON NUS Environmental Corporation is pleased to provide the enclosed revised version of the Organic Data Validation Report for the soil sampling and analysis conducted at NWS Earle on March 10, 1992. The revisions are based on the conversation you had with Deb Scheib, HALLIBURTON NUS - Pittsburgh, on Tuesday, May 12, 1992.

Do not hesitate to contact me (215-971-0900) if you have any questions regarding this submission.

Sincerely,

Richard J. Gorrell
Project Manager

cc: G. Hoover, NORTHDIV Code 1821
J. Trepanowski, P.E. (HALLIBURTON NUS), W/O Attachments
D. Scheib, (HALLIBURTON NUS)



INTERNAL CORRESPONDENCE

C-51-4-2-131

TO: RICHARD GORRELL

DATE: MAY 1, 1992

FROM: ROY COHEN

COPIES: D. A. SCHEIB

SUBJECT: ORGANIC DATA VALIDATION - FULL TCL ORGANICS
NWS-EARLE, EARLE, NEW JERSEY
CASE NOS. NUS001 AND NUS002, SDG E-RB-0310

SAMPLES: 2/AQUEOUS/

E-RB-0310

E-TB-0310

19/SOIL/

E-S10-0006

E-S11-0006

E-S12-0006

E-S13-0006

E-SS10-0612

E-SS11-0612

E-SS12-0612

E-SS12D-0612

E-SS13-0612

E-SS1-0612

E-SS2-0612

E-SS3-0612

E-SS4-0612

E-SS5-0612

E-SS6-0612

E-SS7-0612

E-SS8-0612

E-SS9-0612

Introduction

Two (2) aqueous samples and ten (10) soil samples were analyzed for Target Compound List Organics (TCL) volatile organics. One of the aqueous samples and nine of the soil samples were analyzed for TCL semivolatile organic compounds; these nine soil samples also received TCL pesticide/PCB analyses. In addition, nine (9) other soil samples were analyzed for PCBs only.

The data from these organic analyses were evaluated using the following parameters:

- * o Data completeness
- * o Holding times
- * o Gas chromatography/mass spectrometry (GC/MS) tuning and mass calibration
 - o Initial and continuing calibrations
 - o Laboratory and field blanks
 - o Surrogate spike recoveries
 - o Matrix spike/matrix spike duplicate (MS/MSD) recoveries
 - o Internal standards performance
- * o Field duplicate precision
- o Detection limits
- * o Compound identification
- * o Compound quantitation
- o Tentatively Identified Compounds (TICs)

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The symbol (*) indicates that all quality control criteria were met for this parameter. Documentation of compliance for these parameters is provided in Appendix C (Regional Worksheets).

Problems affecting data quality are listed below, and the data spreadsheets presented in Appendix A (Qualified Analytical Results) summarize the validation qualifications.

Overview

One rinsate quality control blank (sample E-RB-0310) and one trip blank were submitted as part of the analytical data set. One field duplicate pair (samples E-SS12-0612 and E-SS12D-0612) was also included.

The samples were collected by HALLIBURTON NUS Environmental Corporation on March 10, 1992, and analyzed by ORTEK Environmental Laboratories under Naval Energy and Environmental Support Activity (NEESA) Level D Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted using Contract Laboratory Program (CLP) Statement of Work (SOW) 1/91 analytical and reporting protocols.

Summary

Methylene chloride, acetone, 1,1,1-trichloroethane (1,1,1-TCEA), toluene, total xylenes, bis (2-ethylhexyl)phthalate (BEHP), and di-n-butyl phthalate (DNBP) were detected in the laboratory method blanks. All results for methylene chloride, acetone, BEHP and DNBP that were within ten times the highest associated blank value, and sample results for 1,1,1-TCEA, toluene, and total xylenes that were within five times the highest associated blank value have been qualified as false positives (artifacts of blank contamination). Affected results that are below the Contract Required Quantitation Limit (CRQL) have been replaced with the CRQL and coded [U(b)]; affected sample results above the CRQL have been coded [U(b)] when the values were within the validation action level range.

Benzene was detected in the rinsate blank. Several sample results were within the validation action level for this compound (which is set at five times this blank value), and are considered artifacts of blank contamination. Sample results below the CRQL were replaced with the CRQL, and coded [U(b)]; affected results above the CRQL have been coded [U(b)].

Methylene chloride was detected in the trip blank; all results have already been qualified on the basis of contamination noted in the method and rinsate blanks.

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High percent differences (greater than 50 percent) were noted between the initial calibration average relative response factor (RRF) and the continuing calibration RRFs for carbon disulfide, 2-butanone, 4-chloroaniline, and hexachlorocyclopentadiene. Associated results and detection limits have been qualified as estimated [J(c)] and [UJ(c)]. The bias for these results cannot be determined.

High toluene surrogate recoveries occurred in two samples; these samples were re-analyzed with similar results. In the validator's professional opinion, the data from both analyses are of similar quality; the data presented on the attached spreadsheets for this sampling location represents the results and detection limits considered the most usable. To minimize the impacts from blank contamination, the lowest results of the initial and re-analysis results were reported for compounds that are within the validation action level range for blank contamination. Because QC data were similar, the higher of the initial and re-analysis results were reported for other compounds to present the user with the highest potential levels of contamination. All results and detection limits have been qualified [J(s)] and [UJ(s)]. A high recovery for the bromofluorobenzene surrogate occurred for one additional sample. The sample was not re-analyzed because the laboratory believed that a re-analysis would show the same matrix effect. All results and detection limits have been qualified as estimated [J(s)] and [UJ(s)]. A reliable direction of bias cannot be determined.

Several single-peak pesticide results have been qualified as questionable, [Y]. Because of the lack of specificity of the electron capture detector, which can detect more than just halogenated compounds, results are often attributable to co-eluting interferences, which happen to possess retention times nearly identical with the components of interest. Hence, false positive results for target compounds can occur. In addition, there was no corroboration for the suspect compounds, i.e., no related or breakdown products were present, and there was no GC/MS confirmation. (Since GC detection limits are lower than those achievable by GC/MS for pesticide/PCB compounds, GC/MS confirmation is not usually possible when the extract concentration of any particular compound is less than 10 nanograms/microliter.) Further information would be necessary to determine if the results qualified with [Y] are actually present in the affected samples.

There was no recovery for the decachlorobiphenyl (DCB) surrogate in two samples; all PCB detection limits are qualified as unreliable [R(s)], and may be biased very low.

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No recovery was obtained for the tetrachloro-meta-xylene (TCX) surrogate in one sample; positive results for pesticides are qualified as estimated [J(s)], detection limits for non-detected pesticide compounds have been qualified [UJ(s)]. The results and detection limits may be biased low.

For nearly all other pesticide analyses, including laboratory preparation blanks, the recoveries for both TCX and DCB were outside of the advisory quality control limits. The recoveries for TCX were generally above the QC limits, and the DCB recoveries were below the advisory QC limits. This suggests possible errors in method performance (misspiking, incorrect calibration, or, for DCB, systematic clean-up loss). Matrix spike/matrix spike duplicate (MS/MSD) recoveries suggest that samples were correctly concentrated, injected, and calculated for target compounds. Because the 4,4'-DDT MSD recovery was slightly low, it is possible that targets as well as surrogates may be affected by the problem that caused the low DCB recoveries. As a worst-case approach, all positive results and detection limits may be biased low, and have been flagged [J(s), UJ(s)] except for the five MS/MSD compounds that exhibited acceptable recoveries (gamma-BHC, heptachlor, aldrin, dieldrin, and endrin). An additional problem with low extraction efficiencies is suggested in three samples that exhibited especially low pesticide surrogate recoveries. One sample exhibited zero percent recoveries for DCB and TCX, another sample exhibited a zero percent recovery for DCB, and a third sample exhibited a DCB recovery of less than five percent. All pesticide compounds (including the MS/MSD compounds) may be biased extremely low in these three samples, and were flagged estimated [J(s), UJ(s)] in these samples.

All three volatile internal standard (IS) areas were below quality control limits in two samples; upon re-analysis, two IS areas were still below these limits. As discussed previously, the attached spreadsheets contain the most useful data; detection limits for compounds eluting before 2-butanone have been reported from the re-analysis because the area for the first IS was within acceptable limits. Consequently, all results and detection limits for compounds eluting after (and including) 2-butanone have been flagged [J(i)]/[UJ(i)]. Because target compounds respond to possible matrix effects in a similar manner as the internal standards, no direction of bias can be inferred for positive results. (The internal standard method of calculation incorporates a recovery correction for associated target compounds.) However, detection limits may be biased low.

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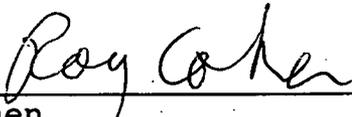
The laboratory claims that no semivolatile surrogate compounds were added to the initial analysis of one sample. The sample was re-analyzed with acceptable surrogate recoveries. Only the re-analysis results should be used for this sample (E-SS12D-0612RE), and these results are presented in the attached data summary spreadsheets.

Positive results for several compounds are qualified as estimated [J] since they are reported at concentrations below the CRQL.

No other problems were noted

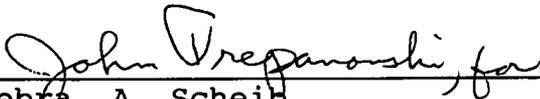
The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Data Validation" (2/88), as amended for use within USEPA Region III, and the NEESA document entitled "Sampling and Chemical Analysis Quality Assurance requirements for the Navy Installation Restoration Program". The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NEESA Guidelines and the Quality Assurance Project Plan (QAPP)."



Roy Cohen

HALLIBURTON NUS Environmental Corporation
Data Validator



Debra. A. Scheib

HALLIBURTON NUS Environmental Corporation
Data Validation Quality Assurance Officer

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Attachments:

1. Appendix A - Qualified Analytical Results.
2. Appendix B - Results as Reported by the Laboratory.
3. Appendix C - Results of all Tentatively Identified Compounds (TICs) which have been corrected to exclude analytical artifacts.
4. Appendix D - Regional Worksheets.
6. Appendix E - Support Documentation.

cc: D. Scheib