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DATA ITEM DESCRIPTION

Title: Munitions Constituents Chemical Data Quality Deliverables

Number: MMRP-09-009, REV 01

Approval Date: 201002525

AMSC Number: 00

Limitation: None

DTIC Applicable: N

GIDEP Applicable: N

Office of Primary Responsibility: CEHNC-EM-CX-ES

Applicable Forms:

Use/Relationship: Munitions Constituents (MC) Chemical Data Quality Deliverables will be used to describe planning and results of sampling and analysis, quality assurance/quality control, laboratory qualification, data acquisition/data reporting, and chain-of-custody when environmental samples are required for Munitions Response or other munitions related projects.

Requirements

1.0 References

The publications listed below form a part of this DID to the extent referenced. The publications are referred to in the text by basic designation only.

DEPARTMENT OF DEFENSE

OSD memorandum DoD Environmental Laboratory Accreditation Program (DoD ELAP),
December 24, 2008 (will be rescinded and replaced by a citation in DOD
Instruction Number 4715.15)

DOD Quality Systems Manual for Environmental Laboratories (DoD QSM) (latest version) as referenced in DOD
Instruction Number 4715.15

Uniform Federal Policy for Quality Assurance Project Plans (latest version) (DoD/EPA/DoE joint publication) as
referenced in DOD Instruction Number 4715.15

Department of Defense Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing
(DFARS Policy Guidance and Instruction (PGI) 223.7)

U.S. ARMY CORPS OF ENGINEERS (USACE)

HQ USACE Memorandum HTRW Chemical Data Quality Management (CDQM) Policy for Environmental
Laboratory Testing, September 30, 2004

EM 200-1-6 Chemical Quality Assurance

ER 1110-1-263 Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial
Activities

EP 75-1-3 Recovered Chemical Warfare Materiel (RCWM) Response

EM 1110-1-4009 Ordnance and Explosives Response

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

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EPA 540-R-99-008	Contract Laboratory Program National Functional Guidelines for Organic Data Review
EPA 540-R-04-004	Contract Laboratory Program National Functional Guidelines for Inorganic Data Review
EPA 530/F-93/004 (Rev 0; updates I, II, IIA, IIB, III, IIIA, IIIB, IVA, and IVB)	Test Methods for Evaluating Solid Waste (Vol. IA, IB, IC, and II) and new methods published at http://www.epa.gov/epaoswer/hazwaste/test/new-meth.htm

1.1 Chemistry Requirements

Chemical Data Quality Control (CDQC) shall be as defined in ER 1110-1-263; this ER, which integrates USACE guidance on the subject, shall be supplemented by EM 200-1-6 for detailed technical guidance on CDQC. Planning documents shall be according to or consistent with Uniform Federal Policy for Quality Assurance Project Plans (QAPP). Laboratory analysis shall be according to or consistent with DOD Quality Systems Manual for Environmental Laboratories (DoD QSM) (latest version). Chemistry requirements for MMR projects with environmental sampling shall also be according to EM 1110-1-4009. Chemistry requirements for Chemical Warfare Materiel (CWM) projects shall also be according to EP 75-1-3.

1.1.1 Data Quality Objectives (DQO): Sample acquisition, chemical analysis and chemical parameter measurements shall be performed so that the resulting data meet and support data use requirements. The chemical data shall be acquired, documented, verified and reported to ensure that the specified precision, accuracy, representativeness, comparability, completeness and sensitivity requirements are achieved.

1.1.2 Sampling, Analysis and Measurement: Samples shall be collected and analyzed, or shipped to a primary laboratory according to the project-specific SOW or PWS.

1.2 Quality Assurance Elements

The Contractor shall be responsible for the following QA elements necessary to monitor and ensure the quality of chemical data produced.

1.2.1 Laboratory Performance Requirements: The contractor shall use a laboratory that meets the requirements of the HTRW Chemical Data Quality Management (CDQM) Policy for Environmental Laboratory Testing (USACE, 2004) relative to DOD Quality Systems Manual (latest version) compliance. The laboratory shall demonstrate compliance with the DoD QSM (latest version) by being accredited through the DoD Environmental Laboratory Accreditation Program (DoD ELAP) – see 1.0 References. The laboratory must meet the performance requirements described in Section 5.2 of the Department of Defense Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing. The Contractor shall identify all proposed project laboratories in the proposal and in the QAPP. If a proposed analytical laboratory cannot meet specified analytical requirements or achieve requirements specified above, the Contractor shall select another laboratory. Samples may not be subcontracted to another laboratory without approval of the CO. If a subcontractor laboratory must be used, the subcontractor laboratory must meet all requirements of the prime laboratory, as well as project-specific QAPP requirements. For chemical warfare or chemical warfare agent projects, all potentially agent-contaminated environmental samples must be: (a) sent to a government laboratory or a contractor laboratory with a current bailment agreement for agent analysis or (b) cleared as having no detectable levels of agent by extraction-based analytical methods prior to being sent to an HTRW laboratory. Laboratories conducting agent analysis must be included in project QAPPs, but do not require USACE CDQM or DoD QSM described in the preceding paragraph. If samples from chemical warfare projects are sent to an HTRW laboratory, the receiving laboratory must be notified in writing prior to sample shipment that samples could possibly contain chemical agent contamination. A copy of this notification shall be provided to CO and PM.

1.2.2 Quality Assurance Sample Collection and Analysis: Unless the SOW/PWS explicitly removes the responsibility, the Contractor shall be responsible for collection and transportation of QA samples to the QA laboratory IAW 10-8 (c) of EM 11101-4009. Samples for all analyses (except volatiles) shall be taken as splits of

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homogenized samples. Samples for volatiles shall be collected as discrete duplicates/triplicates. Samples shall be collected at a rate of 10 percent per matrix per analysis per sampling event.

The Contractor shall allow 60 calendar days for laboratory analysis of QA samples, data review, and submission of the Government chemical quality assurance report. The elapsed time shall begin when the Contractor's last sample arrives at the QA laboratory, provided that the Contractor's completed chemistry data package is received within 30 calendar days thereafter. Otherwise, the Contractor shall allow 30 calendar days from the date the completed chemistry data package is received at the laboratory. Where QA results are unacceptable due to Contractor negligence (e.g. improper sample collection and/or handling by the Contractor), or where QA sample results conflict with the Contractor's primary sample results, further sampling and testing shall be performed as directed by the CO. All costs for such additional sampling and testing due to Contractor negligence, including both QC and QA testing and analysis, and for any required remedial actions in the work, shall be borne by the Contractor. USACE acceptance of final disposition of any excavated soil shall not occur until the Contractor's sampling and QC results have been confirmed by QA results. This includes all final stockpiling, wasting, backfilling, etc. No payment will be made for laboratory sampling and testing before receipt and acceptance by the Government of the QA samples and the completed Chemical Data Final Report (CDFR), properly formulated according to these specifications.

1.2.3 Review of Primary Laboratory Data: The Contractor shall be responsible for the independent data review of the entire primary data set.

1.2.4 Validation of Data: The Contractor shall be responsible for validating the data in accordance with EPA 540-R-99-008, EPA 540-R-04-004, and any applicable state or regional requirements. The data validation strategy shall be established at the beginning of the project to be consistent with project DQOs. Any data validation "flags" must be captured in electronic data submittals.

1.3 Submittals

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with project-specific statements of work:

1.3.1 Quality Assurance Project Plan (G): The QAPP shall be provided as an Appendix to the work plan according to the work plan schedule.

1.3.2 Data Quality Control Reports for Environmental Sampling Activities: Daily Quality Control Reports (DQCRs) will be prepared daily during environmental sampling activities. At a minimum, copies shall be sent daily electronically to Contracting Agency (PM, TM, and Project Chemist) and the geographic district. Additional addresses may be specified at the project level by the PM.

1.3.3 Chemistry Data Package: The chemistry data package shall be provided to Contracting Agency after each sampling event.

1.3.4 Electronic Data Deliverable (G): All laboratory data for samples analyzed by commercial laboratories shall be submitted in the Staged Electronic Data Deliverable (SEDD) format unless the PWS/SOW states otherwise. Details on the SEDD format are provided in SEDD Version 5.2 (or most recent version) [specification located at http://www.epa.gov/superfund/programs/clp/sedd.htm](http://www.epa.gov/superfund/programs/clp/sedd.htm). The following software is available upon request to support this task as government furnished software: ADR, Environmental Data Management System (EDMS), MRSPP Wizard, and Forms II Lite. Use of the ADR software is mandatory, use of EDMS and Forms II Lite are optional. Use of the MRSPP Wizard is mandatory if MRSPP preparation is part of the SOW/PWS. Electronic data deliverables for Chemistry Data are required prior to approval of a Final Report. These deliverables shall be reviewed and must be found acceptable for milestone approval.

1.3.4.1 The following files shall be included for a complete submittal:

1.3.4.1.1 Library file (must be project specific)

1.3.4.1.2 DTD file

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1.3.4.1.3 SEDD Stage 2A or 2B XML file

1.3.4.1.4 Post-review ADR files

1.3.4.1.5 Annotated Error Log

1.3.4.1.6 SEDD Stage 1 export file

1.3.4.1.7 MRSPP Wizard export file (not required if MRSPP preparation is not part of the SOW/PWS)

1.3.4.2 Acceptance of these files will be based on the following:

1.3.4.2.1 The error log generated by the reviewer shall match the error log provided by the contractor.

1.3.4.2.2 For SEDD Stage 2A files, the files shall successfully pass the EPA Stage 2A checker (<http://epasmoweb.fedcsc.com/seddchecker/uploadervlet>).

1.3.4.2.3 For SEDD Stage 2B files, there is no current known checker of this type. If the 2A checker can be used to check those portions of the 2B files, it shall be used.

1.3.4.2.4 The reviewed files (PREP files) shall be consistent with flagged data tables provided in the report. If there are manually derived data flags (from hard copy review), they shall be documented in the reviewed data file.

1.3.5 Chemical Data Final Report (G): Unless directed otherwise regarding placement, the CDFR shall be provided as an Appendix to the applicable Final Report. The bulleted items list in the Electronic Data Deliverable paragraph above are required to be submitted with the report. A summary of chemical data results shall be provided within the body of the applicable Final Report.

Quality Assurance (QA) Split Sampling Data/Chemical Quality Assurance Reporting. If QA split samples were collected for the project, a Chemical Quality Assurance Report will be provided to the contractor by the Design Center for inclusion in the Final Report. Documentation of Design Center /District QA activities (per EM 200-1-6) to include the evaluation of split sample data should also be provided in an Appendix to the Final Report.

1.4 Qualifications

Personnel experience requirements and roles and responsibilities are described in Section 7 and 8 of the Department of Defense Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing and in Section 10-3a (1) of EM 1110-1-4009. The more stringent requirements apply.

2.0 General Execution Requirements

The Contractor shall be responsible for chemical sample acquisition, sample analysis, instrumental measurements of chemical parameters, and chemical data quality control. An effective chemical data quality control system shall be established that meets the requirements for the chemical measurement DQO applicable to the project. The system shall cover chemical measurements pertaining to and required for Contractor and subcontractor produced chemical data. The Contractor shall control field screening, sampling, and testing in conjunction with remedial activities to meet all DQO; minimize the amount of excavated material requiring temporary storage; prevent dilution of contaminated soils with clean soils; and ensure completion of work within the required time.

2.1 Quality Control Plan

2.1.1 Additional Requirements: In addition to the quality control requirements specified in EM 1110-1-4009, Ch.4, the CQC Plan shall incorporate the qualifications, authority and responsibilities of all chemical quality management and support personnel. Chemical measurements including sampling and/or chemical parameter

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measurement will not be permitted to begin until after production and acceptance of the CQC Plan, and Government approval of the QAPP.

2.1.2 Chemistry Elements of the CQC Plan: To cover contract related chemical measurements by the Contractor and all subcontractors, the CQC Plan shall include the following as a minimum.

2.1.2.1 Qualifications: Names, education, experience qualifications, authorities, and decision-making responsibilities of all chemical quality management and support personnel. The CQC Plan shall contain a copy of a letter from the project QC manager designating and authorizing a Chemical Quality Control Officer and chemical quality control organization staff.

2.1.2.2 Authority and Responsibility: A diagram, flow chart, or figure clearly depicting the chemical data quality management and support staff and the authority and responsibility of each for chemical sampling and analysis, procedures for corrective actions, deliverables and submittals, deviations and changes, chemical quality documentation, data validation, minimum data reporting requirements, and DQO for chemical parameter measurement by the Contractor and subcontractors. The contents of this section of the CQC Plan shall be included in the applicable "Project Organization" elements of the QAPP.

2.2 Quality Assurance Project Plan

The QAPP shall be prepared in accordance with CDQC requirements, the Uniform Federal Policy for Quality Assurance Project, and EM 1110-1-4009. The QAPP shall clearly identify the Contractor obtained laboratories. The Contractor shall furnish copies of the Government approved QAPP to all laboratories and the Contractor's field sampling crew. The QAPP shall address all levels of the investigation with enough detail to become a document that may be used as an audit guide for field and laboratory work. The Contractor shall provide the laboratory QA/QC plan and applicable Standard Operating Procedures as an electronic Appendix to the QAPP.

2.3 Data Quality Control Reports for Environmental Sampling Activities

The reports will include site activities, description of samples collected, and instruments and equipment utilized. Any deviations from the approved work plan will be documented in the DQCRs, including a description of the problems encountered, corrective action taken, and a summary of any verbal or written instruction received from Government personnel. Any deviations that may affect data quality objectives must be conveyed to USACE personnel (technical manager, project chemist, etc.) immediately. The following should be attached to the DQCRs: QA sample tables that match up primary, replicate (QA/QC), and other field control samples (e.g., blanks), copies of chain-of-custody forms, and any other environmental sampling-related project forms that are generated. DQCRs will become part of the project file.

2.4 Chemistry Data Package

The chemistry data package shall be produced and provided through CO to the USACE QA lab and Contracting Agency. The chemistry data package shall contain information to demonstrate that the project's DQO have been fulfilled. The QA function will compare QA sample results to corresponding primary sample results, will assess the Contractor's compliance with the QAPP, and will recommend corrective action as necessary. The laboratory shall provide data reporting elements as described in Appendix E – SW-846 Reporting Requirements of the DoD QSM with the following clarifications – all data identified as “optional” in the Appendix must be included, to include Section 7: Information for Third-Party Review, unless the requirement is explicitly waived in the SOW/PWS. For methods for which second column confirmation is required (i.e., EPA 8330 and its versions), the information described must be provided for both columns for results requiring confirmation. The laboratory shall report all analytical results greater than the Limit of Detection (LOD), which, in the analyst's professional judgment, are believed to be reliably detected. Concentrations reported between the LOD and the Limits of Quantitation (LOQ): shall be flagged as estimated. LOQs shall be at least 3 times LODs for all analytes.

2.5 Control of Chemical Data Quality

Contractor chemical data quality control shall ensure that a quality control program is in place that assures sampling and analytical activities and the resulting chemical parameter measurement data comply with the DQOs and the

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requirements of the QAPP. The Contractor shall utilize the three-phase control system that includes a preparatory, initial and follow-up phase for each definable feature of work. The Contractor's three-phase chemical data control process shall ensure that data reporting requirements are achieved and shall be implemented according to the CQC Plan and the QAPP.

2.6 Analytical Testing Laboratories

The Contractor shall propose the analytical laboratories to be used for the primary samples analyses. Laboratory accreditation requirements shall be in accordance with paragraph Laboratory Performance Requirements. The Contractor may utilize its own laboratory or utilize subcontract laboratories to achieve the primary required sample analyses.

2.6.1 Laboratory Analytical Requirements: The Contractor shall provide the specified chemical analyses by the Contractor's laboratory. The Contractor shall provide chemical analyses to achieve the project DQO for all parameters specified by the methods. To give the USACE programs the greatest flexibility in the execution of its projects, the SW-846 (EPA 530/F-93/004) methods are generally the methods employed for the analytical testing of environmental samples. These methods are flexible and shall be adapted to individual project-specific requirements. Method performance must be in accordance with DoD QSM requirements, unless variances are specifically approved in the QAPP. The requirement for the laboratory to provide quantitative second column confirmation for explosives per DoD QSM/EPA 8330 (i.e., five-point calibrations must be performed for each target analyte for the primary and confirmatory columns and quantitative results for each column must be reported) will not be waived. Based upon project requirements, exceptions will be considered for the following coeluting pairs: 2-A-DNT/4-A-DNT, 2-NT/4-NT, and 2,4-DNT/2,6-DNT.

2.6.2 Laboratory Performance: The Contractor shall provide continued acceptable analytical performance and shall establish a procedure to address data deficiencies noted by review and/or quality assurance sample results. The Contractor shall provide and implement a mechanism for providing analytical labs with the QAPP, for monitoring the lab's performance and for performing corrective action procedures. The Contractor shall acquire analytical services with additional acceptable laboratories in the event a project lab fails to perform acceptably during the project.

2.7 Chemical Data Final Report (CDFR)

The CDFR shall be produced including a summary of quality control practices employed and all chemical parameter measurement activities after project completion. As a minimum, the CDFR shall contain the following:

2.7.1 Summary of project scope and description

2.7.2 Summary of any deviations from the design chemical parameter measurement specifications

2.7.3 Summary of chemical parameter measurements performed as contingent measurements

2.7.4 Summary discussion of resulting data including achieving data reporting requirements

2.7.5 Summary of achieving project-specific DQOs

2.7.6 Presentation and evaluation of the data to include an overall assessment on the quality of the data for each method and matrix. This should include, at a minimum, two types of data tables. The first shall include all analytical results for all samples collected. The second shall include all analytical results greater than Limit of Detection (LOD) for all samples collected. Tables should be sorted by method and include appropriate data flags resulting from laboratory review and from Contractor's data validation.

2.7.7 Internal QC data generated during the project, including tabular summaries correlating sample identifiers with all blank, matrix spikes, surrogates, duplicates, laboratory control samples, and batch identifiers.

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2.7.8 A list of the affected sample results for each analyte (indexed by method and matrix) including the appropriate data qualifier flag (J, B, R, etc.), where sample results are negatively impacted by adverse quality control criteria.

2.7.9 Summary of field and laboratory oversight activities, providing a discussion of the reliability of the data, QC problems encountered, and a summary of the evaluation of data quality for each analysis and matrix as indicated by the laboratory QC data and any other relevant findings.

2.7.10 Comparison of results to any applicable project-specific numeric criteria

2.7.11 Conclusions and recommendations

2.7.12 Appendices containing: (1) Chemistry data package, (2) DQCRs, and (3) Results of the Chemical Quality Assurance Report (CQAR). The CQAR is a Government produced document achieved through the inspection and analysis of QA samples and corresponding project sample data. The CQAR will include review of all QC parameters such as holding times, detection limits, method blanks, surrogate recoveries, matrix spikes and duplicates, and inter-laboratory and intra-laboratory data comparisons.

2.8 Documentation

Documentation records shall be provided as factual evidence that required chemical data has been produced and chemical data quality has been achieved. The documentation shall comply with the requirements specified in paragraphs "Quality Assurance Project Plan", "Data Quality Control Reports for Environmental Sampling Activities", "Chemistry Data Package", "Electronic Data Deliverable", and "Chemical Data Final Report."

3.0 End of DID MMRP-09-009, REV 1.