

10 DATA ASSESSMENT PROCEDURES

10.1 DEFINITION OF TERMS

Samples: A group of units or portion of material taken from a larger collection of units or quantity of material, which serves to provide information that can be used as a basis for judging the quality of the larger quantity of material as a basis for action on the larger quantity.

Data Quality: The totality of features and characteristics that bear on the ability of data to satisfy a given purpose. The characteristics of major importance are precision, accuracy, representativeness, completeness, and comparability (PARCC).

PARCC Parameters: The PARCC parameters are defined in Section 5.

10.2 FIELD WORK

Field sampling consists of a single collection cycle in the field for subsequent chemical analysis in an analytical laboratory. There may be no opportunity to make routine assessments of accuracy, precision, or completeness in the course of the field sampling. QA/QC samples, as described in Section 6, will be included to assess field work.

10.3 LABORATORY ANALYSIS

The laboratory compiles information regarding the precision, accuracy, and completeness of data. DQO requirements are presented in Tables 3-1 to 3-4. The methods for making these assessments will be prescribed in the approved QAAP or SOPs of the analytical laboratory. These procedures will specify the processing of blanks, replicates, and spikes. Surrogate standards are used with each sample analyzed by gas chromatography/mass spectrography. Additionally, the laboratory will monitor their QC data to ensure that they are within the established control limits for the methods, as published by EPA or state agency.

Data accuracy and precision will be assessed for each sample lot using samples and sample duplicates spiked at a known level. Completeness will be reported. The descriptive calculations are defined in Section 5.

10.4 PROCEDURE VALIDATION

When new laboratory analytical methods are developed, the data necessary to characterize the method must be submitted to the QC Manager prior to implementation. These data will include the associated SOPs and results from MDL studies, results of matrix spike and matrix spike duplicate tests (for accuracy and precision specifications),

and other information sufficient to develop appropriate data quality objectives (e.g., surrogate recoveries, known interferences, and instrument specifications).

10.5 REVIEW OF DATA/DATA QUALITY ASSESSMENT

When sample analysis data are received from the analytical laboratory, they will undergo a QA review by the QC Manager, and the accuracy and precision achieved will be compared to the control limits.

The control limits are presented in Tables 3-2 to 3-5 and represent typical results from previous EPA method development studies. Calculations will follow standard statistical conventions and formulas as presented in Section 5. Additional specifications and professional judgment by the QC Manager may be incorporated when data from specific matrices and field samples are available.

As a final step, a data quality assessment will be prepared to document the overall quality of the data in terms of the project-specific data quality objectives and the overall effectiveness of the data generation process. This includes evaluation of the overall measurement system in terms of completeness of project plans, effectiveness of field measurement and data collection techniques, and the relevance of laboratory analytical methods used for the project. The major components of the data quality assessment are presented below and show the logical progression of the process:

- *Data Validation Summary.* Summarizes the individual data validation reports for all sample delivery groups by analytical method. The summary presents systematic problems, data generation trends, general conditions of the data, and reasons for data qualification.
- *Quality Control Sample Evaluation.* Evaluates the potential contamination introduced into the samples via the analysis of control samples.
- *Assessment of Data Quality Objectives.* An assessment of the quality of data measured and generated in terms of accuracy, precision, and completeness through the evaluation of laboratory and field control samples in relation to objectives established for the project.
- *Summary of Data Usability.* This section of the assessment summarizes the usability of data, based upon the assessment performed in the three preceding steps. Sample results for each analytical method will be qualified as acceptable, rejected, estimated, biased high, or biased low.

The data quality assessment will help to achieve an acceptable level of confidence in the decisions that are to be made based upon the project data.