Mercury in Water by Automated Cold Vapor Atomic Absorption (CVAA)
EPA Method 245.2

Table 1A.Summary of Holding Times and Preservation for Mercury

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Mercury in water	Technical: 28 days from date of collection; Contract: 26 days from sample receipt at laboratory	pH <2 (with nitric acid)

Data Calculations and Reporting Units:

Calculate the sample results by comparing sample peak height, area, or absorbance against the standard curve.

Report water sample results in concentration units of micrograms per liter (Fg/L), and soil sample results in concentration units of milligrams per kilogram (mg/kg) on a dry weight basis. Report percent solids to the nearest percent.

For rounding results, adhere to the following rules:
a) If the number following those to be retained is less than 5, round down;
b) If the number following those to be retained is greater than 5, round up; or
c) If the number following the last digit to be retained is equal to 5, round down if the digit is even, or round up if the digit is odd.

All records of analysis and calculations must be legible and sufficient to recalculate all sample concentrations and QC results. Include an example calculation in the data package.

TABLE 1B. Target Analyte List, CAS Number, and Contract Required Detection Limit Mercury in Water by Automated CVAA

ANALYTE	**CAS No.**	**CRDL for Water (µg/L)**
Mercury	7439-97-6	0.2

Table 2. Summary of Calibration Procedures for Mercury in Water by Automated CVAA

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 8 standards) (ICAL) [a]	Each analytical batch; whenever required, due to failure of CCV	r $ 0.995	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	80-120% of expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Before samples, after every 10 samples, and end of run	80-120% of expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRA)	After ICV, but before sample analysis	65-135% of expected concentration	1. Reprep and re-analyze standard 2. Re-calibrate and verify

[a] The ICAL low standard must be at the CRDL. The low standard instrument response should be calculated from the linear regression. The predicted result must be within 25% of the low standard true value.

Table 3. Summary of Internal Quality Control Procedures for Mercury in Water by Automated CVAA

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per batch or SDG [a, b]	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all affected samples must be prepared again with another method blank and re-analyzed
Duplicate Sample (DUP)	One per batch or SDG [a, b]	RPD <± 20 for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike Sample (MS)	One per batch or SDG [a, b]	75-125% of expected value [c]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)	One per batch or SDG [a, b]	80-120% of expected concentration	1. Terminate analysis and identify and document the problem 2. Re-analyze all associated samples

[a] SDG - Sample Delivery Group - each case of field samples received; or each 20 field samples within a case; or each 7 calendar day period during which field samples in a case are received.

[b] Minimum requirement is the analysis of 1 QC sample per 20 samples.

[c] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

Dilute and reanalyze samples with concentrations exceeding the range of the calibration curve. Results for such re-analyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.