SUMMARY OF QC CRITERIA FOR USE WITH 8270E

Quality Control Type	Minimum frequency	Specification	Suggested Acceptance Criteria 8270E	Difference
Instrument performance check (Secs. 9.3.1, 11.3.1)	Prior to initial calibration	≤50 ng Decafluorotriphenyl phosphine (DFTPP) injected	Meet ion ratio criteria for reference compound: DFTPP (Table 3), or alternative documented criteria; Tailing factor ≤2 and degradation ≤20%	DFTPP tune is only required prior to an initial calibration and is no longer a daily QC requirement. Tune criteria is updated to latest criteria found in method 8270E.
Initial calibration (ICAL) (Secs. 9.3.2, 11.3)	Prior to analyzing samples, and as needed if continuing performance criteria cannot be met	5 points minimum for response factor (RF) and linear regressions (LR), 6 points minimum for quadratic regression (QR) >90% of reported target analytes meet ICAL criteria	For average RF calibration model: ≤20% relative standard deviation (RSD) of RFs For LR or QR model: R≥0.995, R2≥0.99. Independent of calibration model: Low standard recalculation (refit) should be ±50% of true value; other standards >lower limit of quantitation (LLOQ) are recommended to be ±30% of true value. Or, relative standard error (RSE) ≤20% (Refer to Method 8000 and reference 19 for calculation). See Method 8000 for additional criteria.	ARI will continue to use 15% RSD for initial calibrations per DOD requirements. The lowest applicable calibration point (MRL or LLOQ) will be recalculated against the calibration curve. The recalculated concentration of the low point should be within ±50% of the standard's true concentration. Analytes exceeding the requirement will be Q flagged to indicate an estimated value. An initial calibration is valid if >90% of reported target analytes meet both initial calibration fit criteria and the recalculated value is within ±50% of the true concentration.
Initial Calibration Verification (SCV) (Secs. 9.3.2, 11.3.7)	After each ICAL and prior to analyzing samples	Prepared from different source of target analytes than ICAL standards	Calculated concentrations of target analytes are ±30% of true value	No changes-same as 8270D. ARI will continue to use ±20% of true value for DOD projects.
Continuing Calibration Verification (ICV/CCV) (Secs. 9.3.3, 11.4)	Once at least every 12 hours	>80% of target analytes meet CCV criteria	Targets are ≤20% difference or drift; IS responses are within 50% to 200% of mid-point of ICAL or average of ICAL ISs; and retention times for ISs have not shifted >30 seconds relative to ICAL	No changes-same as 8270D
Blanks (Sec. 9.5)	One method blank (MB) per preparation batch of 20 or fewer samples; Instrument blanks as needed	NA	Target analyte concentrations in blanks are <1/2 LLOQ, or ≤10% of concentration in field samples	At least one method blank or instrument blank must be analyzed on every instrument after calibration standard(s) and prior to the analysis of any samples. Method blanks must show all targets <1/2 MRL or less than 1/10 the amount in the sample
Laboratory Control Sample (LCS) (Sec. 9.6.2)	One per preparation batch of 20 or fewer samples	NA	Meets recovery criteria	No changes-same as 8270D
Duplicates and Matrix Spikes (Sec. 9.6.1)	A duplicate and matrix spike, or matrix spike/matrix spike duplicate per preparation of 20 or fewer samples (not required per batch)	NA	Performance-based or project-defined recovery criteria for matrix spikes; Relative percent difference (RPD) criteria between measured concentrations in sample and laboratory duplicate or in matrix spike and matrix spike duplicate	No changes-same as 8270D
Surrogates (Sec. 9.7)	Added to each sample	NA	Performance-based recovery criteria established by the laboratory or criteria chosen for the project	No changes-same as 8270D

SUMMARY OF QC CRITERIA FOR USE WITH 8270E

Internal Standards (IS) (Secs. 9.8, 11.5.4)	Added to each sample	NA	IS response is within 50-200% of the response of the same IS in the midpoint ICAL standard (or average of ICAL) or most recent CCV	Sample and associated QC internal standard areas will be compared against the opening ICV in each bracket. (The ICV/CCV internal standard areas will be compared against the mid-point of the initial calibration-no change)
Qualitative Analyte Identification (Sec. 11.6.1)	Each target analyte	NA	RT in sample is within ±10 seconds of RT in midpoint ICAL or CCV standard) or within ±10 seconds relative to the shift of the associated IS (delta RT of the IS ± 10 seconds) Characteristic ion(s) within ±30% of expected ion ratio in reference spectrum; or, match to reference library spectra ≥0.8 (only for full mass range acquisition modes)	No changes-same as 8270D
Annual verification of the LLOQ	Each target analyte	Must be run independent of an initial calibration	LLOQ verifications should meet ±20% (advisory until in-house control limits can be calculated) of the standards true concentration when compared to the initial calibration.	LLOQ verifications will be performed annually on every instrument.