The performance of the column and detector is monitored each day of use.

NOTE: Unextracted standards and extracted calibrators or controls typically containing the target compound(s), may be analyzed each day to monitor critical aspects of column performance. Appropriate criteria for evaluating such parameters as retention time, relative retention time, separation of closely eluting compounds of interest, chromatography quality, and detector response should be established and monitored.

Evidence of Compliance:
- ✓ Records for column and detector monitoring

CHM.17050 Gas Leakage - GC **Phase I**

Gas lines and connections are checked for leaks every time tubing or a connection has been manipulated.

Evidence of Compliance:
- ✓ Records of gas line checks

CHM.17100 Reagent Grade **Phase II**

Reagents, solvents and gases are of appropriate grade.

CHM.17150 Limit of Detection/AMR **Phase II**

The limit of detection (sensitivity) and the AMR for quantitative methods have been determined for each procedure.

Evidence of Compliance:
- ✓ Records of limit of detection and AMR determination

REFERENCES

1) Clinical and Laboratory Standards Institute. *Gas Chromatography/Mass Spectrometry Confirmation of Drugs; Approved Guideline.* 2nd ed. CLSI Document C43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2010.

MASS SPECTROMETRY (MS)

Inspector Instructions:

READ	• Sampling of MS policies and procedures • Sampling of calibration and tuning records • Identification criteria compliance
ASK	• How does your laboratory identify possible ion-suppression or enhancement?

CHM.18400 Instrument Calibration **Phase II**

The laboratory calibrates the mass spectrometer and reviews calibration records for acceptability.

REFERENCES

1) Clinical and Laboratory Standards Institute. *Gas Chromatography/Mass Spectrometry Confirmation of Drugs; Approved Guideline.* 2nd ed. CLSI Document C43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2010.
2) Clinical and Laboratory Standards Institute (CLSI). *Quantitative Measurement of Peptides and Proteins by Mass Spectrometry.* CLSI guideline C64. 1st ed. Clinical and Laboratory Standards Institute, Wayne, PA; 2021.
3) Clinical and Laboratory Standards Institute (CLSI). *Liquid Chromatography-Mass Spectrometry Methods.* 2nd ed. CLSI document C62. Clinical and Laboratory Standards Institute, Wayne, PA; 2022.

***REVISED** 08/24/2023*

CHM.18600 Mass Spectrometer Tuning **Phase II**

The mass spectrometers are tuned as defined based on the particular platform in use, assay performance requirements, and specimen types tested.

NOTE: Instruments must be tuned at least as frequently as recommended by the manufacturer. Acceptable tolerance limits for tune parameters must be defined, and tuning records retained.

Evidence of Compliance:

✓ Records of tuning

***NEW** 08/24/2023*

CHM.18610 Extracted Calibrators **Phase II**

Appropriate extracted calibrator(s) are analyzed, or appropriate calibration verification is conducted, with each batch of samples.

NOTE: At least one extracted calibrator at the commonly accepted cut off or reporting threshold for single-point calibration, or multiple calibrators above and below that value for multipoint calibration, must be analyzed with each run. Appropriate calibration verification, including historical calibration, may be acceptable based on assay performance criteria and validation.

***NEW** 08/24/2023*

CHM.18620 Analytical Performance Monitoring of MS Assays **Phase II**

The laboratory monitors analytical performance of mass spectrometric assays using defined performance criteria and quality metrics and performs corrective action when acceptance criteria are not met.

NOTE: The performance criteria and quality metrics used must be based on the assay design, instrumentation and associated configuration(s), calibration strategy, specimen type, and reporting strategy.

The monitoring of assay performance includes the review and recording of the quality metrics of each run and at defined intervals. Examples of performance criteria and quality metrics include:

- *System suitability testing*
- *Adequacy and stability of internal standards response within and across runs*
- *For quantitative assays, performance criteria for the defined analytical measurement range*
- *Thresholds for re-injection of specimens or re-extraction*
- *Monitoring of assay performance when multiple instruments and/or instrument components are used.*
- *Performance checks after significant maintenance (eg, cleaning or replacing the ion source, changing voltages or gas flow parameters, and cleaning or replacing other hardware, such as, quadrupole rails/rods) for impact on sensitivity, accuracy, and precision where needed.*

Evidence of Compliance:

✓ Records of monitoring **AND**

✓ Records of corrective actions taken

REFERENCES

1) Clinical and Laboratory Standards Institute. *Gas Chromatography/Mass Spectrometry Confirmation of Drugs; Approved Guideline.* 2nd ed. CLSI Document C43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2010.