

LABORATORY SERVICES BUREAU

Document: Toxicology Procedures

Policy Number:
1275

Revision:
9

Subject: TOX-SOP-47 Protocol for GC-MS and GC-MS/MS Maintenance and Performance Checks

Approved:
Gallegos, Amanda

PHOENIX POLICE DEPARTMENT

Effective: 8/30/2022 11:41:51 AM

Page 1 of 2

1. PROTOCOL FOR GC/MS AND GC-MS/MS MAINTENANCE AND PERFORMANCE CHECKS

PURPOSE

The GC/MS and GC-MS/MS instruments in the Toxicology Section are used to screen and confirm for the presence of specific drugs. To ensure optimal performance, the instruments require regular preventative maintenance and performance checks.

PLAN

A. Date of use quality assurance will include:

- (1) Check and/or refill the rinse solutions each day of use.
- (2) Perform a standard spectra autotune or maximum sensitivity autotune. Note any significant variations from the previous autotune. File the printouts in the "Autotune" log book for the instrument.
- (3) Verify that the air peak is <10%.

B. Additional maintenance:

- (1) GC maintenance, including changing injection port liners, septa, and trimming the injector end of the column will be performed when necessary. The following are recommended guidelines for performing some of these more common tasks:

(a) Change Septum:

- (1) Close software, as the instrument is controlled by software with methods in "locked" mode. This is to prevent erroneous editing of the methods.
- (2) Using the GC keyboard cool oven down to at least 50°C.
- (3) Using the GC keyboard cool inlet to 50°C to 100°C.
- (4) Once oven is cool, set inlet pressure to 0.0 psi
- (5) Unscrew septum nut and pry out septum, replace septum and screw septum nut back on to ¼ turn past finger tight.

(b) Change liner:

- (1) Follow same sequence as in (a) (1-4) above.
- (2) Prepare a new liner with small amount of glass wool and appropriate O ring.
- (3) Unscrew larger nut below septum nut, or flip top.
- (4) Use pair of forceps to remove old liner, or the liner removal tool.
- (5) Replace with new liner and appropriate O ring (like the one on the liner removed).
- (6) Reassemble Liner nut and tighten firmly, or close flip top.

(c) Trim column:

LABORATORY SERVICES BUREAU

Document: Toxicology Procedures

Policy Number:
1275

Revision:
9

Subject: TOX-SOP-47 Protocol for GC-MS and GC-MS/MS Maintenance and Performance Checks

Approved:
Gallegos, Amanda

PHOENIX POLICE DEPARTMENT

Effective: 8/30/2022 11:41:51 AM

Page 2 of 2

- (1) Follow same sequence as in (a) (1-4) above.
- (2) When oven is cooled down to 50°C turn oven off. Open oven door.
- (3) Using ¼ inch wrench, unscrew column nut from inlet.
- (4) Push column thru nut approx 6 inches to 1 foot.
- (5) Using a column scribe, score the column in a perpendicular manner.
- (6) Align the column so that approx 5mm of the column is above the graphite ferrule in the column nut.
- (7) Screw the column nut back into the inlet, until tight.

(d) Post maintenance:

- (1) Using the GC keyboard , press the Col 1 button, set colum flow to at least 1.2 ml/min.
 - (2) Wait 1 to 2 minutes until the helium flow has flushed the oxygen from the column
 - (3) Set Inlet temperature to 250°C and turn oven back on.
 - (4) Open the Drug analysis software (not the enhanced analysis software).
 - (5) Verify no air leaks with an autotune.
- (2) MS and MS/MS maintenance will be performed as required based on autotune results and/or performance. This maintenance will include cleaning the ion source and replacing the filaments as needed. For the 5977 Series MSD refer to the Agilent 5977 Series MSD Operation Manual, Part Number G3870-90003, First edition, February 2013. For the 5975 Series MSDs refer to the Agilent GC/MSD Troubleshooting and Maintenance, Course Number H2294A, Student Manual, printed March 2008. For the 7000 Series MS/MS refer to Agilent 7000 Triple Quadrupole GC/MS System Troubleshooting and Maintenance Manual, Part Number G7000-90044, First edition, June 2016.
- (3) Preventative maintenance for the rough pumps and diffusion pumps will be performed by an analyst or an outside vendor as needed. For the 5977 Series MSD refer to the Agilent 5977 Series MSD Operation Manual, Part Number G3870-90003, First edition, February 2013. For the 5975 Series MSDs refer to the Agilent GC/MSD Troubleshooting and Maintenance, Course Number H2294A, Student Manual, printed March 2008. For the 7000 Series MS/MS refer to Agilent 7000 Triple Quadrupole GC/MS System Troubleshooting and Maintenance Manual, Part Number G7000-90044, First edition, June 2016.

C. Documentation:

- (1) Any maintenance will be documented in the appropriate GC-MS and GC-MS/MS "Maintenance Log" along with the date and initials of the person responsible for the maintenance.