

## A2LA Assessor Environmental Method Checklist

### *Volatile Organic Compounds - (GC)*

Item	Section 1 - Personnel	Reference	Yes-No or NA	
1.1	Does the analyst(s) interviewed meet the job description position requirements, training and qualifications for performing the test? Supervisor: _____ Technician: _____	(G25)6.1		

Item	Section 2 - Equipment & Facilities	Reference	Yes-No or NA	
2.1	Does the purge and trap system contain a purging device(s), trap and desorber?	(ORDO)502.2,6.2 (1989)		
2.2	Is the purging device equipped to accept 5 mL or 25 mL samples with a water column depth of at least 5 cm?	(ORDO)502.2,6.2 (1989)		
2.3	Does the gas chromatography unit contain a capillary column, temperature program with photoionization (10eV lamp) and electrolytic conductivity (HALL) detectors?	(ORDO)502.2,6.3 (1989)		
2.4	Is the system equipped with variable constant differential flow controllers so column flow rate remains constant throughout the desorption and temperature program?	(ORDO)502.2,6.3.1 (1989)		
2.5	Is a subambient oven controller present for cooling the column oven below 10°C?	(ORDO)502.2,6.3.1 (1989)		
2.6	Is a 40°C heated purge and trap system used for low level soil samples?	(SW846)5030A,7.3.3 (7/92)		
2.7	Are the volatile organic analysis laboratory and sample storage area(s) free of solvent contamination?	(SW846)5030A,3.4 (7/92)		

Item	Section 3 - Method	Reference	Yes-No or NA	
3.1	Is the purge gas flow rate 40 mL/min with a purge time of 11 min. ± 0.1 min.?	(ORDO)502.2,11.2 (1989)		
3.2	Is the purge gas flow rate as specified in the method?	(SW846)5030A,Tb1 (7/92)		

**Volatile Organic Compounds - (GC) (contd.)**

3.3	Are the sample and standards analyzed under the identical instrument conditions?	(ORDO)502.2,11.2 (1989)		
3.4	Is the sample brought to room temperature before filling the syringe?	(ORDO)502.2,11.2 (1989)		
3.5	Are medium/high level soil samples analyzed by extracting 4 grams sample in 10mL methanol and adding 100 $\mu$ l to 5 mL water and then analyzing as a water sample?	(SW846)5030A, 7.3(7/92)		
3.6	Is the purge gas passed through the water column as finely divided bubbles with a bubble size <3 mm at the origin ?	(ORDO)502.2,6.2.1 (1989)		
3.7	Is the trap conditioned for 10 min at 180°C with backflushing prior to each day of use?	(ORDO)502.2,6.2.1 (1989)		
3.8	Is the desorber capable of heating the trap rapidly to 180°C and is the trap not heated higher than 200°C?	(ORDO)502.2,6.2.4 (1989)		
3.9	Is poor bromoform sensitivity used to characterize trap failure?	(ORDO)524.2,6.2.4 (1989)		
3.10	Is a minimum of three standards used to calibrate a range of a factor of 20 in concentration?	(ORDO)502.2,9.1.1 (1989)		
3.11	Is the single calibration point within $\pm$ 20% of the sample concentration when using the single point calibration method?	(ORDO)502.2,9.2.3 (1989)		
3.12	Is the area measurement of the internal standard of each sample within $\pm$ 3 standard deviations of the calibration standards when using internal standard calibration?	(ORDO)502.2,9.2.4 (1989)		
3.13	Are standards prepared in methanol using gravimetric techniques and corrected for weight if the purity of the compound is certified less than 96%?	(ORDO)502.2,7.3.3 (1989)		
3.14	Are methanol standard solutions prepared from liquid analytes stored at 4°C for no more than four weeks unless verified by quality control samples?	(ORDO)502.2,7.3.4 (1989)		
3.15	Are methanol standard solutions prepared from gaseous analytes stored at less than 0°C for no more than 1 week or stored at room temperature for no more than 1 day?	(ORDO)502.2,7.3.4 (1989)		
3.16	Are internal standards added to all standards, samples and blanks?	(ORDO)502.2,7.5 (1989)		
3.17	Is the standard with the lowest concentration run first?	(ORDO)502.2,9.2.1 (1989)		
3.18	Is the appropriate extraction or purge method referenced with the test method?	(SW846)8000A,7.1 (7/92)		
3.19	Are five standards containing each analyte prepared that bracket the range of concentrations found in the samples with the lowest standard being near and above the method detection limit?	(SW846)8000A,7.4.2 (7/92)		
3.20	Are five standards bracketing the concentration range containing each analyte and internal standards used to calculate the response factor for each compound?	(SW846)8000A,7.4.3 (7/92)		

### **Volatile Organic Compounds - (GC) (contd.)**

3.21	Is the average response factor used when the RSD is less than 20% for the calibration range of standards when using the internal standard calibration method?	(SW846)8000A,7.4.3 (7/92)		
3.22	Are at least three standards containing each analyte prepared that bracket the range of concentrations?	(CFR136)601,7.4 (6/86)		
3.23	Is the retention time window defined by injecting single compound standards over a 72 hour period and calculating the window as $\pm 3$ times the standard deviation of the retention time for each standard?	(SW846)8000A,7.5.2 (7/92)		
3.24	Is a blank carried through all stages of the sample preparation and measurement?	(SW846)8000A,8.2 (7/92)		
3.25	Are the appropriate columns or GC/MS analyses used for confirmation?	(ORDO)504,6.7(1989)		

Item	Section 4 - Sample Handling Practices	Reference	Yes-No or NA	
4.1	Are all samples collected in duplicate?	(ORDO)502.2,8.1.1 (1989)		
4.2	Is the second sample preserved with 1:1 HCl to pH < 2?	(ORDO)502.2,8.1.1 (1989)		
4.3	Are duplicate field reagent blanks (trip blanks) collected with the samples?	(ORDO)502.2,8.3.1 (1989)		
4.4	Is the sample bottle checked for trapped air and checked for leaking prior to analysis?	(ORDO)502.2,8.1 (1989)		
4.5	Are samples stored at 4°C and analyzed within 14 days of collection?	(ORDO)502.2,8.2 (1989)		
4.6	Are samples preserved with either ascorbic acid or sodium thiosulfate when residual chlorine is present?	(ORDO)502.2,8.1.1 (1989)		

Item	Section 5 - Quality Control Practices	Reference	Yes-No or NA	
5.1	Is the laboratory reagent blank analyzed with each work shift to determine background system contamination?	(ORDO)502.2,10.4 (1989)		
5.2	Is the laboratory precision and accuracy demonstrated by analyzing four to seven replicates of each analyte in the concentration range of 0.1 to 5 µg/L?	(ORDO)502.2,10.2 (1989)		
5.3	Is the laboratory precision and accuracy demonstrated by analyzing four aliquots of each analyte at the method specified level?	(SW846)8000A,8.6 (7/92)		
5.4	Are four replicate quality control samples at 10 µg/L in methanol analyzed to determine the laboratory precision and accuracy?	(CFR136)601,8.2 (6/86)		

**Volatile Organic Compounds - (GC) (contd.)**

5.5	Are replicate laboratory fortified blanks analyzed quarterly and added to the control chart data to check precision?	(ORDO)502.2,10.7 (1989)		
5.6	Is a laboratory fortified blank analyzed every 20 samples and found to be within $\pm 20\%$ of the true values with an RSD of less than 20%?	(ORDO)502.2,10.5 (1989)		
5.7	Are the method detection limits below the regulatory reporting limits for drinking water?	(ORDO)502.2,10.3.3 (1989)		
5.8	Is a quality control standard from an external source evaluated for accuracy at least quarterly?	(ORDO)502.2,10.8 (1989)		
5.9	Is a spike or quality control sample analyzed a minimum of 10% of all samples when measuring wastewater?	(CFR136)601.8.3 (6/86)		
5.10	Are the surrogate recoveries for samples, blanks and spikes within the method specified limits?	(SW846)8010B,8.3 (9/94)		
5.11	Is the calibration and QC acceptance criteria within the method specified limits and the laboratory's method criteria?	(SW846)8010B,8.2 (9/94)		