

A2LA Assessor Environmental Method Checklist

Flame & Hydride Atomic Absorption

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	Is the atomic absorption spectrophotometer, single or dual channel, single or double beam with a grating monochromator, photomultiplier detector, adjustable slits, and a wavelength range from 190 to 800 nm and provisions for interfacing with a graphical display available for use?	(SW846)7000A,4.1 (7/92)		
2.2	Is the wavelength, fuel, oxidant, type of flame, background correction and lamp used per the reference method?	(SW846)7140,4.2 (9/86)		
2.3	Is continuum-source, Zeeman or Smith-Hieftje background correction available?	(SM18)3111A,3b (1992)		
2.4	Is the burner head appropriate for the fuel and oxidant with a premix chamber?	(SM18)3111A,6b (1992)		
2.5	Is a vent 15 to 30 cm above the burner to remove fumes and vapors from the flame?	(SM18)3111A,6f (1992)		
2.6	Is an atomic absorption spectrophotometer equipped with electrodeless discharge lamps and power supply, atomizer, and reaction cell for producing the hydride appropriate for the element to be measured?	(SM18)3114B,2(1992)		

Item	Section 3 - Method	Reference	Yes- No or NA	
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3.1	Is the accuracy of automatic pipets verified daily?	(SW846)7000A,4.6 (7/92)		
3.2	Are the acids used spectrograde, certified for AA use and found in the reagent blanks to be less than the instrument detection limit?	(SW846)7000A,5.3 (7/92)		
3.3	Are a blank and 3 standards prepared at the time of analysis using the same type of acid or combination of acids at the concentration of the samples after processing?	(SW846)7000A,5.7 (7/92)		
3.4	Is the optimum concentration range determined based on sensitivity and instrument detection limit determinations?	(SM18)3111A,4(1992)		
3.5	Are standards used that bracket expected sample concentration and that are within the method defined working range?	(SM18)3111A,5(1992)		
3.6	Is the lamp allowed to warm-up for at least 15 minutes?	(SW846)7000A,7.2.1 (7/92)		
3.7	Are chemical interferences reduced or eliminated by adding specific compounds or elements to the sample and standard solutions?	(SM18)3111A,3a (1992)		
3.8	Are high solids (>1%) in aspirated solutions that result in salt build-up on the burner head removed by shutting down the flame and cleaning the burner head?	(SM18)3111A,3a (1992)		
3.9	Is Smith Heitje background correction used only with hollow cathode lamps?	(SM18)3111A,3b (1992)		
3.10	Is the nebulizer rinsed by aspirating water containing 1.5 mL concentrated nitric acid per liter between all runs of standards and samples?	(SM18)3111B,4d (1992)		
3.11	Is the aspiration rate of acidified water checked to ensure a rate of 3 to 5 mL/min?	(SM18)3111D,4b (1992)		
3.12	Is a blank analyzed between the standards and samples to verify baseline stability and is the instrument rezeroed when necessary?	(SM18)3111A,7(1992)		
3.13	Is the power calibration for microwave digestions, operation conditions and batch quality control documented?	(SM18)3030K,6(1992)		
3.14	Is the acid digestion using nitric/hydrochloric acid heated so as not to allow the sample to boil or go dry. Is it gently refluxed until digestion is complete?	(SM18)3030A,3(1992)		
3.15	Are solid samples for RCRA reported as wet weight?	(SW846)7000A,7.4.3 (7/92)		
3.16	Is the pH range for metal extraction used to obtain optimum extraction efficiency when using chelation extraction techniques?	(SM18)3111C,4b (1992)		
3.17	Is water saturated MIBK prepared by mixing one part purified MIBK with one part water and shaking for 30 seconds in a separatory funnel and discarding the aqueous layer when using the chelation extraction technique?	(SM18)3111C,4b (1992)		
3.18	Do the purging gas flow, concentration and rate of addition of sodium borohydride reagent, solution volume, and stirring rate allow for optimum instrument response for the chemical species to be analyzed using hydride techniques?	(SM18)3114B,4a (1992)		

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Item	Section 4 - Sample Handling Practices	Reference	Yes- No or NA	
4.1	Are plastic or glass sample containers washed using this sequence: detergent, tap water, 1:1 nitric acid, tap water, 1:1 hydrochloric acid tap water and reagent water?	(SW846)CH3,3.1.3 (9/94)		
4.2	Are aqueous samples for total and dissolved metals acidified to pH< 2 with nitric acid?	(SW846)CH3,3.1.3 (9/94)		
4.3	Are non-aqueous samples stored at 4±2°C in glass or plastic containers?	(SW846)CH3,3.1.3 (9/94)		
4.4	Are dissolved or suspended metals determined based on samples filtered at the time of collection, using preconditioned apparatus and including a filtration blank?	(SM18)3030B,3-3(1992)		

Item	Section 5 - Quality Control Practices	Reference	Yes- No or NA	
5.1	Is one sample out of every ten analyzed by adding a known mid range concentration amount of the metal of interest and is a recovery of 85-115% achieved?	(SM18)3111A,7(1992)		
5.2	Is a standard solution analyzed at least every ten samples and is the value within the control criteria published in Table 3111-III?	(SM18)3111A,7(1992)		
5.3	Is an acid blank for each type of digestion performed?	(SM18)3030D,3-5(1992)		
5.3	Are reagent blanks analyzed a minimum of 5% of the sample load?	(SM18)1020B, 4(1992)		
5.4	Are duplicates analyzed at least 5% or more of the samples?	(SM18)1020B,6(1992)		
5.5	Is a calibration check standard (made from a reference material or other independent standard, at or near the mid range) analyzed at the beginning (within ±10% of the true value) & after every 10 samples (within ±20% of the true value)?	(SW846)7000A,8.2 (7/92)		
5.6	Is at least 1 matrix spike and 1 matrix spike duplicate included in each analytical batch?	(SW846)7000A,8.4 (7/92)		
5.7	Is at least one typical sample per analytical batch selected for serial dilution to determine if interferences are present?	(SW846)7000A,8.6 (7/92)		
5.8	Is the average recovery for arsenic and selenium using hydride techniques not less than 90% for a digested sample with 10µg/L?	(SM18)3114B,4e,f (1992)		