

## A2LA Assessor Environmental Method Checklist

### *Radiochemistry*

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	Are counting instruments in a room different from wet chemistry analyses and standard/sample preparation areas when performing drinking water testing?	(570.2)2.2,59(10/91)		
2.2	Are areas used for radioactive standards preparation covered with adsorbent paper?	(570.2)2.2,59(10/91)		
2.3	Are an analytical balance, pH meter, drying oven (or infrared lamp), dessicator, hotplate, muffle furnace, centrifuge, Class A glassware available for use?	(570.2)3.1,60(10/91)		
2.4	For drinking water testing is the following equipment available for use? Liquid scintillation system - tritium, radon Gas-flow proportional counting system with thin window or "windowless" detector - gross alpha, gross beta, radium (226, 228), strontium (89, 90), cesium-134, iodine-131 Alpha scintillation counting system - gross alpha radium 226 Low background counting systems -alpha and beta Scintillation cell system - radium-226 Gamma spectrometer system - manmade photo emitters	(570.2)3.2,60(10/91)		
2.5	Is a liquid scintillation system (for tritium and/or radium) available with a sensitivity to meet or exceed the requirements of section 141.25 of the NPDWR?	(570.2)3.2.1,60(10/91)		
2.6	Is a fluorometer (for uranium) available?	(570.2)TableVI,61 (10/91)		

Item	Section 3 - Method	Reference	Yes-No or NA	
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## **Radiochemistry (contd.)**

Item		Reference	or NA	
3.1	Is a combination shielding and a cosmic (guard) detector operated in anticoincidence with the main detector to achieve low background beta counting capability?	(SM18)7010D,6(1992)		
3.2	Are background counts (not more than 1,000 minutes) adequate to meet the sensitivity requirements for the drinking water program?	(570.2)3.2.2, 60(10/91)		
3.3	Are the acid salts converted to nitrate salts prior to analysis of gross alpha and gross beta when analyzing drinking water samples preserved with hydrochloric acid?	(570.2)TableVI,61 (10/91)		
3.4	Is the plateau at least 150V long with a slope of less than 5% for alpha and beta testing?	(SM18)7010D,3.b (1992)		
3.5	Is the counter stability determined at the operating voltage by counting the plateau source daily?	(SM18)7010D,3.c (1992)		
3.6	Is the source count within two standard deviations of the determined mean count rate?	(SM18)7010D,3.c (1992)		
3.7	Is the background counting time the same as the sample counting time?	(SM18)7010D,3.d (1992)		
3.8	Are the solutions and reagents checked periodically for radioactivity and discarded if the level interferes with the test?	(SM18)7010E,1(1992)		
3.9	Are NIST-traceable radioactive standards used?	(SM18)7010E,3(1992)		
3.10	Is equipment and glassware stored and reused on samples of comparable radioactivity?	(SM18)7010E,2(1992)		

## Radiochemistry (contd.)

Item	Section 4 - Sample Handling Practices	Reference	Yes-No or NA	
4.1	Are samples preserved for the drinking water program as follows? Iodine-131, Tritium - None, Cesium-134 - Conc HCl to pH < 2 All others - Conc HCl or HNO <sub>3</sub> to pH < 2	(570.2)TableVI, 61(10/91)		
4.2	Are preservatives and reagents tested for radioactive content?	(SM18)7010B,2(1992)		

Item	Section 5 - Quality Control Practices	Reference	Yes-No or NA	
5.1	Are quality control performance charts or records maintained to make firm conclusions about data validity?	(SM18)7020A,1(1992)		
5.2	Are duplicates analyzed on at least 10% of the samples to verify internal laboratory precision?	(570.2)7.6.1, 61(10/91)		
5.3	Is a counting standard and a background sample measured for each 20 samples or each daily batch, whichever is more frequent?	(570.2)7.6.2, 61(10/91)		
5.4	Are records (raw data, calculations, QC data and reports) for compliance monitoring of drinking water supplies kept for at least 3 years?	(570.2)8.2, 62(10/91)		
5.5	Is the date of collection, volume of sample, type of test, type of activity, type of counting equipment, variation(s) to accepted method, time of counting, weight of solids sample, and kind and amount of radioactivity reported?	(SM18)7110B5.d (1992)		
5.6	Is the lower limit of detection or the minimum detectable activity determined?	(SM18)7010G,2(1992)		
5.7	Is the analysis of known standards used to compare to known values, cross check of natural samples with other laboratories and "blind" replicate analysis of real samples to determine precision and reproducibility used as quality control mechanisms?	(SM18)7020A,1(1992)		