

# RADIOCHEMISTRY

Matrices in soil, vegetation, air filters,  
and water for monitoring of radiochemicals.



## 2015 Radiochemistry PT Scheme Schedule

	Scheme #	Opens	Closes
Q	RAD 100	Jan 5	Feb 19
Q	RAD 101	Apr 6	May 21
Q	RAD 102	Jul 6	Aug 20
Q	RAD 103	Oct 5	Nov 19

Schedule subject to change – see ERA’s website at [www.eraqc.com](http://www.eraqc.com)

## 2016 Radiochemistry PT Scheme Schedule

	Scheme #	Opens	Closes
Q	RAD 104	Jan 11	Feb 25
Q	RAD 105	Apr 4	May 19
Q	RAD 106	Jul 11	Aug 25
Q	RAD 107	Oct 7	Nov 21

Schedule subject to change – see ERA’s website at [www.eraqc.com](http://www.eraqc.com)

**CRM** – Certified Reference Material

**PT** – Proficiency Testing

**QR** – Quik Response

Q All ERA Radiochem PTs open quarterly.

\* All ERA MRAD PTs open in March and September.

Description	CRM	PT	QR	Page
Gamma Emitters	758	808 Q	758QR	66
Gross Alpha/Beta	759	809 Q	759QR	66
Iodine-131	750	810 Q	750QR	66
Naturals	751	811 Q	751QR	66
Strontium-89/90	757	807 Q	757QR	66
Tritium	752	812 Q	752QR	66

### 2015 MRAD PT Scheme Schedule

	Scheme #	Opens	Closes
*	MRAD 22	Mar 16	May 15
*	MRAD 23	Sep 21	Nov 20

2 studies per year – open for 60 days  
Schedule subject to change – see ERA's website at [www.eraqc.com](http://www.eraqc.com)

### 2016 MRAD PT Scheme Schedule

	Scheme #	Opens	Closes
*	MRAD 24	Mar 14	May 13
*	MRAD 25	Sep 19	Nov 18

2 studies per year – open for 60 days  
Schedule subject to change – see ERA's website at [www.eraqc.com](http://www.eraqc.com)

**CRM** – Certified Reference Material

**PT** – Proficiency Testing

**QR** – QuiK Response

**Q** All ERA WS Radchem PTs open quarterly.

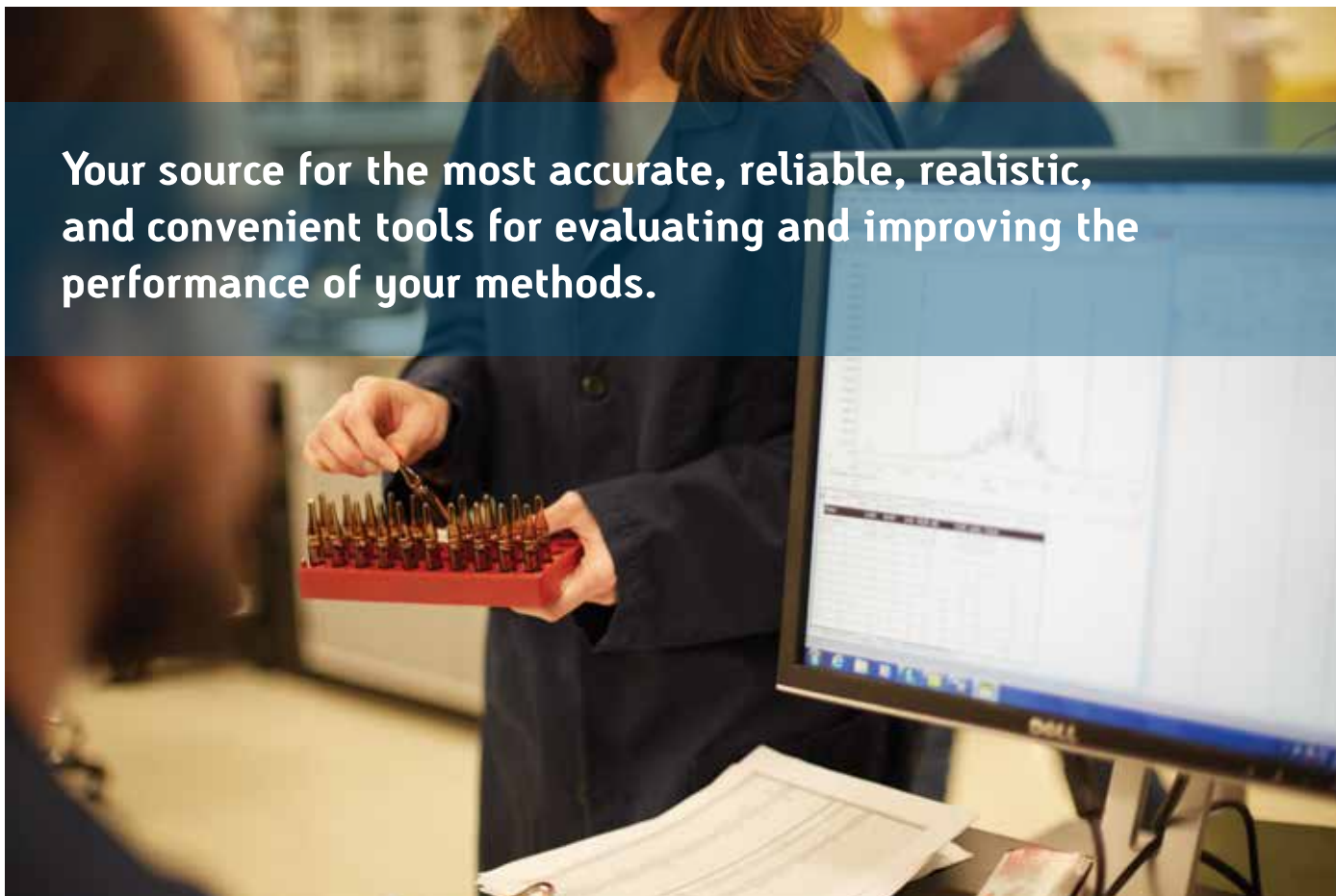
**\*** All ERA MRAD PTs open in March and September.

Description	CRM	PT	QR	Page
Air Filter Gross Alpha/Beta	607	801 *	607QR	68
Air Filter Radionuclides	606	800 *	606QR	68
Soil Radionuclides	608	802 *	608QR	68
Vegetation Radionuclides	609	803 *	609QR	68
Water Gross Alpha/Beta	615	805 *	615QR	69
Water Radionuclides	617	804 *	617QR	69
Water Tritium	616	806 *	616QR	69

### ▶▶ QuiK Response PT

Need PT results fast? Available 52 weeks a year, QuiK Response PTs are on demand PTs that return final results within minutes of submitting your data online. In the US, please call ERA customer service at 800-372-0122 or 303-431-8454 to order. Outside of the US, please contact your authorized ERA sales partner to order.

Your source for the most accurate, reliable, realistic, and convenient tools for evaluating and improving the performance of your methods.



# WS RADCHEM

All Radchem standards are provided as convenient, easy-to-prepare concentrates except for Tritium, which is provided as a whole-volume sample.

## Gamma Emitters

CRM	PT Q	QR
Cat. #758	Cat. #808	Cat. #758QR

One 12 mL screw-top vial yields up to 2 liters after dilution.

Barium-133.....	10-100 pCi/L
Cesium-134.....	10-100 pCi/L
Cesium-137.....	20-240 pCi/L
Cobalt-60.....	10-120 pCi/L
Zinc-65.....	30-360 pCi/L

## Gross Alpha/Beta

CRM	PT Q	QR
Cat. #759	Cat. #809	Cat. #759QR

One 12 mL screw-top vial yields up to 1 liter after dilution.

Gross Alpha as Thorium-230.....	7-75 pCi/L
Gross Beta as Cesium-137.....	8-75 pCi/L

## Naturals

CRM	PT Q	QR
Cat. #751	Cat. #811	Cat. #751QR

One 12 mL screw-top vial yields up to 8 liters after dilution.

Radium-226.....	1-20 pCi/L
Radium-228.....	2-20 pCi/L
Uranium (Nat).....	2-70 pCi/L
Uranium (Nat) mass.....	3-104 µg/L

## Tritium

CRM	PT Q	QR
Cat. #752	Cat. #812	Cat. #752QR

One 250 mL whole-volume bottle is ready to analyze as received. Includes Tritium at 1,000-24,000 pCi/L.

## Iodine-131

CRM	PT Q	QR
Cat. #750	Cat. #810	Cat. #750QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Contains Iodine-131 within the range 3-30 pCi/L. Due to short half-life, CRMs, PTs and QRs are available only during January, April, July, and October.

## Strontium-89/90

CRM	PT Q	QR
Cat. #757	Cat. #807	Cat. #757QR

One 12 mL screw-top vial yields up to 2 liters after dilution.

Strontium-89.....	10-70 pCi/L
Strontium-90.....	3-45 pCi/L



# RADCHEM LAB CONTROL & MATRIX SPIKING (LCS/MS)

ERA's radiochemistry LCS/MS standards are prepared according to your specifications at activity levels that enable you to directly fortify your batch laboratory control and matrix spike QC samples. These single-use spiking standards are verified, conveniently packaged in 2-20 mL glass vials, and very economical.

## The direct benefits:

- **Easy-to-use** – ERA LCS/MS spiking standards are ready-to-use – no dilutions are required.
- **Reliable and consistent** – eliminate the possibility of errors from the contamination or repeated multiple dilutions of your primary stock standards.
- **Independently verified** – ERA LCS/MS standards are analytically verified and traced to NIST SRMs where available.
- **Save money** – You no longer need to pay for microcuries of activity when you only need picocuries. You also eliminate the cost of activity loss for short-lived isotopes.
- **Reduce analytical cost** – You no longer need to spend valuable instrument time re-verifying standard stability. Order what you expect to use on a quarterly or annual basis – we'll do the verification.

## The process is easy:

1. Select from any of the following carrier-free, single radionuclide standards.
2. Choose an activity up to the maximum listed in the table below.
3. Choose a convenient volume: 2 to 20 mL glass vials available.
4. For labs that analyze samples with more elevated activities, call for standard availability and pricing.
5. We will prepare the standards to your specifications and ship within 72 hours.

## Single Radionuclide Spiking Standards

Cat. #	Radionuclide	Maximum Activity/Vial
AM241	Americium-241	40 pCi
BA133	Barium-133	400 pCi
CS134	Cesium-134	200 pCi
CS137	Cesium-137	400 pCi
CO60	Cobalt-60	200 pCi
GAB	Gross Alpha/Beta	30/40 pCi
GA	Gross Alpha (Th-230)	30 pCi
GB	Gross Beta (Cs-137)	40 pCi
PU238	Plutonium-238	40 pCi
PU239	Plutonium-239	40 pCi
RA226	Radium-226	20 pCi
RA228	Radium-228	Call
SR89	Strontium-89	200 pCi
SR90	Strontium-90	40 pCi
H3	Tritium	2000 pCi
UNAT	Uranium, Natural	40 pCi
ZN65	Zinc-65	600 pCi

## MRAD SOLIDS

## Soil Radionuclides

CRM Cat. #608	PT* Cat. #802	QR Cat. #608QR
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One 500 cc standard includes the alpha, beta and gamma emitting radionuclides listed below.

Actinium-228.....	500-5,000 pCi/kg
Americium-241.....	50-2,000 pCi/kg
Bismuth-212.....	500-5,000 pCi/kg
Bismuth-214.....	500-5,000 pCi/kg
Cesium-134.....	1,000-10,000 pCi/kg
Cesium-137.....	1,000-10,000 pCi/kg
Cobalt-60.....	1,000-10,000 pCi/kg
Lead-212.....	500-5,000 pCi/kg
Lead-214.....	500-5,000 pCi/kg
Manganese-54.....	1,000-10,000 pCi/kg
Plutonium-238.....	50-2,000 pCi/kg
Plutonium-239.....	50-2,000 pCi/kg
Potassium-40.....	5,000-50,000 pCi/kg
Strontium-90.....	500-10,000 pCi/kg
Thorium-234.....	500-5,000 pCi/kg
Uranium-234.....	500-5,000 pCi/kg
Uranium-238.....	500-5,000 pCi/kg
Uranium (Nat).....	1,000-10,000 pCi/kg
Uranium (Nat) mass.....	1,500-15,000 µg/kg
Zinc-65.....	1,000-10,000 pCi/kg

## Vegetation Radionuclides

CRM Cat. #609	PT* Cat. #803	QR Cat. #609QR
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One 500 cc standard includes the alpha, beta and gamma emitting radionuclides listed below.

Americium-241.....	50-5,000 pCi/kg
Cesium-134.....	300-3,000 pCi/kg
Cesium-137.....	300-3,000 pCi/kg
Cobalt-60.....	300-3,000 pCi/kg
Curium-244.....	50-5,000 pCi/kg
Manganese-54.....	300-3,000 pCi/kg
Plutonium-238.....	50-5,000 pCi/kg
Plutonium-239.....	50-5,000 pCi/kg
Potassium-40.....	5,000-50,000 pCi/kg
Strontium-90.....	500-10,000 pCi/kg
Uranium-234.....	50-5,000 pCi/kg
Uranium-238.....	50-5,000 pCi/kg
Uranium (Nat).....	100-10,000 pCi/kg
Uranium (Nat) mass.....	150-15,000 µg/kg
Zinc-65.....	300-3,000 pCi/kg

## MRAD AIR FILTER

## Air Filter Radionuclides

CRM Cat. #606	PT* Cat. #800	QR Cat. #606QR
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One 47 mm diameter glass fiber filter contains the alpha, beta and gamma emitting radionuclides listed below.

Americium-241.....	2-80 pCi/filter
Cesium-134.....	50-1,500 pCi/filter
Cesium-137.....	50-1,500 pCi/filter
Cobalt-60.....	50-1,500 pCi/filter
Iron-55.....	50-1,500 pCi/filter
Manganese-54.....	50-1,500 pCi/filter
Plutonium-238.....	2-80 pCi/filter
Plutonium-239.....	2-80 pCi/filter
Strontium-90.....	5-200 pCi/filter
Uranium-234.....	2-80 pCi/filter
Uranium-238.....	2-80 pCi/filter
Uranium (Nat).....	4-160 pCi/filter
Uranium (Nat) mass.....	6-240 µg/filter
Zinc-65.....	50-1,500 pCi/filter

## Air Filter Gross Alpha/Beta

CRM Cat. #607	PT* Cat. #801	QR Cat. #607QR
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One acrylic treated 47 mm diameter glass fiber filter contains the radionuclides listed below.

Gross Alpha as Thorium-230.....	5-100 pCi/filter
Gross Beta as Cesium-137.....	5-100 pCi/filter

# MRAD WATER

## Water Radionuclides

CRM	PT*	QR
Cat. #617	Cat. #804	Cat. #617QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Includes the alpha, beta and gamma emitting radionuclides listed below.

Americium-241.....	10-200 pCi/L
Cesium-134.....	100-3,000 pCi/L
Cesium-137.....	100-3,000 pCi/L
Cobalt-60.....	100-3,000 pCi/L
Iron-55.....	100-3,000 pCi/L
Manganese-54.....	100-3,000 pCi/L
Plutonium-238.....	10-200 pCi/L
Plutonium-239.....	10-200 pCi/L
Strontium-90.....	50-1,000 pCi/L
Uranium-234.....	10-200 pCi/L
Uranium-238.....	10-200 pCi/L
Uranium (Nat).....	20-400 pCi/L
Uranium (Nat) mass.....	30-600 µg/L
Zinc-65.....	100-3,000 pCi/L

## Water Gross Alpha/Beta

CRM	PT*	QR
Cat. #615	Cat. #805	Cat. #615QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Includes the radionuclides below.

Gross Alpha as Thorium-230.....	10-200 pCi/L
Gross Beta as Cesium-137.....	10-200 pCi/L

## Water Tritium

CRM	PT*	QR
Cat. #616	Cat. #806	Cat. #616QR

One 125 mL whole volume bottle ready to analyze as received.

Tritium.....	3,000-30,000 pCi/L
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\* All ERA MRAD PTs open in March and September.