



# Air and Emissions

Matrices consisting of organic, inorganic, and particulate matter for testing emissions and ambient air. Standards are designed to meet regulations of the United States Environmental Protection Clean Air Act and may be used to satisfy PT requirements worldwide.



## Air & Emissions PT Schedule

### 2026 Schedule

	Scheme #	Opens	Closes
Q	AE 75	Jan 30	Mar 16
Q	AE 76	May 1	Jun 15
Q	AE 77	Jul 31	Sep 14
Q	AE 78	Oct 30	Dec 14

### 2027 Schedule

	Scheme #	Opens	Closes
Q	AE 79	Jan 29	Mar 15
Q	AE 80	Apr 30	Jun 14
Q	AE 81	Jul 30	Sep 13
Q	AE 82	Oct 29	Dec 13

Schedule subject to change - see Waters ERA's website at [eraqc.com](http://eraqc.com)

For the latest products and information, please visit us online at [eraqc.com](http://eraqc.com)

# Contents

**CRM** Certified Reference Material  
**PT** Proficiency Testing  
**QR** QuiK Response  
**RM** Reference Material

All Waters ERA Air & Emissions PTs open quarterly (Q) or biannually (B), unless otherwise noted.

Quarterly months are January, April, July, and October. Biannual months are January and July.

Description	CRM/ RM	PT	QR	Page
Aldehydes and Ketones on Sorbent	1114	1014 Q	1114QR	<a href="#">55</a>
Ammonia in Impinger Solution	1145	1045 Q	1145QR	<a href="#">57</a>
Chromium on Filter Paper	1131	1031 Q	1131QR	<a href="#">56</a>
Fluoride in Impinger Solution	1141	1041 Q	1141QR	<a href="#">57</a>
Hexavalent Chromium in Impinger Solution	1132	1032 B	1132QR	<a href="#">56</a>
Hydrogen Halides & Halogens in Impinger Solution	1140	1040 Q	1140QR	<a href="#">57</a>
Lead on Filter Paper	1129	1029 Q	1129QR	<a href="#">56</a>
Mercury in Impinger Solution	1128	1028 Q	1128QR	<a href="#">56</a>
Mercury on Filter Paper	1127	1027 Q	1127QR	<a href="#">56</a>
Metals on Filter Paper	1125	1025 Q	1125QR	<a href="#">56</a>
Metals in Impinger Solution	1126	1026 Q	1126QR	<a href="#">56</a>
Nitrogen Oxide in Impinger Solution	1142	1042 Q	1142QR	<a href="#">57</a>

Description	CRM/ RM	PT	QR	Page
Organochlorine Pesticides on Polyurethane Foam	1111	1011 B	1111QR	<a href="#">55</a>
PAHs on Polyurethane Foam	1113	1013 Q	1113QR	<a href="#">55</a>
Particulate Matter in Impinger Solution	1151	1051 Q	1151QR	<a href="#">57</a>
Particulate Matter on Filter Paper	1150	1050 Q	1150QR	<a href="#">57</a>
PCBs on Polyurethane Foam	1112	1012 B	1112QR	<a href="#">55</a>
Semivolatiles on Polyurethane Foam	1110	1010 B	1110QR	<a href="#">55</a>
Sulfur Dioxide in Impinger Solution	1143	1043 Q	1143QR	<a href="#">57</a>
Sulfuric Acid & Sulfur Dioxide in Impinger Solution	1144	1044 Q	1144QR	<a href="#">57</a>
Volatiles in Gas Cylinder	1100	1000 Q	1100QR	<a href="#">54</a>
Volatiles on Sorbent	1101	1001 Q	1101QR	<a href="#">54</a>

**CRM:** A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at [eraqc.com/Accreditations](http://eraqc.com/Accreditations).

**PT:** A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

**QR:** Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

**RM:** A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

# Volatiles

## Volatiles in Gas Cylinder\*

RM** Cat. #1100	PT Cat. #1000	Q	QR Cat. #1100QR
Acetone	1,1-Dichloropropene		Methylene chloride
Benzene	1,2-Dibromo-3-chloropropane (DBCP)		4-Methyl-2-pentanone (MIBK)
Benzy chloride			
Bromodichloromethane	1,2-Dibromoethane (EDB)		Naphthalene
Bromoform	Dibromomethane		Nitrobenzene
Bromomethane	1,2-Dichlorobenzene		n-Propylbenzene
1,3-Butadiene	1,3-Dichlorobenzene		Styrene
2-Butanone (MEK)	1,4-Dichlorobenzene		1,1,2-Tetrachloroethane
Methyl tert-butyl ether (MTBE)	Dichlorodifluoromethane (Freon 12)		1,1,2,2-Tetrachloroethane
Carbon disulfide	1,1-Dichloroethane		Tetrachloroethene
Carbon tetrachloride	1,2-Dichloroethane		Toluene
Chlorobenzene	1,1-Dichloroethene		1,2,3-Trichlorobenzene
Chlorodibromomethane	cis-1,2-Dichloroethene		1,2,4-Trichlorobenzene
Chloroethane	trans-1,2-Dichloroethene		1,1,1-Trichloroethane
Chloroform	1,2-Dichloropropane		1,1,2-Trichloroethane
Chloromethane	cis-1,3-Dichloropropene		Trichloroethylene
Cyclohexane	trans-1,3-Dichloropropene		Trichlorofluoromethane
1,2-Dibromoethane (EDB)	Ethylbenzene		1,2,3-Trichloropropane
1,2-Dichlorobenzene	Hexachlorobutadiene		1,2,4-Trimethylbenzene
1,3-Dichlorobenzene	Hexachloroethane		1,3,5-Trimethylbenzene
1,4-Dichlorobenzene	2-Hexanone		Vinyl acetate
Dichlorodifluoromethane (Freon 12)	Isopropylbenzene		Vinyl chloride
	4-Isopropyltoluene		Xylenes, total
	Methyl tert-butyl ether (MTBE)		m&p-Xylene
			o-Xylene

\*Volatiles in Gas Cylinder ships as dangerous goods.

\*\* Reference Material (RM)

## Volatiles on Sorbent

CRM Cat. #1101	PT Cat. #1001	Q	QR Cat. #1101QR
Acetone	1,1-Dichloroethane		Styrene
Acetonitrile	1,2-Dichloroethane		1,1,2,2-Tetrachloroethane
Acrolein	1,1-Dichloroethylene		Tetrachloroethylene
Acrylonitrile	cis-1,2-Dichloroethylene		Toluene
Benzene	trans-1,2-Dichloroethylene		Trichloroethene
Bromobenzene	1,2-Dichloropropane		1,2,4-Trichlorobenzene
Bromochloromethane	cis-1,3-Dichloropropylene		1,1,1-Trichloroethane
Bromodichloromethane	trans-1,3-Dichloropropylene		1,1,2-Trichloroethane
Bromoform	1,2-Dichlorotetrafluoroethane (Freon 114 )		Trichlorofluoromethane (Freon 11)
Bromomethane	Ethyl acetate		Trichlorotrifluoromethane (Freon 113)
2-Butanone (MEK)	Ethylbenzene		1,2,4-Trimethylbenzene
n-Butylbenzene	p-Ethyltoluene		1,3,5-Trimethylbenzene
sec-Butylbenzene	n-Heptane		Vinyl bromide
tert-Butylbenzene	Hexachlorobutadiene		Vinyl chloride
Carbon disulfide	n-Hexane		Xylenes, total
Carbon tetrachloride	2-Hexanone		m&p-Xylene
Chlorobenzene	Isopropyl alcohol		o-Xylene
Chlorodibromomethane	Methylene chloride		
Chloroethane	Methyl methacrylate		
2-Chloroethyl vinyl ether	4-Methyl-2-pentanone (MIBK)		
Chloroform	Methyl tert-butyl ether (MTBE)		
Chloromethane	Propylene		
2-Chlorotoluene			
4-Chlorotoluene			
1,3-Dichloropropane			
2,2-Dichloropropane			

One 2 mL flame-sealed ampule for spiking client-specific sorbent. Use with EPA Methods TO-17, 0030, 0031, or other applicable methods. Contains at least 24 analytes, randomly selected from the list below, at 50–2000 ng/sample (200–3000 ng/sample for Total Xylenes) after preparation.

# Semivolatiles

## Semivolatiles on Polyurethane Foam

CRM Cat. #1110	PT Cat. #1010	<b>B</b>	QR Cat. #1110QR
-------------------	------------------	----------	--------------------

Two 2 mL flame-sealed ampules plus one polyurethane foam. Use with EPA Method 0010, or other applicable methods. Contains at least 42 analytes, randomly selected from the list below, at 10–225 µg/sample (200–1000 µg/sample for Benzidine) after preparation.

Acenaphthene	1,3-Dichlorobenzene	N-Nitroso-di-n-propylamine
Acenaphthylene	1,4-Dichlorobenzene	2,2'-Oxybis(1-chloropropane)
Aniline	3,3'-Dichlorobenzidine	Pentachlorobenzene
Anthracene	Diethyl phthalate	Phenanthrene
Benzidine	Dimethyl phthalate	Pyrene
Benzo(a)anthracene	2,4-Dinitrotoluene	Pyridine
Benzo(b)fluoranthene	2,6-Dinitrotoluene	o-Toluidine
Benzo(k)fluoranthene	Di-n-octyl phthalate	1,2,4,5-Tetrachlorobenzene
Benzo(g,h,i)perylene	Fluoranthene	1,2,4-Trichlorobenzene
Benzo(a)pyrene	Fluorene	Benzoic Acid
Benzyl alcohol	Hexachlorobenzene	4-Chloro-3-methylphenol
4-Bromophenyl phenyl ether	Hexachlorobutadiene	2-Chlorophenol
Butyl benzyl phthalate	Hexachlorocyclopentadiene	2,4-Dichlorophenol
Carbazole	Hexachloroethane	2,6-Dichlorophenol
4-Chloroaniline	Indeno(1,2,3-cd)pyrene	2,4-Dimethylphenol
Bis(2-chloroethoxy) methane	Isophorone	2,4-Dinitrophenol
Bis(2-chloroethyl)ether	2-Methylnaphthalene	2-Methyl-4,6-dinitrophenol
Bis(2-ethylhexyl)phthalate	Naphthalene	2-Methylphenol (o-Cresol)
1-Chloronaphthalene	2-Nitroaniline	4-Methylphenol (p-Cresol)
2-Chloronaphthalene	3-Nitroaniline	2-Nitrophenol
4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol
Chrysene	Nitrobenzene	Pentachlorophenol
Dibenz(a,h)anthracene	N-Nitrosodiethylamine	Phenol
Dibenzofuran	N-Nitrosodimethylamine (NDMA)	2,3,4,6-Tetrachlorophenol
Di-n-butyl phthalate	N-Nitrosodiphenylamine	2,4,5-Trichlorophenol
1,2-Dichlorobenzene		2,4,6-Trichlorophenol

## Organochlorine Pesticides on Polyurethane Foam

CRM Cat. #1111	PT Cat. #1011	<b>B</b>	QR Cat. #1111QR
-------------------	------------------	----------	--------------------

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Methods TO-04A, TO-10A, or other applicable methods. Contains at least 16 analytes, randomly selected from the list below, at 1–20 µg/sample after preparation.

Aldrin	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin aldehyde
beta-BHC	4,4'-DDT	Endrin ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC (Lindane)	Endosulfan I	Heptachlor epoxide (beta)
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan sulfate	

## PCBs on Polyurethane Foam

CRM Cat. #1112	PT Cat. #1012	<b>B</b>	QR Cat. #1112QR
-------------------	------------------	----------	--------------------

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Methods TO-04A, TO-10A, or other applicable methods. Contains one aroclor, randomly selected from the list below, at 2–10 µg/sample after preparation.

Aroclor 1016	Aroclor 1242	Aroclor 1254
Aroclor 1221	Aroclor 1248	Aroclor 1260
Aroclor 1232		

## PAHs on Polyurethane Foam

CRM Cat. #1113	PT Cat. #1013	<b>Q</b>	QR Cat. #1113QR
-------------------	------------------	----------	--------------------

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Method TO-13A, or other applicable methods. Contains at least 13 analytes, randomly selected from the list below, at 10–200 µg/sample after preparation.

Acenaphthene	Benzo(g,h,i)perylene	Indeno(1,2,3-cd)pyrene
Acenaphthylene	Benzo(a)pyrene	1-Methylnaphthalene
Anthracene	Chrysene	2-Methylnaphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Naphthalene
Benzo(b)fluoranthene	Fluoranthene	Phenanthrene
Benzo(k)fluoranthene	Fluorene	Pyrene

## Aldehydes & Ketones on Sorbent

CRM Cat. #1114	PT Cat. #1014	<b>Q</b>	QR Cat. #1114QR
-------------------	------------------	----------	--------------------

One 2 mL flame-sealed ampule to be spiked onto sorbent. Use with EPA Method TO-11A, or other applicable methods. Contains at least four analytes, randomly selected from the list below, at 0.5–10 µg/sample after preparation.

Acetaldehyde	Crotonaldehyde	Propionaldehyde (Propanal)
Acetone	2,5-Dimethylbenzaldehyde	o-Tolualdehyde
Benzaldehyde	Formaldehyde	m-Tolualdehyde
2-Butanone (MEK)	Hexaldehyde (Hexanal)	p-Tolualdehyde
Butyraldehyde (Butanal)	Isovaleraldehyde	Valeraldehyde (Pentanal)

# Metals

## Metals on Filter Paper

CRM Cat. #1125	PT Cat. #1025	Q	QR Cat. #1125QR
-------------------	------------------	---	--------------------

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter ready for use with EPA Method 29 or other applicable methods.

Antimony.....	25-250 µg/filter
Arsenic.....	20-250 µg/filter
Barium.....	20-250 µg/filter
Beryllium.....	10-250 µg/filter
Cadmium.....	10-250 µg/filter
Chromium.....	15-250 µg/filter
Cobalt.....	10-250 µg/filter
Copper.....	10-250 µg/filter
Lead.....	20-350 µg/filter
Manganese.....	10-250 µg/filter
Nickel.....	20-250 µg/filter
Phosphorus.....	10-250 µg/filter
Selenium.....	20-250 µg/filter
Silver.....	30-250 µg/filter
Thallium.....	30-250 µg/filter
Zinc.....	20-250 µg/filter

## Metals in Impinger Solution

CRM Cat. #1126	PT Cat. #1026	Q	QR Cat. #1126QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 29, or other applicable methods.

Antimony.....	0.25-20 µg/mL
Arsenic.....	0.2-20 µg/mL
Barium.....	0.15-25 µg/mL
Beryllium.....	0.05-20 µg/mL
Cadmium.....	0.1-20 µg/mL
Chromium.....	0.2-20 µg/mL
Cobalt.....	0.1-25 µg/mL
Copper.....	0.2-20 µg/mL
Lead.....	0.2-20 µg/mL
Manganese.....	0.1-20 µg/mL
Nickel.....	0.15-30 µg/mL
Phosphorus.....	0.15-25 µg/mL
Selenium.....	0.15-25 µg/mL
Silver.....	0.5-20 µg/mL
Thallium.....	0.15-25 µg/mL
Zinc.....	0.15-25 µg/mL

## Mercury on Filter Paper

CRM Cat. #1127	PT Cat. #1027	Q	QR Cat. #1127QR
-------------------	------------------	---	--------------------

One 2 mL flame-sealed ampule containing approximately 2 mL of standard concentrate and a 50 mm polystyrene petri dish containing a single 47 mm glass fiber filter. Sample is ready for use with EPA Method 29, or other applicable methods.

Mercury.....	1-75 µg/filter
--------------	----------------

## Mercury in Impinger Solution

CRM Cat. #1128	PT Cat. #1028	Q	QR Cat. #1128QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Methods 29, 101a, or other applicable methods.

Mercury.....	0.9-200 ng/mL
--------------	---------------

## Lead on Filter Paper

CRM Cat. #1129	PT Cat. #1029	Q	QR Cat. #1129QR
-------------------	------------------	---	--------------------

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter spiked with lead ready-for-use with EPA Method 12 or other applicable methods.

Lead.....	20-350 µg/filter
-----------	------------------

## Chromium on Filter Paper

CRM Cat. #1131	PT Cat. #1031	Q	QR Cat. #1131QR
-------------------	------------------	---	--------------------

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm fiber film filter for use with CARB Method 425, or other applicable methods.

Total chromium.....	1-20 µg/filter
Hexavalent chromium.....	1-20 µg/filter

## Hexavalent Chromium in Impinger Solution

CRM Cat. #1132	PT Cat. #1032	B	QR Cat. #1132QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA Method 0061/7199, or other applicable methods.

Hexavalent chromium.....	45-880 µg/L
--------------------------	-------------

# Inorganics

## Hydrogen Halides & Halogens in Impinger Solution

CRM Cat. #1140	PT Cat. #1040	Q	QR Cat. #1140QR
-------------------	------------------	---	--------------------

Two impinger solution samples packaged in 15 mL screw-top vials containing approximately 14 mL of standard concentrate for use with EPA Methods 26, 26a, or other applicable methods.

Total halides.....	10-1000 mg/L
Total halogens.....	10-200 mg/L
Hydrogen chloride .....	5-500 mg/L
Hydrogen fluoride.....	5-500 mg/L
Hydrogen bromide.....	5-100 mg/L
Bromine.....	5-100 mg/L
Chlorine.....	5-100 mg/L

## Fluoride in Impinger Solution

CRM Cat. #1141	PT Cat. #1041	Q	QR Cat. #1141QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Methods 13a, 13b, 14, or other applicable methods.

Fluoride .....	1-50 mg/dscm
----------------	--------------

## Nitrogen Oxide in Impinger Solution

CRM Cat. #1142	PT Cat. #1042	Q	QR Cat. #1142QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 7, or other applicable methods.

Oxides of nitrogen (NOx) .....	100-2000 mg/dscm
--------------------------------	------------------

## Sulfur Dioxide in Impinger Solution

CRM Cat. #1143	PT Cat. #1043	Q	QR Cat. #1143QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 6 and Method 8, or other applicable methods.

Sulfur dioxide.....	50-2000 mg/dscm
---------------------	-----------------

## Sulfuric Acid & Sulfur Dioxide in Impinger Solution

CRM Cat. #1144	PT Cat. #1044	Q	QR Cat. #1144QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA Method 8, or other applicable methods.

Sulfuric acid.....	5-150 mg/dscm
--------------------	---------------

## Ammonia in Impinger Solution

CRM Cat. #1145	PT Cat. #1045	Q	QR Cat. #1145QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA CTM 027, or other applicable methods.

Ammonium.....	0.1-10 mg/L
---------------	-------------

## Particulate Matter on Filter Paper

CRM Cat. #1150	PT Cat. #1050	Q	QR Cat. #1150QR
-------------------	------------------	---	--------------------

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter ready for use with EPA Methods 5, 5A, 5B, 5D, 5F, or other applicable methods.

Particulate matter.....	50-600 mg/filter
-------------------------	------------------

## Particulate Matter in Impinger Solution

CRM Cat. #1151	PT Cat. #1051	Q	QR Cat. #1151QR
-------------------	------------------	---	--------------------

One impinger solution sample packaged in a 250 mL polyethylene bottle containing approximately 250 mL of standard ready for use with EPA Methods 5, 5A, 5B, 5D, 5F, or other applicable methods.

Particulate matter.....	140-675 mg/L
-------------------------	--------------



Learn more about  
Air & Emissions products