

# AIR & 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.



## 2015 Air & Emissions PT Scheme Schedule

	Scheme #	Opens	Closes
Q	AE 31	Jan 26	Mar 12
Q	AE 32	Apr 27	Jun 11
Q	AE 33	Jul 27	Sep 10
Q	AE 34	Oct 26	Dec 10

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

## 2016 Air & Emissions PT Scheme Schedule

	Scheme #	Opens	Closes
Q	AE 35	Jan 29	Mar 14
Q	AE 36	Apr 25	Jun 9
Q	AE 37	Jul 29	Sep 12
Q	AE 38	Oct 24	Dec 8

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

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CRM – Certified Reference Material

PT – Proficiency Testing

QR – QuiK Response

**Q** All ERA Air & Emissions PTs open quarterly.

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\*Reference Material [RM]

### 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.

# VOLATILES

## Volatiles in Gas Cylinder\*

CRM Cat. #1100	PT Q Cat. #1000	QR Cat. #1100QR
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One pressurized gas cylinder containing 25 liter of gas at 500 psig (34 bar) for use with EPA methods TO-14, TO-15, or other applicable methods. Contains at least 10 analytes, randomly selected from the list below, at 2-30 ppbv (4-60 ppbv for Total Xylenes).

Benzene	1,1-Dichloroethane	Tetrachloroethylene
Bromodichloromethane	1,2-Dichloroethane	Toluene
Bromoform	1,1-Dichloroethylene	1,2,4-Trichlorobenzene
Bromomethane	cis-1,2-Dichloroethylene	1,1,1-Trichloroethane
2-Butanone (MEK)	1,2-Dichloropropane	1,1,2-Trichloroethane
Methyl tert-butyl ether (MTBE)	cis-1,3-Dichloropropylene	Trichlorofluoromethane (Freon 11)
Carbon tetrachloride	trans-1,3-Dichloropropylene	Trichlorotrifluoromethane (Freon 113)
Chlorobenzene	1,2-Dichlorotetrafluoroethane (Freon 114)	1,2,4-Trimethylbenzene
Chlorodibromomethane	Ethylbenzene	1,3,5-Trimethylbenzene
Chloroethane	p-Ethyltoluene	Vinyl bromide
Chloroform	n-Heptane	Vinyl chloride
Chloromethane	Hexachlorobutadiene	Xylenes, total
Cyclohexane	n-Hexane	
1,2-Dibromoethane (EDB)	2-Hexanone	
1,2-Dichlorobenzene	4-Methyl-2-pentanone (MIBK)	
1,4-Dichlorobenzene	Propylene	
Dichlorodifluoromethane (Freon 12)	1,1,1,2-Tetrachloroethane	
	1,1,2,2-Tetrachloroethane	

## Volatiles on Sorbent

RM Cat. #1101	PT Q Cat. #1001	QR Cat. #1101QR
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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 50-2,000 ng/sample (200-3,000 ng/sample for Total Xylenes) after preparation.

Acetone	1,2-Dibromoethane (EDB)	4-Methyl-2-pentanone (MIBK)
Acetonitrile	Dibromomethane	Methyl tert-butyl ether (MTBE)
Acrolein	1,2-Dichlorobenzene	Naphthalene
Acrylonitrile	1,3-Dichlorobenzene	Styrene
Benzene	1,4-Dichlorobenzene	1,1,1,2-Tetrachloroethane
Bromodichloromethane	Dichlorodifluoromethane (Freon 12)	1,1,2,2-Tetrachloroethane
Bromoform	1,1-Dichloroethane	Tetrachloroethene
Bromomethane	1,2-Dichloroethane	Toluene
2-Butanone (MEK)	1,1-Dichloroethene	1,2,4-Trichlorobenzene
Carbon disulfide	cis-1,2-Dichloroethene	1,1,1-Trichloroethane
Carbon tetrachloride	trans-1,2-Dichloroethene	1,1,2-Trichloroethane
Chlorobenzene	1,2-Dichloropropane	Trichloroethylene
Chlorodibromomethane	cis-1,3-Dichloropropene	Trichlorofluoromethane
Chloroethane	trans-1,3-Dichloropropene	1,2,3-Trichloropropane
2-Chloroethyl vinyl ether	Ethylbenzene	Vinyl acetate
Chloroform	Hexachlorobutadiene	Vinyl chloride
Chloromethane	2-Hexanone	Xylenes, total
1,2-Dibromo-3-chloropropane (DMCP)	Methylene chloride	

\*Volatiles in Gas Cylinder ships as dangerous goods.



## SEMIVOLATILES

## Semivolatiles on Polyurethane Foam

CRM Cat. #1110	PT <b>Q</b> Cat. #1010	QR Cat. #1110QR
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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 (200–1,000 µg/sample for Benzidine) after preparation.

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

## Organochlorine Pesticides on Polyurethane Foam

CRM Cat. #1111	PT <b>Q</b> Cat. #1011	QR Cat. #1111QR
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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 0.5–20 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 <b>Q</b> Cat. #1012	QR Cat. #1112QR
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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 1–15 µg/sample after preparation.

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

## PAHs on Polyurethane Foam

CRM Cat. #1113	PT <b>Q</b> Cat. #1013	QR Cat. #1113QR
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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	Fluorene
Acenaphthylene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
Anthracene	Chrysene	Naphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Phenanthrene
Benzo(b)fluoranthene	Fluoranthene	Pyrene
Benzo(k)fluoranthene		

## Aldehydes &amp; Ketones on Sorbent

CRM Cat. #1114	PT <b>Q</b> Cat. #1014	QR Cat. #1114QR
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One 2 mL flame-sealed ampule to be spiked onto sorbent. Use with EPA method TO-11A, or other applicable methods. Contains at least 4 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)

All ERA Air & Emissions PTs open quarterly (**Q**).

## METALS

### Metals on Filter Paper

CRM Cat. #1125	PT Q Cat. #1025	QR Cat. #1125QR
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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 Q Cat. #1026	QR Cat. #1126QR
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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 Q Cat. #1027	QR Cat. #1127QR
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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
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### Mercury in Impinger Solution

CRM Cat. #1128	PT Q Cat. #1028	QR Cat. #1128QR
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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
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### Lead on Filter Paper

CRM Cat. #1129	PT Q Cat. #1029	QR Cat. #1129QR
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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
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### Lead in Impinger Solution

CRM Cat. #1130	PT Q Cat. #1030	QR Cat. #1130QR
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One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA method 12, or other applicable methods.

Lead.....	0.2-120 µg/mL
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### Chromium on Filter Paper

CRM Cat. #1131	PT Q Cat. #1031	QR Cat. #1131QR
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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 Q Cat. #1032	QR Cat. #1132QR
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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
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## INORGANICS

Hydrogen Halides & Halogens  
in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1140	Cat. #1040	Cat. #1140QR

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

Total halides.....	15-1500 mg/L
Total halogens.....	10-200 mg/L
Hydrogen chloride.....	5-500 mg/L
Hydrogen fluoride.....	5-500 mg/L
Hydrogen bromide.....	5-500 mg/L
Bromine.....	5-100 mg/L
Chlorine.....	5-100 mg/L

## Fluoride in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1141	Cat. #1041	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
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## Nitrogen Oxide in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1142	Cat. #1042	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 (NO <sub>x</sub> ).....	100-2000 mg/dscm
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## Sulfur Dioxide in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1143	Cat. #1043	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, or other applicable methods.

Sulfur dioxide.....	50-2000 mg/dscm
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Sulfuric Acid & Sulfur Dioxide  
in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1144	Cat. #1044	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
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## Ammonia in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1145	Cat. #1045	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
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## Particulate Matter on Filter Paper

CRM	PT <sup>Q</sup>	QR
Cat. #1150	Cat. #1050	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
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## Particulate Matter in Impinger Solution

CRM	PT <sup>Q</sup>	QR
Cat. #1151	Cat. #1051	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
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All ERA Air & Emissions PTs open quarterly (Q).