



Environmental Laboratory Licensure Application

Laboratory Services

250 N. 17th Avenue
Phoenix, AZ 85007-3231
602-364-0720
FAX 602-364-0759

PART E – Director Approval

Part E lists director approved methods available to all laboratories. In addition, the director approval process is outlined in the following pages. These methods are current as of **November 2011**.

Director Approved Methods (Refer to A.A.C. R9-14-610.B for references.) AIR = Air program. SDW = Drinking water. WW = Wastewater. SW = Solid, Liquid, and Hazardous Waste.

Description	Program	Reference	Method	Fee
Aluminum	AIR	Note 9	IO-3.4	\$10
Aluminum	AIR	Note 10	IO-3.5	\$26
Antimony	AIR	Note 9	IO-3.4	\$10
Antimony	AIR	Note 10	IO-3.5	\$26
Arsenic	AIR	Note 9	IO-3.4	\$10
Arsenic	AIR	Note 10	IO-3.5	\$26
Arsenic	AIR	Note 14	Method 29 - ICP	\$10
Arsenic	AIR	Note 14	Method 29- ICPMS	\$26
Barium	AIR	Note 9	IO-3.4	\$10
Barium	AIR	Note 10	IO-3.5	\$26
Barium	AIR	Note 14	Method 29 - ICP	\$10
Barium	AIR	Note 14	Method 29- ICPMS	\$26
Beryllium	AIR	Note 9	IO-3.4	\$10
Beryllium	AIR	Note 10	IO-3.5	\$26
Beryllium	AIR	Note 14	Method 29 - ICP	\$10
Beryllium	AIR	Note 14	Method 29- ICPMS	\$26
Bismuth	AIR	Note 9	IO-3.4	\$10
Boron	AIR	Note 9	IO-3.4	\$10
Cadmium	AIR	Note 9	IO-3.4	\$10
Cadmium	AIR	Note 10	IO-3.5	\$26
Cadmium	AIR	Note 14	Method 29 - ICP	\$10
Cadmium	AIR	Note 14	Method 29- ICPMS	\$26

Calcium	AIR	Note 9	IO-3.4	\$10
Carbon Dioxide, Methane, Nitrogen, & Oxygen	AIR	Note 7	Method 3C	\$393
Cesium	AIR	Note 9	IO-3.4	\$10
Chromium	AIR	Note 9	IO-3.4	\$10
Chromium	AIR	Note 10	IO-3.5	\$26
Chromium	AIR	Note 14	Method 29 - ICP	\$10
Chromium	AIR	Note 14	Method 29- ICPMS	\$26
Cobalt	AIR	Note 9	IO-3.4	\$10
Cobalt	AIR	Note 10	IO-3.5	\$26
Cobalt	AIR	Note 14	Method 29 - ICP	\$10
Cobalt	AIR	Note 14	Method 29- ICPMS	\$26
Copper	AIR	Note 9	IO-3.4	\$10
Copper	AIR	Note 10	IO-3.5	\$26
Copper	AIR	Note 14	Method 29 - ICP	\$10
Copper	AIR	Note 14	Method 29- ICPMS	\$26
Digestion of Ambient Matter	AIR	Note 8	IO-3.1	\$7
Germanium	AIR	Note 9	IO-3.4	\$10
Gold	AIR	Note 9	IO-3.4	\$10
Indium	AIR	Note 9	IO-3.4	\$10
Iron	AIR	Note 9	IO-3.4	\$10
Lanthanum	AIR	Note 9	IO-3.4	\$10
Lithium	AIR	Note 9	IO-3.4	\$10
Lead	AIR	Note 9	IO-3.4	\$10
Lead	AIR	Note 10	IO-3.5	\$26
Lead	AIR	Note 14	Method 29 - ICP	\$10

Lead	AIR	Note 14	Method 29- ICPMS	\$26
Magnesium	AIR	Note 9	IO-3.4	\$10
Manganese	AIR	Note 9	IO-3.4	\$10
Manganese	AIR	Note 10	IO-3.5	\$26
Manganese	AIR	Note 14	Method 29 - ICP	\$10
Manganese	AIR	Note 14	Method 29- ICPMS	\$26
Mercury	AIR	Note 9	IO-3.4	\$10
Mercury	AIR	Note 14	Method 29 – CVAA	\$52
Molybdenum	AIR	Note 9	IO-3.4	\$10
Molybdenum	AIR	Note 10	IO-3.5	\$26
Nickel	AIR	Note 9	IO-3.4	\$10
Nickel	AIR	Note 10	IO-3.5	\$26
Nickel	AIR	Note 14	Method 29 - ICP	\$10
Nickel	AIR	Note 14	Method 29- ICPMS	\$26
Niobium	AIR	Note 9	IO-3.4	\$10
Nonmethane Organic Compounds	AIR	Q	Method 25C	\$393
Palladium	AIR	Note 9	IO-3.4	\$10
Phosphorus	AIR	Note 9	IO-3.4	\$10
Phosphorus	AIR	Note 14	Method 29 – ICP	\$10
Platinum	AIR	Note 9	IO-3.4	\$10
Potassium	AIR	Note 9	IO-3.4	\$10
Rhenium	AIR	Note 9	IO-3.4	\$10
Rhodium	AIR	Note 9	IO-3.4	\$10

Ruthenium	AIR	Note 9	IO-3.4	\$10
Samarium	AIR	Note 9	IO-3.4	\$10
Selenium	AIR	Note 9	IO-3.4	\$10
Selenium	AIR	Note 10	IO-3.5	\$26
Selenium	AIR	Note 14	Method 29 - ICP	\$10
Selenium	AIR	Note 14	Method 29- ICPMS	\$26
Silicon	AIR	Note 9	IO-3.4	\$10
Silver	AIR	Note 10	IO-3.5	\$26
Silver	AIR	Note 14	Method 29 - ICP	\$10
Silver	AIR	Note 14	Method 29- ICPMS	\$26
Sodium	AIR	Note 9	IO-3.4	\$10
Strontium	AIR	Note 9	IO-3.4	\$10
Tantalum	AIR	Note 9	IO-3.4	\$10
Tellurium	AIR	Note 9	IO-3.4	\$10
Thallium	AIR	Note 9	IO-3.4	\$10
Thallium	AIR	Note 10	IO-3.5	\$26
Thallium	AIR	Note 14	Method 29 - ICP	\$10
Thallium	AIR	Note 14	Method 29- ICPMS	\$26
Thorium	AIR	Note 10	IO-3.5	\$26
Tin	AIR	Note 9	IO-3.4	\$10
Titanium	AIR	Note 9	IO-3.4	\$10
Tungsten	AIR	Note 9	IO-3.4	\$10
Uranium	AIR	Note 10	IO-3.5	\$26
Vanadium	AIR	Note 9	IO-3.4	\$10

Vanadium	AIR	Note 10	IO-3.5	\$26
VOCs	AIR	Note 4	TO-14A	\$152
VOCs in Vapor	AIR	S	8260B AZ Vapor	\$152
Yttrium	AIR	Note 9	IO-3.4	\$10
Zinc	AIR	Note 9	IO-3.4	\$10
Zinc	AIR	Note 10	IO-3.5	\$26
Zinc	AIR	Note 14	Method 29 - ICP	\$10
Zinc	AIR	Note 14	Method 29- ICPMS	\$26
Zirconium	AIR	Note 9	IO-3.4	\$10
Alkaline Digestion for Hexavalent Chromium	SW	F	3060A	\$7
Aluminum	SW	F	6020A	\$26
Antimony	SW	F	6020A	\$26
Arsenic	SW	F	6020A	\$26
Barium	SW	F	6020A	\$26
Beryllium	SW	F	6020A	\$26
Cadmium	SW	F	6020A	\$26
Calcium	SW	F	6020A	\$26
Chromium	SW	F	6020A	\$26
Cobalt	SW	F	6020A	\$26
Copper	SW	F	6020A	\$26
Iron	SW	F	6020A	\$26
Lead	SW	F	6020A	\$26
Magnesium	SW	F	6020A	\$26
Manganese	SW	F	6020A	\$26
Microwave Extraction	SW	Note 1	3546	\$7
<i>n</i> -Hexane	SW	F	8260B	\$0
Mercury	SW	F	7473	\$152
Mercury	SW	F	7474	\$152

Mercury	SW	F	6020A	\$26
Nickel	SW	F	6020A	\$26
Nitroaromatics, Nitramines, and Nitrate Esters	SW	F	8330B	\$116
Perchlorate	SW	F	6850	\$152
Potassium	SW	F	6020A	\$26
Selenium	SW	F	6020A	\$26
Silver	SW	F	6020A	\$26
Sodium	SW	F	6020A	\$26
Thallium	SW	F	6020A	\$26
Vanadium	SW	F	6020A	\$26
Zinc	SW	F	6020A	\$26
Bromate	SDW	Note 22	302.0	\$26
Chlorine Dioxide	SDW	C1	10126	\$76
Cyanide, Available	SDW	Note 20	D6888-04	\$76
<i>E. coli</i> by Colilert (in combination with Total Coliform)	SDW	C2	9223B	\$0
<i>E. coli</i> and Coliforms by Colitag	SDW	Note5	Colitag	\$152
<i>E. coli</i> by Colisure (in combination with Total Coliform)	SDW	C2	9223B	\$0
<i>E. coli</i> by Membrane Filtration Two Step	SDW	C2	9222B/9222G	\$76
Heterotrophic Plate Count (For Bottled Water testing only)	SDW	C2	9215D	\$152
Radium 226	SDW	Note18	Gamma-ray HPGE or Ge(Li)	\$206
Radium 228	SDW	Note18	Gamma-ray HPGE or Ge(Li)	\$206
Silica	SDW	C2	4500 SiO2-C	\$76
Total Coliforms and <i>E. coli</i> by Readycult	SDW	Note2	Readycult Coliforms 100 P/A	\$152

Total Coliforms and <i>E. coli</i> by m-ColiBlue24	SDW	C1	HACH 10029	\$228
Uranium	SDW	Note3	D5174-97, 02	\$206
VOCs by GC-MS Benzene Carbon tetrachloride Chlorobenzene 1,2-dichlorobenzene 1,4-dichlorobenzene 1,2-dichloroethane cis-Dichloroethylene trans-Dichloroethylene Dichloromethane 1,2-Dichloropropane Ethylbenzene Styrene Tetrachloroethylene 1,1,1-Trichloroethane Trichloroethylene Toluene 1,2,4-Trichlorobenzene 1,1-Dichloroethylene 1,1,2-Trichlorethane Vinyl chloride Xylenes, total Total Trihalomethanes Dibromochloropropane (DBCP) Ethylene dibromide (EDB)	SDW	Note17	EPA 524.3	\$152
VOCs by GC/MS – Additional Compounds Required by Other Programs	SDW	Note17	EPA 524.3	\$26
Ammonia (18 th Edition)	WW	Note 15	SM 4500-NH3B&C	\$76
Ammonia	WW	Note19	HACH 10205	\$39
Boron	WW	A1	200.8	\$26
Bromide	WW	Z	300.1	\$26
Calcium	WW	A1	200.8	\$26
Chloride	WW	Z	300.1	\$26
Chloride	WW	C2	4500-Cl D	\$39
Chlorine, Total	WW	C2	4500-Cl E	\$39
Chromium (VI) Hexavalent (IC method)	WW	A1	218.6	\$26
Chromium (VI) Hexavalent (IC Method)	WW	C	3500-Cr E	\$26
Chronic Toxicity on <i>Daphnia magna</i>	WW	Note	Lozarchak, J. 2001	\$194
Copper	WW	C	3500-Cu E	\$76

Cyanide, Available	SDW	Note 20	D6888-04	\$76
Cyanide, Total	WW	A2	335.4	\$76
Cyanide, Total	WW	C2	4500-CN F	\$76
Cyanide, Total	WW	Z9	QuikChem 10-204-00-1-X	\$76
<i>E. coli</i> by m-ColiBlue24	WW	C1	HACH 10029	\$228
Enteric Virus in Sewage Sludge	WW	Note13	EPA 625/R-92/013	\$381
Fecal Coliform by Colilert-18 (APP and Reuse only)	WW	C2	SM 9020B and 9223B	\$152
Fecal Coliform by Colilert-18 (NPDES – ATP Permits only)	WW	C2	SM 9020B and 9223B	\$152
Fecal Coliforms in Sludge by MTF	WW	Note11	EPA 1681	\$228
Fluoride	WW	Z	300.1	\$26
Gold	WW	A1	200.8	\$26
Hardness (Sum of Ca and Mg)	WW	A1	200.8	\$10
Hydrogen Sulfide	WW	C2	SM 4500-S ²⁻ H	\$10
Iron	WW	A1	200.8	\$26
Kjeldahl Total, Nitrogen	WW	C2	4500-NH3 D	\$39
Kjeldahl Total, Nitrogen	WW	C2	4500-NH3 E	\$39
Kjeldahl Total, Nitrogen (18 th edition)	WW	Note 16	SM4500-NH3B & C and NORG B	\$115
Lab Bench Scale Batch Digestion (Sludge)	WW	Note13	EPA 625/R-92/013	\$76
Magnesium	WW	A1	200.8	\$26
Mercury	WW	A1	200.7	\$10
Mercury	WW	Note6	245.7	\$152
Nitrate	WW	Z	300.1	\$26
Nitrate	WW	C2	4500-NO3 D	\$39
Nitrate-Nitrite	WW	Z	300.1	\$26
Nitrite	WW	Z	300.1	\$26
Nitrite	WW	C2	4500-NO3 E	\$76
Nitrite	WW	C2	4500-NO3 F	\$76
Nitrite	WW	A2	353.2	\$76
Orthophosphate	WW	Z	300.1	\$26
Potassium	WW	A1	200.8	\$26
pH (Hydrogen Ion)	WW	A	150.2	\$39
Phenols	WW	A2	420.4	\$116

Phosphorus	WW	A1	200.7	\$10
Silica	WW	A1	200.7	\$10
<i>Salmonella</i> in Sludge by MSRV Medium	WW	Note12	EPA 1682	\$228
Silica	WW	A1	200.8	\$26
Sodium	WW	C	3500-Na D	\$26
Sodium	WW	A1	200.8	\$26
Sulfide	WW	C2	4500-S2 G	\$39
Sulfate	WW	A2	375.2	\$76
Sulfate	WW	Z	300.1	\$26
Sulfate	WW	Note 21	D516-02	\$76
Tin	WW	A1	200.8	\$26
Titanium	WW	A1	200.7	\$10
Titanium	WW	A1	200.8	\$26

- Note: Lozarchak, J. 2001. "Short-term Chronic Toxicity tests on *Daphnia magna* (survival and growth tests)", USEPA.
- Note1: SW-846 3546 "Microwave Extraction", Rev. 0. November 2000
- Note2: Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Finished Waters, Version 1.1, January 2007
- Note3: Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry, ASTM 5174-97, 02
- Note4: Determination Of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters With Subsequent Analysis By Gas Chromatography referencing the Compendium Method TO-14A, EPA/625/R-96/010b
- Note5: Colitag® Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations, August 2001
- Note6: EPA Method 245.7, Rev. 2.0, February 2005, EPA 821-R-05-001, For the Determination of Mercury by Cold Vapor Atomic Fluorescence Spectrometry
- Note7: 40 CFR, Part 61, Appendix A, available at <http://www.access.gpo.gov/nara/cfr/cfr-table-search.html>
- Note8: Compendium Method IO-3.1, Selection, Preparation and Extraction of Filter Material, EPA/625/R-96/010a, June 1999, available at <http://www.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-3-1.pdf>
- Note9: Compendium Method IO-3.4, Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma (ICP), EPA/625/R-96/01a, June 1999, available at <http://www.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-3-4.pdf>
- Note10: Compendium Method IO-3.5, Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma/Mass Spectroscopy (ICP/MS), EPA/625/R-96/01a, June 1999, available at <http://www.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-3-5.pdf>
- Note11: EPA Method 1681, July 2006, EPA-821-R-06-013, Fecal Coliforms in Sewage Sludge (Biosolids) by Multiple-Tube Fermentation using A-1 Medium.
- Note12: EPA Method 1682, July 2006, EPA-821-R-06-014, *Samonella* in Sewage Sludge (Biosolids) by Modified Semisolid Rappaport-Vassiliadis (MSRV) Medium.
- Note13: EPA 625/R-92/013 – "White House Document" Environmental Regulations and Technology – Control of Pathogens and Vector Attraction in Sewage Revised July 2003, U.S. Environmental Protection Agency.
- Note 14: Method 29, 40 CFR - Chapter I, Part 60. Determination of Metals Emissions From Stationary Sources.
- Note 15: Ammonia by Nesslerization in Wastewater by Sm 4500-NH3 B&C by the American Public Health Association et al., Standard Methods for the Examination of Water and Wastewater (18th ed. 1992)
- Note 16: Total Kjeldahl Nitrogen by SM 4500-N Org B, 4500-NH3 B & C by the American Public Health Association et al. Standard Methods of Examination of Water and Wastewater (18th ed. 1992)
- Note 17: EPA Method 524.3, Rev. 1.0, June 2009, EPA Document #EPA 815-B-09-009 for the Measurement of Purgeable Organic Compounds in Drinking Water by Capillary Column Gas Chromatography/Mass Spectrometry.
- Note 18: The Determination of Radium-226 and Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE Or Ge(Li) Detectors, "Revision 1.2, December 2004 Georgia Institute of Technology
- Note 19: HACH Company Ammonia Method 10205, Revision 2.0, August 2008 (See Attached) for the determination of ammonia.
- Note 20: ASTM-D6888-04, Standard Test Method for Available Cyanide with Ligand Displacement and Flow Injection

Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection, ASTM International, 100 Barr Harbor Drive P.O. Box C700, West Conshohocken, Pa, 19428-2959

Note 21: ASTM-D516-02, Standard Test Method for Sulfate Ion in Water, ASTM International, 100 Barr Harbor Drive P.O. Box C700, West Conshohocken, Pa, 19428-2959

Note 22: EPA Method 302.0: Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection. EPA 815-B-09-014, Office of Water, September 2009.

2. Process for Director Approved Methods (A.A.C. R9-14-610.C.)
(This is a summary of the steps needed for approval, please refer to the rule cited for detailed instructions.)

Note: For a request for an alternate method or method alteration approval, there is a \$50 fee payable to the Department of Health Services.

- A. Request for approval of a different method or method alteration that is required by an EPA, ADEQ, the U.S. Food and Drug Administration or 9 A.A.C. 8.

1. Name, address, and telephone number of the licensee submitting the request.
2. Name, address, and telephone number of the laboratory for which approval is requested.
3. Identification of the parameter for which approval is requested.
4. Reference to the EPA, ADEQ, the U.S. Food and Drug Administration or 9 A.A.C. 8 that requires or authorizes the use of the method or method alteration for which approval is requested.

- B. Request for approval of a different method or method alteration that is **not** required by an EPA or ADEQ statute or rule.

1. Name, address, and telephone number of the licensee submitting the request.
2. Name, address, and telephone number of the laboratory for which approval is requested.
3. Identification of the parameter for which approval is requested.
4. Written justification for using the method or method alteration for which approval is requested, including the following:
 - a. A detailed description of the method or method alteration.
 - b. References to published or other studies confirming the general applicability of the method or method alteration to the parameter.
 - c. Reference to the EPA, ADEQ, the U.S. Food and Drug Administration or 9 A.A.C. 8 requirement to test the parameter.
 - d. Data that demonstrates the performance of the method or method alteration in terms of accuracy, precision, reliability, ruggedness, ease of use, and ability to achieve a detection limit appropriate to the proposed use of the method or method alteration.

The Department, before approving a method or method alteration that is not required or authorized by EPA or ADEQ statute or rule, may require that the method or method alteration be performed by a designated laboratory to verify that the method or method alteration complies with (C)(2)(d)(iv).