



# Official Methods of Analysis

19th Ed. (2012)

Front Matter

Revised to reflect changes in the 19th Edition

**NEW SECTION:** Standard Method Performance Requirements:

Stakeholder Panel on Marine and Freshwater Foods

**AOAC SMPR 2009.001** Standard Method Performance Requirements for Quantitative Methods for Drug Residues in Shrimp, Tilapia, Catfish, and Salmon

Stakeholder Panel on Agent Detection Assays:

**AOAC SMPR 2010.001** Standard Method Performance Requirements for Polymerase Chain Reaction (PCR) Methods for Detection of *Francisella tularensis* in Aerosol Collection Filters and/or Liquids

**AOAC SMPR 2010.002** Standard Method Performance Requirements for Polymerase Chain Reaction (PCR) Methods for Detection of *Yersinia pestis* in Aerosol Collection Filters and/or Liquids

**AOAC SMPR 2010.003** Standard Method Performance Requirements for Polymerase Chain Reaction (PCR) Methods for Detection of *Bacillus anthracis* in Aerosol Collection Filters and/or Liquids

**AOAC SMPR 2010.004** Standard Method Performance Requirements for Immunological-Based Hand-Held Assays (HHAs) for Detection of *Bacillus anthracis* in Spores in Visible Powders

**AOAC SMPR 2010.005** Standard Method Performance Requirements for Immunological-Based Hand-Held Assays (HHAs) for Detection of Ricin in Visible Powders

Stakeholder Panel on Endocrine Disruptors

**AOAC SMPR 2010.007** Standard Method Performance Requirements for Quantitative Determination of Estrone (E1) in Freshwater

Stakeholder Panel on Infant Formula and Adult Nutritionals:

**AOAC SMPR 2011.003** Standard Method Performance Requirements for Vitamin A in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.004** Standard Method Performance Requirements for Vitamin D in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.005** Standard Method Performance Requirements for Vitamin B<sub>12</sub> in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.006** Standard Method Performance Requirements for Folate in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.007** Standard Method Performance Requirements for Myo-Inositol in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.008** Standard Method Performance Requirements for Nucleotides in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.009** Standard Method Performance Requirements for Ultra Trace Minerals in Infant Formula and Adult/Pediatric Nutritional Formula

**AOAC SMPR 2011.010** Standard Method Performance Requirements for Vitamin E in Infant Formula and Adult/Pediatric Nutritional Formula

Stakeholder Panel on Strategic Food Analytical Methods:

**AOAC SMPR 2011.011** Standard Method Performance Requirements for Antioxidants in Food

Chapter 6

**2011.26** (6.1.04) First Action 2011: Phenols and Phenates in Disinfectant Formulations by Liquid Chromatography with Ultraviolet Detection

**955.14** (6.2.01) Approved by Methods Committee on Antimicrobial Efficacy Testing and revised July 2012 to include editorial and procedural revisions

**955.15** (6.2.04) Approved by Methods Committee on Antimicrobial Efficacy Testing and revised July 2012 to include editorial and procedural revisions

***If you have any questions of a technical nature or suggestions for editorial changes, please e-mail us at [editoma@aoac.org](mailto:editoma@aoac.org).***

	<b>964.02</b> (6.2.06) Approved by Methods Committee on Antimicrobial Efficacy Testing and revised July 2012 to include editorial and procedural revisions
	<b>960.09</b> (6.3.03) Approved by Methods Committee on Antimicrobial Efficacy Testing and revised October 2011 to include editorial and procedural revisions
Chapter 15	<b>2007.06</b> (15.5.10) Move to Chapter 17, Subchapter 5 (17.5.11)
Chapter 16	<b>2011.03</b> (16.1.04) First Action 2011: <i>Salmonella</i> by the VIDAS® Easy <i>Salmonella</i> Assay (EasySLM) with ChromID™ <i>Salmonella</i> (SM2) Agar in a Variety of Foods
Chapter 17	<b>2005.04</b> (17.4.01E) Revised 2011 to include procedural revisions <b>2005.05</b> (17.4.06A) Revised 2011 to include procedural revisions <b>2000.07</b> (17.9.24A) Delete full text of method, which was repealed in 2008 <b>2003.09</b> (17.9.32) Revised First Action 2011 to include a hot start functionality <b>995.22</b> (17.10.06) <b>E(a)</b> : Revised January 2012 to read “Transfer 1.0 mL LEB...” (not 10 mL) <b>2012.05</b> (17.14.05) First Action 2012: <i>Bacillus anthracis</i> Spores on Filters and in Liquid Suspensions Derived from Surface Swabbings, Triple Signature QFlow–JBAIDS Polymerase Chain Reaction–National Guard Bureau Method <b>2011.17</b> (17.15.01) First Action 2011: <i>Salmonella</i> , <i>Escherichia coli</i> , and Other Enterobacteriaceae, VITEK® 2 Gram-Negative (GN) Biochemical Identification Method <b>2012.02</b> (17.15.02) First Action 2012: VITEK® 2 Gram-Positive (GP) Biochemical Identification Method (Identification of Gram-Positive Bacteria Including <i>Listeria</i> and <i>Staphylococcus species</i> )
Chapter 23	<b>2011.22</b> (23.1.18) First Action 2011: Ractopamine in Swine, Bovine, and Turkey Tissues by HPLC with Fluorescence Detection <b>2011.23</b> (23.1.19) First Action 2011: Parent and Total Ractopamine in Bovine, Swine, and Turkey Tissues by Liquid Chromatography with Tandem Mass Spectroscopy <b>2011.24</b> (23.1.20) First Action 2011: Narasin and Monensin in Bovine, Swine, and Chicken Tissues by Liquid Chromatography with Tandem Mass Spectroscopy
Chapter 32	<b>2011.25</b> (32.1.43) First Action 2011: Insoluble, Soluble, and Total Dietary Fiber (CODEX Definition) in Foods by Enzymatic-Gravimetric-Liquid Chromatography <b>2012.01</b> (32.1.44) First Action 2012: Gliadin as a Measure of Gluten in Foods
Chapter 35	<b>977.13</b> (35.1.32) <b>C(b)</b> : Revised September 2012 to read “ <i>Phosphoric acid</i> .—To prepare 1.19M phosphoric acid, dilute 73.33 (not 121.8) mL 85% (15M H <sub>3</sub> PO <sub>4</sub> ) to 1 L.” <b>D</b> : Revised September 2012 to read “After exactly 4 min, pipet in 3 mL 1.19M (not 3.57N) H <sub>3</sub> PO <sub>4</sub> and mix immediately.”
Chapter 39	<b>2011.04</b> (39.1.40) First Action 2011: Protein in Raw and Processed Meats by Sprint™ Rapid Protein Analyzer
Chapter 41	<b>940.28</b> (41.1.21) <b>(a)</b> : Revised April 2012 to read “Report as percent free fatty acids expressed as oleic acid. (Using the sample size and molarity of NaOH specified in the method, the mL 0.25 M NaOH used in the titration corresponds directly to the percent oleic acid in the sample.)”
Chapter 42	<b>963.27</b> (42.3.08) <b>A(b)</b> : Revised July 2012 to correct oxalic acid formula to “H <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ·2H <sub>2</sub> O” (not H <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ·H <sub>2</sub> O) <b>A(d)</b> : Revised October 2011 to read “ <i>Hydrogen peroxide solution</i> .—0.05 M” (not 0.1 M) <b>A(e)</b> : Revised October 2011 to read “ <i>2,6-Dichloroindophenol solution</i> .—0.001 M. Dissolve about 290 mg 2,6-dichloroindophenol sodium salt (CAS-620-45-1) or 265 mg 2,6-dichloroindophenol (CAS-956-48-9) in H <sub>2</sub> O and dilute to 1 L.” <b>D</b> : Revised July 2012 to include calculations for <i>K</i> <sub>1</sub> and <i>K</i> <sub>2</sub> directly in the method instead of referencing <b>947.11D</b> and change “log” to “ln”
Chapter 45	<b>981.17</b> (45.1.21) Delete full text of method, which was repealed in 2007 <b>2001.13</b> (45.1.34) <b>D</b> : Revised June 2011 to compensate for volume of vitamin E (vitamin E portion of method was not accepted in 2001): for high standard, add 35 mL (not 25 mL) of 95% ethanol; intermediate standard, 38 mL (not 33 mL); and low standard, 39.5 mL (not 37.5 mL) <b>2009.01</b> (45.4.17) Revised January 2012 to replace HMWDF with IDF:SDFP and LMWSDF with SDFS in text and Figure <b>2009.01B</b> ; include additional information in <b>B(v)</b> on chromatography of SDFS; include note on sorbital presence in <b>C(p)</b>
Chapter 47	<b>2012.03</b> (47.2.05) First Action 2012: Analytical Parameters of the Microplate-Based ORAC Pyrogallol Red Assay <b>2012.04</b> (47.2.06) First Action 2012: Antioxidant Activity in Foods and Beverages by Reaction with 2,2'-Diphenyl-1-Picrylhydrazyl (DPPH)
Chapter 49	<b>2011.02</b> (49.10.05) First Action 2011: Paralytic Shellfish Toxins in Mussels, Clams, Scallops and Oysters by Liquid Chromatography Post-Column Oxidation <b>2011.27</b> (49.10.06) First Action 2011: Paralytic Shellfish Poisoning in Shellfish by Receptor Binding Assay
Chapter 50	<b>2011.01</b> (50.1.27) Revised June 2011 to identify sample codes by matrixes [Tables <b>2011.01C</b> and <b>D</b> and sections <b>G(a)</b> – <b>(d)</b> ]; revised August 2011 to include collaborative study reference to <i>J. AOAC Int.</i> <b>94</b> , 1217(2011); revised November 2011 to correct statistical data in Table <b>2011.01A</b>

	<b>2011.05</b> (50.1.28) First Action 2011: Folate in Infant Formula and Adult/Pediatric by Optical Biosensor Assay
	<b>2011.06</b> (50.1.29) First Action 2011: Total Folates in Infant Formula and Adult/Pediatric Nutritional Formula by Trienzyme Extraction and UPLC-MS/MS Quantitation
	<b>2011.07</b> (50.1.30) First Action 2011: Vitamin A in Infant Formula and Adult Nutritionals by UPLC-UV
	<b>2011.08</b> (50.1.31) First Action 2011: Vitamin B <sub>12</sub> in Infant Formula and Adult/Pediatric Nutritional Formula by Liquid Chromatography/UV Detection with Immunoaffinity Extraction
	<b>2011.09</b> (50.1.32) First Action 2011: Vitamin B <sub>12</sub> in Infant Formula and Adult/Pediatric Nutritional Formula Using HPLC After Purification on an Immunoaffinity Column
	<b>2011.10</b> (50.1.33) First Action 2011: Vitamin B <sub>12</sub> in Infant Formula and Adult/Pediatric Nutritional Formula by HPLC
	<b>2011.11</b> (50.1.34) First Action 2011: Vitamin D in Infant Formula and Adult/Pediatric Nutritional Formula by Ultra-High-Performance Liquid Chromatography-Tandem Mass Spectrometry
	<b>2011.12</b> (50.1.35) First Action 2011: Vitamin D in Infant Formula and Adult/Pediatric Nutritional Formula by Ultra-Pressure Liquid Chromatography with Tandem Mass Spectrometry Detection (UPLC-MS/MS)
	<b>2011.13</b> (50.1.36) First Action 2011: Vitamin D <sub>2</sub> and D <sub>3</sub> in Infant Formula and Adult/Pediatric Nutritional Formula by LC-MS/MS
	<b>2011.14</b> (50.1.37) First Action 2011: Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Phosphorus, Sodium, and Zinc in Infant Formula by Microwave Digestion and Inductively Coupled Plasma-Optical Emission Spectrometry
	<b>2011.15</b> (50.1.38) First Action 2011: Vitamin A (Retinol) in Infant Formula and Adult Nutritionals by Liquid Chromatography
	<b>2011.16</b> (50.1.39) First Action 2011: Vitamin B <sub>12</sub> in Infant Formula and Adult/Pediatric Nutritional Formula by Surface Plasmon Resonance
	<b>2011.18</b> (50.1.40) First Action 2011: Myo-Inositol (Free and Bound as Phosphatidylinositol) in Infant Formula and Adult/Pediatric Nutritional Formula by HPLC Column Switching and Pulsed Amperometry
	<b>2011.19</b> (50.1.41) First Action 2011: Chromium, Selenium, and Molybdenum in Infant Formula and Adult/Pediatric Nutritional Formula by ICP-MS
	<b>2011.20</b> (50.1.42) First Action 2011: Routine Analysis of 5'-Mononucleotides in Infant Formula and Adult/Pediatric Nutritional Formula by Liquid Chromatography
	<b>2011.21</b> (50.1.43) First Action 2011: Nucleotides in Infant Formula and Adult/Pediatric Nutritional Formula by HILIC-MS/MS
Chapter 51	<b>2008.04</b> (51.7.01) Revised January 2012 to correct ratio of diluent solvent in <b>C(i)</b> from 10 to 90 mL acetonitrile and from 90 to 10 mL water
	<b>2009.04</b> (51.9.01) <b>C(s)</b> : Revised January 2012 to include EDTA in alginate buffer preparation
Appendix A	<b>890.01</b> (A.1.14) <b>B</b> : Correct cross-reference to read "See <b>936.15D</b> " not "E"
Appendix F	<b>NEW APPENDIX: Guidelines for Standard Method Performance Requirements</b>
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Appendix L	<b>NEW APPENDIX: AOAC Recommended Guidelines for Stakeholder Panel on Infant Formula and Adult Nutritionals (SPIFAN) Single-Laboratory Validation</b>
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Subject Index	Revised to reflect changes in the 19th Edition
Index of Method Numbers	Revised to reflect changes in the 19th Edition