

TABLE 20: Inorganic Chemistry Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
A12023	3	Determination of Acidity in Surface Waters, Sewage and Industrial Waters	2 May 2005	SM (18) 2310B (4a)
A12151	Original	Acidity of Food Dressings	15 Apr 2005	AOAC (16) 935.57
A45023	4	Determination of Alkalinity in Drinking, Surface and Saline Waters, Domestic and Industrial Wastes	1 Nov 2005	SM (18) 2320B
A45023A	3	Alkalinity in Water and Wastewater by Orion 960	2 May 2005	SM(18) 2320B; Orion 960 Autochemistry Instruction Manual
A84951	2	Ash in Fruit, Confectionary and Nuts	1 Apr 2005	AOAC (17) 940.26, 950.49; AOAC (14) 900.02A
A85051	6	Ash Determination in Foods	1 Apr 2005	AOAC (17) 923.03; 930.30; 945.46, 935.42
A90051	2	Alkalinity in Ash	1 Jul 2005	AOAC 941.07; SM (Dairy) 15.4 APHA
B02523 B02123 B02223 B02323	6	Determination of BOD, Soluble BOD, CBOD, and Dissolved Oxygen in Wastewaters, Effluent and Polluted Waters	15 Apr 2005	SM (20) 5210
B56023B	3	Determination of Bromide in Water by Flow Injection Analysis on the Quick Chem 2000	15 Sep 2004	USGS I212985; Lachat Quick Chem Method #10-135-21-1-A
C02023 C02123	5	Determination of COD and Soluble COD in Surface Waters and Domestic and Industrial Wastes (Replaces C02023/C02123)	15 Sep 2004	EPA 410.4; HACH Method 8000
C10023	2.7	Determination of Calcium by Flame AA	11 Jan 2000	EPA 215.1
C15013	3	Quality Determination of Liming Materials	15 Apr 2005	Article 1007; Mag AG-FS-2677; AOAC (15) 1.001 - 1.007; ASTM C117;

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MVTL Method Number	Revision	Title	Effective Date	Reference
C16051 C15851	3	Determination of Total Calories and Calories from Fat	15 Jul 2004	21 CFR 101.9(C)(1)(I)(B) and (C)
C17851	2	Carbohydrate Determination by Calculation	1 Jul 2004	21 CFR 101.9(C)(6)
C18023	2	Determination of Free Carbon Dioxide in Drinking, Surface and Saline Waters and Domestic and Industrial Wastes	2 May 2005	SM (19) 4500C-O2-C
C21051	4	Determination of Casein	2 May 2005	AOAC (16) 927.03
C22523	3	Cation-Anion Summation	16 Feb 2004	SM 1030F, 1050A
C28011	3	Distillation and Titration of Soil Extract Samples for CEC	15 Apr 2005	MVTL Soil Laboratory
C32023	Original	Determination of Chloride in Gound, Surface and Industrial Waters by Automated Colorimetry on the AQ2	1 Jun 2005	EPA 325.2
C32023B	4	Determination of Chloride in Drinking, Surface and Saline Waters and Wastewaters by Flow Injection Analysis (FIA) on the Quik Chem 8000	15 Feb 2006	EPA 325.2
C34123	3	Determination of Residual Chlorine in Surface, Saline and Wastewater	15 Nov 2004	SM (18) 4500 Cl-G; HACH
C37023	4	Determination of Chlorophyll-a and Pheophytin-a	15 Sep 2004	SM (18) 10200 H
C45023	2.2	Determination of Hexavalent Chromium	Unknown	SM (18) 3500
C73023	4	Measuring Color of Water Derived from Natural Occuring Materials	15 Nov 2005	SM (18) 2120B
C78023	3	Conductivity in Drinking and Surface Waters, Domestic And Wastes	2 Aug 2004	SM (18) 2510B
C95023	6	Determination of Total And Amenable Cyanide	1 Mar 2005	EPA 335.2; SM (18) 4500CN
D38023	Original	Determination of Disodium Octaborate Tetrahydrate in Expanded Polystyrene by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)	24 Mar 2003	SW-846 6010B
D39023	3	Dissolved Oxygen (Membrane Electrode)	2 May 2005	SM 4500O-G
D39223	2	Dissolved Oxygen by Titration	15 Jul 2004	SM 4500O-C
E40023	3	Determination of Oxidation Reduction Potential (eH)	15 Sep 2004	ASTM D1498

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E90023	2	Extraction of Soil, Sludge, Feed, Dried Whey, Dried Forage, Ash and Meat for Analysis of FIA	2 May 2005	AOAC 973.31, 968.07; Soil Analysis 33-8, 28-3; IDF Standard 97A (1984)
F09051	2	Fat Determination in Food Products Using the Acid Hydrolysis Method	1 Apr 2005	AOAC 922.06, 925.32, 933.05, 925.12
F10051	2	Fat Determination by the Babcock Method	15 Apr 2005	Dairy SM (16) 15.8
F11051	7	Fat Determination by Soxhlet Extraction	1 Apr 2005	AOAC (16) 960.39B
F12051	Original	Fat Determination by the Roesse-Gottlieb and Modified Mojonnier Ether Extraction Method	15 Jun 2005	AOAC (16) 989.05
F33051	4	Fiber, Total Dietary in Foods by the Enzymatic Gravimetric Method	15 Jul 2004	AOAC (16) 985.29
F42051	2	Flavor and Odor	15 Nov 2005	ADPI Bullentin 916 Rev 1990
F45023	4	Potentiometric Measurement of Fluoride	15 Sep 2004	SM (18) 4500F-B
F45423	2	Potentiometric Measurement of Fluoride in Drinking Water	15 Sep 2004	SM (18) 4500F-C
G55051	Original	Grade Determination of Dry Milk Products	15 Apr 2005	Dairy SM 916
G65023C	1	Determination of n-Hexane Extractable Material Using Solid Phase Extraction Disks (SPE)	2 May 2005	EPA 1664A
G65123	2	Grease and Oil in Biosolid Samples	15 Jan 2006	SM (19) 5520E, 5520F
G65323	Original	Hydrocarbons in Grease and Oil Samples	2 May 2005	EPA 1664A
H08023	Original	Calculation of Hardness in Water and Waste Water	15 Sep 2004	SM (19) 2340A, B
H95023	1	Hydrocarbons in Sludge Oil Samples	2 May 2005	SM (19) 5520
L07023	3	Determination of the Langelier Index	1 Apr 2005	Nalco Water Handbook
L15013	4	Determination of Liming Materials (Quick Sugar)	15 Sep 2004	AWWA B202-65
M17523	4	Man-Made Inerts in Compost	15 Apr 2005	Minnesota Statute 7035.2836, Subpart S (J) (3)
M22923	2.4	Determination of Mercury in Solid or Semi-Solid Waste by Manual Cold-Vapor Technique	9 May 2001	SW-846 7471, 7471B
M23023	3	Determination of Mercury in Aqueous Sample by Manual Cold-Vapor Technique	27 Sep 2001	EPA 245.1; SW-846 7470A

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MVTL Method Number	Revision	Title	Effective Date	Reference
M23023A	Original	Determination of Hg in Water by Cold Vapor Atomic Fluorescence Spectrometry	14 Apr 2004	EPA 245.7
M26023A	3	Metals Determination by Inductively Coupled Plasma-Atomic Emission Spectrometry in Water, Solids and Biosolids	16 Apr 2003	EPA 200.7, 6010B
M27023	Original	Determination of Metals by Inductively Coupled Plasma-Mass Spectrometry	28 May 2002	US EPA Method 200.8 Chemical Waste for Water and Waste, SW-846 Method 6020
M59051A	3	Moisture in Meat and Meat Products	1 Apr 2005	AOAC (16) 950.46B
M62313	Original	Moisture Determination at 133EC on Dry Feed Stuffs	12 Nov 2004	Sponsor 30 AOAC (16) 930.15, 925.10
N40823	3	Distillation of Ammonia in Wastewater Samples	2 Aug 2004	SM (18) 4500-NH3B,E
N41011	3	Distillation of Ammonia in Sludge Samples	2 Aug 2004	SM (18) 4500-NH3E
N41023B	4	Determination of Ammonia Nitrogen in Drinking and Ground Waters on the QuikChem 8000	2 May 2005	EPA 350.1; QuikChem 10-107-06-01-B
N41223	4	Determination of Ammoniacal Nitrogen in Fertilizers Using the Magnesium Oxide Method	2 May 2005	AOAC (17) 920.03
N42023 N42523	6	Determination of Total Kjeldahl Nitrogen	1 Dec 2005	SM (18) 4500NorgB/4500-NH3B, E
N43023	Original	Determination of Nitrate/Nitrite by Discrete Automated Colorimetry	19 Jul 2004	US EPA 600/4-79-020, 1983; Method 353.2
N43023B	4	Determination of Nitrate+Nitrite or Nitrite Singly in Surface and Saline Waters, Wastewaters, and Drinking Water on the QuikChem 8000	15 Sep 2004	EPA 353.2; QuikChem 10-107-04-1-C
N43023C	Original	Determination of Nitrite by Discrete Automated Colorimetry	15 Sep 2004	EPA 353.2
N49523	Original	Calculation of Organic Nitrogen by Difference	15 Jun 2004	40 CFR 136.3, Table 1B, parameter 43
N50051	3	Determination of Non-Protein Nitrogen in Non Fat Dry Milk and Milk Powders	15 Apr 2005	AACC 46-22, 8th Edition

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MVTL Method Number	Revision	Title	Effective Date	Reference
N53023	5	Determination of Water Insoluble Kjeldahl Nitrogen in Fertilizer	15 Mar 2005	AOAC 945.01
O05023	3	Determination of Odor Threshold	2 Aug 2004	SM (18) 2150B
P25023	5	Determination of pH in Drinking, Surface, Saline and Wastewater	2 May 2005	SM (18) 4500-H+B
P33023	5	Determination of Total Recoverable Phenolics	16 Jan 2006	EPA 420.1
P37023	3	Phosphorus (Citrate Insoluble)	2 Aug 2004	AOAC (17) 963.03
P38023B	4	Determination of Specified Forms of Phosphorus in Drinking, Surface and Saline Waters on the QuikChem 8000	15 Mar 2005	EPA 365.1; QuikChem 10-115-01-1-A, 10-115-01-1-E
P39013	6	Determination of Phosphorus in Animal Feed and Manure	2 May 2005	AOAC (17) 965.17 (Modified)
P39013A	4	Total Phosphorus in Soil	15 Apr 2005	Methods for Soil Analysis, 24-2; AOAC (15) 958.01
P50051	2	Physical Appearance	3 May 2004	Standards for Grades of Dry Milks, ADPI, Bulletin 916 (revised) Copyright 1990
P50523	3	Determination of Physical Appearance in Aqueous Samples	1 Apr 2005	SM (18) 2110
P56513	2	Available Potassium in Fertilizers	29 May 2002	AOAC (16) 983.02
P65923	5	Acid Digestion of Non-Aqueous Samples	16 Apr 2003	SW-846 3050
P65923A	2.4	Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame Atomic Absorption Spectroscopy (FLAA) or Inductively Coupled Argon Plasma Spectroscopy (ICP)	6 Apr 2000	SW-846 3010 A
P69913	2	Determination of Soluble Protein by Kjeldahl Method	15 Sep 2004	Techniques for Measuring Protein Fractions in Feedstuffs, Pg. 85
P70013A	4	Determination of Crude Protein by CuSO ₄ /TiO ₂ Kjeldahl	1 Jun 2005	AOAC (16) 988.05
P70013B	9	Nitrogen Determination in Samples - Kjeltech System	1 Jun 2005	AOAC (16) 981.10, 988.05, 991.20 I, J, Modified
R99023	3	Determination of the Ryznar Stability Index	1 Apr 2005	Nalco Water Handbook

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S04051	3	Determination of Salt Using the Volhard Method	2 May 2005	AOAC (15) 937.09; Quant Analytical Agriculture and Food Products
S04251	Original	Determination of Salt in Butter (from Micro)	15 Jun 2005	AOAC 960.29
S08051	2	Determination of Scorched Particles (from Micro)	1 Jul 2004	Standards for Grades of Dry Milks, ADPI
S65051-E	1	Total Solids Determination in Eggs	16 Aug 2004	AOAC (16) 925.30
S67523	3	Determination of Settleable Solids in Wastewater	2 Feb 2004	SM (18) 2540F
S68023	5	Determination of Total Suspended Solids in Drinking, Surface, Saline and Wastewaters	27 Jul 2005	SM (18) 2540D
S68523	3	Suspended Volatile Solids	15 Sep 2004	SM (18) 2540D
S69023	3	Determination of Total Solids in Drinking, Surface, Saline and Wastewaters	2 May 2005	SM (18) 2540B; EPA 160.4
S69023A	4	Determination of Total Solid in Solid and Semi Solid Samples	1 Apr 2005	SM (18) Method 2540G
S69523	3	Determination of Total, Inorganic, and Volatile Dissolved Solids in Water	2 May 2005	SM (18) 2540C, E
S71051	2	Solubility Index (from Micro)	1 Jul 2004	Standards for Grades of Dry Milks, ADPI
S75423	4	Specific Gravity	2 Aug 2004	Standard Method 2710F
S88523B	3	Determination of Sulfate in Surface and Wastewater on the QuikChem 8000	15 Mar 1005	EPA 375.4; QuikChem 10-116-10-1-A
S88723	Original	Determination of Sulfate in Ground, Surface and Industrial Waters by Discrete Automated Colorimetry on the AQ2	15 Jan 2006	EPA 375.4; AQ2 2-019-1-L
S90023	3	Determination of Sulfide in Water	2 Aug 2004	SM (18) 4500S2B,C,E,F
S91023	3	Determination of Sulfite	2 Aug 2004	SM (18)
S92531	Original	Determination of Sulfur in Waters by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)	15 Jul 2003	EPA 200.7

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S97523	3	Determination of Anionic Surfactants in Drinking and Surface Waters and Domestic and Industrial Wastes	1 Oct 2004	SM (18) 5540C
T42051	Original	Titrateable Acidity	2 Aug 2004	SM (Dairy) (16)
T63023	1	Transmittance	15 Sep 2004	Client Supplied
T80023	2.4	Determination of Turbidity in Drinking, Surface and Saline Waters	5 Jan 2001	EPA 180.1
V45023	3	Volatile Acids	15 Sep 2004	SM (19) 5560
W05523	2.1	Shake Extraction of Solid Waste with Water	22 Feb 1995	ASTM D2987-85
W30051	3	Determination of Undenatured Whey Protein Nitrogen in Nonfat Dry Milk	15 Nov 2005	Standards for Grades of Dry Milks

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MVTL Method Number	Revision	Title	Effective Date	Reference
A16113	2.4	Acid Detergent Insoluble Nitrogen	3 Apr 2001	USDA #379-Modified
C73051	2.3	Determination of Color in Fats and Oils	4 Jan 2000	AOCS Cc13a-43
F09513	1	Crude Fat Determination by Acid Hydrolysis (Sponsor 30)	15 Apr 2005	AOAC (16) Method 922.06
F11213	4	Fat Determination in Feed/Ingredient by Soxtec Extraction	1 Jul 2005	AOAC, 920.39B
F12113	1	Fat Determination in Crystalyx by the Modified Mojonnier Ether Extraction Method	19 Jan 2000	AOAC (15) 932.06
F12213	3	Fat Determination in Pet Food by the Modified Ether Extraction Method	7 Jan 2004	AOAC (17) 954.02
F12313	1.2	Fat Determination in Dried Milk by the Modified Ether Extraction Method	5 Dec 2000	AOAC 915) 932.06
F30013	3	Determination of Acid-Detergent Fiber and Lignin	6 Feb 2003	AOAC (17) 973.18
F30113	0	Acid Detergent Fiber in Feeds and Ingredients Using the Fibertec	9 Oct 2000	AOAC 973.18

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MVTL Method Number	Revision	Title	Effective Date	Reference
		System		
F31013	4	Crude Fiber in Feeds and Feedstuff Using the Fibertec System	1 Dec 2005	AOAC (17) 962.09 Tecator application note PAN 22/79
F32013	2.7	Determination of Neutral-Detergent Fiber by Refluxing	1 Mar 2001	Forage Analyses Procedure, July 1993, Method 5.1
F65051	2	Free Fatty Acids in Crude and Fined Oils	15 Oct 1997	AOAC 940.28, AOCS Ca 5-a-40
I50051	3	Determination of Insoluble Impurities	8 Feb 2002	AOCS Ca2b-38, Ca3-46
M50051	3	Determination of MIU in Fats and Oils	4 Feb 2002	AOCS, 1986
M62313	1	Moisture Determination at 133EC on Dry Feedstuffs	15 Apr 2005	AOAC (16) 930.15; 925.10
N50013	0	Determination of Non-Protein Nitrogen	29 Dec 2000	AOAC (15) 941.04
P22051	3	Peroxide Value (P22151)	8 Feb 2002	AOAC 965.33, 15th Edition
P28813	0	Determination of pH in Pet Food, Molasses, and Digest Products	20 Jul 2000	AOAC (15) 932.06
P39013	1	Determination of Phosphorus in Animal Feed Ingredients and Manure	1 Jul 2005	AOAC 965.18
S06013	1	Determination of Salt	1 Mar 2004	AOAC 969.10
S28551	1.1	Sieve Determination	1 Jan 1994	AOAC 965.22
U40013	3	Determination of Unsaponifiable Matter	8 Feb 2002	AOCS Ca6a-40

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MVTL Method Number	Revision	Title	Effective Date	Reference
A07515	4	Acid-Base Accounting	15 Feb 2006	EPA 600/2-78-054
A13023	4	Determination of Acidity	1 Dec 2005	SM (18) 2310B; ASTM D1067-E
A13023A	3	Acidity of Hydrocarbon Liquids	15 Oct 2006	ASTM D1093
A29541	5	Determination of Total Ethanol, Methanol, and Water Content in Petroleum Products	15 Nov 2006	ASTM-Information Document on Gasahol, X8
A45023	4	Determination of Alkalinity	1 Oct 2005	SM (18) 2320B
A45023B F45023C C78023B P25023B	1	Determination of Alkalinity, pH, Fluoride, and Specific Conductance using the Brinkmann Autotitration System	15 Nov 2006	SM (18) 2320B; 4500H-B; 2510B; 4500F-C
A55023A	5	Metals by ICP	1 Apr 2006	SM (18) 3500-A1; EPA 200.7, SW-846 6010B
A68041	3	Determination of Antifreeze in a Wear Metal Sample	15 Jul 2005	ASTM D2982-73
A68041A	0	Antifreeze in Oil Samples	15 Sep 2005	HACH
A75041	3	Determination of API Gravity	15 Oct 2006	ASTM Designation D287 and D1250 Petroleum Measurement Tables
A85541	4	Determination of Ash in an Oil Sample	15 Feb 2006	ASTM D482
A86545	4	Determination of Ash	15 Feb 2006	ASTM D482
A87031	5	Determination of Ash in Coal or Coke Samples	15 Nov 2005	ASTM D3174
A87031A	3	Determination of Ash in Wood or Wood Products	1 Oct 2005	ASTM D1102
A87131	3	Loss of Ignition of RDF Materials	1 Oct 2005	ASTM E830
A88031	6	Preparation of Samples for Mineral Ash Analysis	15 Nov 2005	ASTM D3682
A91031 A92031 A93031	4	Fusibility of Coal and Coke Ash	15 Nov 2005	ASTM D1857

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MVTL Method Number	Revision	Title	Effective Date	Reference
A94045	4	Determination of Asphaltenes	15 Oct 2006	ASTM Designation D-3279
A94045A	4	Determination of Pentane Insolubles by Membrane Filtration	15 Oct 2006	ASTM D4055-92
B02023	9	Determination of Biochemical Oxygen Demand	15 Nov 2006	SM (20) 5210B
B49023A	5	Boron ICP Analysis	1 Apr 2006	SM (18) Method 3500-B and 6010B; EPA 200.7
B54041	4	Determination of Water and Sediment in Petroleum	15 Feb 2006	ASTM D1796
B56023	0	Determination of Bromide and/or Bromine by ICP-MS	15 Nov 2005	SW-846 6020A; MVTL M26123
B75031A B75545A B76041A	5	Determination of Gross Calorific Value by Isoperibol Bomb Calorimeter	15 Feb 2006	ASTM D5865, Parr Manual 148, 156
B75031B B75545B B76041B	3	Determination of Gross Calorific Value by Isoperibol Bomb Calorimeter	15 Feb 2006	ASTM D40, Parr Manual 148, 156
B75031C B75545C B76041C	3	Determination of Gross Calorific Value by Isoperibol Bomb Calorimeter	15 Feb 2006	ASTM D240, Parr Manual 148, 156
B75031D B75545D B76041D	4	Determination of Gross Calorific Value by Isoperibol Bomb Calorimeter	15 Feb 2006	ASTM D240, Parr Manual 148, 156
B80131A1	3	Determination of Pellet Diameter	1 Oct 2005	APFI-PF 1-88
B80131A2	3	Determination of Pellet Length	1 Oct 2005	APFI-PF 1-88
B80131A3	3	Determination of Pellet Bulk Density	1 Oct 2005	APFI-PF 1-88; ASTM E873-82
B80131B	3	Determination of Pellet Fines	1 Oct 2005	APFI-PF-1-88
B94223	3	Determination of Antifreeze Freeze Point	2 May 2005	Misco Glycol/Battery Tester Manual
C02023	5	Determination of Chemical Oxygen Demand (COD)	1 Oct 2005	HACH COD Reactor Digestion Method 8000

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MVTL Method Number	Revision	Title	Effective Date	Reference
C10023A	5	Minerals by ICP	1 Apr 2006	SM (18) 3500-Ca; SW-846 6010B; EPA 200.7
C15015A	5	Determination of Calcium Carbonate Equivalence (CCE) and Neutralization Potential	1 Dec 2005	EPA 600/2-78-054, March 1978, USDA Handbook 60, 1969
C17031	3	Determination of Available Calcium Oxide in Quicklime and Hydrated Lime	1 Oct 2005	AWWA Standard for Quicklime and Hydrated Lime ANSI/AWWA B202-88, Sect. 4.2
C17131	4	Determination of Calcium in Lime Samples	1 Oct 2005	AOAC 3003.53
C17231	4	Determination of Sulfate in Lime Samples	1 Oct 2005	AOAC 3003.55
C32023	7	Determination of Chloride	15 Nov 2006	SM (18) 4500Cl-E; Lackett Quik Chem 10-117-07-1-A
C32823	1	Determination of Chloride by Potentiometric Titration	1 Feb 2007	AM (18) 4500Cl-D
C34323	2	Determination of Residual Chlorine	1 Dec 2005	SM (19) 4500-Cl, Hach Portable Colorimeter/pH Meter, 2-18
C45023	7	Determination of Hexavalent Chromium	15 Oct 2005	EPA 218.4
C46023 C80023 I65023 L20023 M15023 Z30034	3	Metals by Flame Atomic Absorption Analysis	15 Oct 2005	SM (18) 3111B
C58041	3	Determination of Cloudpoint	15 Feb 2006	ASTM D2500
C66123	3	Colilert Test for the Detection of Coliforms in Water	15 Feb 2006	SM 9221D, APHA 20th Ed.
C73023	4	Determination of Color	1 Oct 2005	SM (18) 2120B; EPA Method 110.2

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MVTL Method Number	Revision	Title	Effective Date	Reference
C78015	4	Determination of Electrical Conductivity on a Soil Extract	2 May 2005	EPA 600/2-78-054
C78023A	5	Determination of Specific Conductance Using the AB30 Accumet Conductivity Meter	1 Feb 2005	SM (18) 2510B
C95023	9	Determination of Total and Amenable Cyanide	15 Nov 2006	EPA 335.4; SM (19) 4500-CN E; SW-846 9012A; Leeman Labs AP1214; Lachat 10-204-00-1-A
C95323	3	Determination of Weak Acid Dissociable Cyanide (WAD CN)	15 Feb 2006	SW-846 Method 9012A, EPA 600/4-79-020, SM (19) 4500-CN-I, Lachat 10-204-00-1-A; Leeman Labs AP1214
D35023	4	Microwave Digestion Procedure	15 Nov 2005	CEM Application Note GM-10, Rev. 6-88
D35023A	2	Microwave Digestion Procedure	15 Nov 2005	CEM Application Note GM-10, Rev. 6-88
D40041	4	Distillation of Petroleum Products	15 Feb 2005	ASTM D86
F20123	3	Estimation of Fecal Coliforms by Most Probable Number	15 Feb 2006	SM (18) 9221E.1, APHA
F40045	4	Determination of Ignitability by the Setaflash Closed-Cup Method	15 Nov 2006	SW-846 1020, ASTM D3278
F40045C	3	Determination of Ignitability by the Pensky Martens Closed Cup Method	15 Nov 2006	ASTM Designation D93, EPA SW-846 Method 1010
F40045O	2	Determination of Flashpoint by Cleveland Open Cup Method	15 Nov 2006	ASTM Designation D92-90, EPA SW-846, Method 1020
F65423	3	Paint Filter Liquid Test	1 Jun 2005	SW-846 9095
F80041	4	Determination of Wear Metal Fuel Dilution	15 Oct 2006	ASTM D3278-79; SW-846 1020A
G65023B	2	Determination of Oil and Grease by Solid Phase Extraction	15 Feb 2006	EPA 1664 Rev. A, Horizon Training Manual and Users Guide

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H03045	5	Determination of Halogens as Chlorine	15 Oct 2005	ASTM D2361 E776, D808
H03145	2	Determination of Halogens as Bromine	15 Nov 2005	ASTM D808
H03245A	0	Determination of Halogens as Fluorine using the 815 Robotic USB Sample Processor XL	1 Jan 2006	SW-846 5050; ASTM D808
H05031	3	Determination of Hardgrove Grindability of Coal	1 Oct 2005	ASTM D409
I52231	3	Determination of Silica and Other Insolubles in Lime Samples	1 Oct 2005	AOAC 3003.51
I52231A	3	Determination of Objectionable Insoluble Matter in Quicklime	1 Oct 2005	AWWA Standard of Quicklime and Hydrated Lime ANSI/AWWA B202-88 Section 4.4
I64031	4	Determination of Iron and Aluminum Oxide in Lime Samples	1 Oct 2005	AOAC 3003.52
L40023	1	Lithium by ICP	1 Apr 2006	SM (18) 3500-Li; 200.7; 6010B
M08131	3	Determination of Magnesium in Lime Samples	1 Oct 2005	AOAC 3003.54
M23023C	1	Determination of Mercury in Solid Samples	15 Feb 2006	SW-846 7471
M23023E	0	Determination of Mercury in Waters (RCRA)	1 Sep 2006	EPA 7470A
M23023F	0	Mercury waters drinking and waste	15 Sep 2006	245.1
M23331A	0	Determination of Mercury in Coal	15 Sep 2005	ASTM D3684
M26123	4	Determination of Trace Metals in Waters and Wastes by ICP-MS	4 Nov 2005	EPA 200.8, SW-846 Method 6020
M26123A	0	Determination of Trace Metals by ICP-MS by Method 200.8	15 Oct 2006	EPA 200.8
M26123B	0	Determination of Trace Metals by ICP-MS by Method 6020	15 Oct 2006	SW946, 6020A
M39523S	0	Determination of Reactive Silica	1 Dec 2006	HACH Method 8185
M39523V	4	Determination of Centipoise Viscosity	15 Nov 2005	Lab Line Viscometer Operation Manual
M60031	4	Determination of Total Moisture	15 Nov 2005	ASTM D3173, D2961
M61531	3	Determination of Total Moisture	1 Oct 2005	ASTM D3173, D2961
M61031				

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MVTL Method Number	Revision	Title	Effective Date	Reference
M62045B	2	Determination of Karl Fischer Moisture using the 784 KFP Titrino	15 Feb 2006	ASTM D1744, Instructions for Use of the 784 KFP Titrino
N41023	6	Determination of Ammonia-Nitrogen	15 Nov 2006	SM (18) 4500NH3-H; QuikChem 10-107-06-01-B
N42023	5	Determination of Total Kjeldahl Nitrogen (TKN)	15 Nov 2006	SM (20) 4500-Norg-B
N42023A	5	Determination of Total Kjeldahl Nitrogen (TKN) in Solid Waste Samples	15 Nov 2006	SM (18) 4500Norg-B
N43023 N49023	6	Determination of Nitrate, Nitrite and Nitrate + Nitrite Nitrogen	15 Nov 2006	SM (18) 4500-NO3-F; QuikChem 10-107-04-1-A
O62015	5	Determination of Organic Matter	1 Jun 2005	NCR-13
P25023A	4	Determination of pH by the Accumet Basic pH Meter	1 Oct 2005	SM (18) 4500H-B
P25023S	4	Determination of pH in Soil	1 Dec 2005	SW-846 Method 9045
P26015	5	Determination of pH on a Saturated Paste	1 Dec 2005	Agronomy #9; EPA 600/2-78-054
P33023	6	Determination of Phenols	15 Nov 2006	SM (18) 5530D; QuikChem 10-210-00-1-A
P35023 P38023 P38323 M46031	6	Determination of Phosphorous, Orthophosphate and Phosphorus Pentoxide	15 Nov 2006	SM (18) 4500-P-F; QuikChem 10-115-01-1-E, 10-115-10-1-F
P65041	4	Determination of Pourpoint on a Petroleum Sample	15 Feb 2006	ASTM D56, D194
R20123	6	Determination of Reactive Sulfides	15 Jul 2005	SW-846 9030 Reactivity Methods
R20523	3	Determination of Reactive Cyanides	15 Feb 2006	SW 846 9014
S07015 S07115	4	Determination of Saturation Percentage	1 Oct 2005	Agronomy #9; EPA 600/2-78-054
S28631	2	Determination of Sieve Analysis	1 Oct 2005	ASTM D197-87

TABLE 22: Bismarck Laboratory Methods

MVTL Method Number	Revision	Title	Effective Date	Reference
S31023A	6	Silicon ICP Analysis	1 Apr 2006	SM (18) 3500-Si; EPA 200.7; SW-846 6010B
S33523A	5	Silver ICP Analysis	1 Apr 2006	SM (18) 3500-Ag; EPA 200.7, SW-846 6010B
S38031	3	Determination of Slaking Rate for Quicklime	1 Oct 2005	AWWA Standard for Quicklime and Hydrated Lime ANSI/AWWA B202.88 Section 4.3
S49023	3	Determination of Water Soluble Sodium	1 Oct 2005	ASTM E776-12
S59015 C10015 M05015 S56015	5	Determination of Sodium Absorption Ratio on a Soil Extract	1 Oct 2005	EPA 600/2-78-054
S62531 C17431	8	Determination of the % Sodium Oxide and/or the % Calcium Oxide in the Ash of Daily Coal Samples	15 Feb 2006	ASTM D3682
S67523	4	Determination of Settleable Matter	1 Oct 2005	EPA 160.5
S68023	4	Determination of Total Suspended Solids	1 Dec 2005	SM (18) 2540D
S69023 S68523	4	Determination of Total, Volatile and Fixed Solids	15 Feb 2006	SM (18) 2540B, EPA 160.4
S69023A	3	Determination of Total Solids in Sludge	15 Feb 2006	SM (18) 2540B, 2540G
S69523	4	Determination of Total Dissolved Solids	14 Feb 2006	SM (18) 2540C
S75031H	4	Determination of Oil & Grease (HEM) by Soxhlet Extraction	1 Apr 2006	SW-846, Method 9071B
S75525	4	Determination of Specific Gravity	15 Nov 2006	ASTM D1298
S80051	5	Aerobic Plate Count for Solids	15 Feb 2006	BAM, 7th Edition, 1992 FDA
S80051A	2	Aerobic (Heterotrophic) Plate Count in Waters by the Pour Plate Method	15 Feb 2006	SM (20) Method 9215B, APHA
S86541	2	Determination of Sugar in Petroleum Products	15 Apr 2006	NDDOH, In House Procedure, Sugar in Used Oils

TABLE 22: Bismarck Laboratory Methods

MVTL Method Number	Revision	Title	Effective Date	Reference
S88523	6	Determination of Sulfate	15 Feb 2006	SM (18) 4500-SO4 E: Quik Chem 10-116-10-1-A
S88523A	2	Determination of Sulfate by HACH Colorimeter	15 Feb 2006	HACH
S90123	6	Determination of Total Sulfides	15 Sep 2005	SM (18) 4500E SW-846 9030A
S92531	9	Determination of Total Sulfur or % SO ₃	1 Oct 2005	ASTM D4239 and D1552
S92531A	3	Sulfur ICP Analysis	1 Apr 2006	EPA 200.7
S95031	12	Determination of Pyritic Sulfur	15 Oct 2006	EPA 600/2-78-054; ASTM D2492
S96531	6	Determination of Sulfate	1 Apr 2006	ASTM D2492
T01023	4	Determination of Tannin and Lignin	15 Feb 2006	SM (18) 5550B
T04023	6	Determination of Total Organic Carbon	1 Dec 2006	EPA 415.1; SM (18) 5310C; SW-846 9060
T04023A	2	Determination of Total Organic Carbon and Dissolved Organic Carbon	16 May 2005	SM (19) 5310C
T20015 T20215 T20415	5	Determination of Texture by Hydrometer	1 Oct 2005	Field and Laboratory Methods Applicable to Overburdens and Minesoils, EPA 600/2-78-054, 1978
T20115	5	Determination of % Very Fine Sand	15 Nov 2006	Field and Laboratory Methods Applicable to Overburdens and Minesoils, EPA 600/2-78-054, 1978
T80023	4	Determination of Turbidity	1 Dec 2005	SM (18) 2130B
V30041	4	Determination of Saybolt Universal Viscosity	15 Nov 2006	ASTM D88
V31041	4	Determination of Visgage Viscosity	1 Jun 2005	Chevron Research Bulletin; Visgage Manual
V58031	6	Determination of Volatile Matter in Coal or Coke Samples	1 Oct 2005	ASTM D3175
W05041	4	Determination of Water Content in a Wear Metal Sample	15 Nov 2006	Chevron Research Bulletin

TABLE 22: Bismarck Laboratory Methods

MVTL Method Number	Revision	Title	Effective Date	Reference
W08023	3	Determination of Water Soluble Alkali	1 Feb 2007	MVTL-Bismarck

TABLE 23: Nevada Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
A45023	2	Alkalinity in Water and Wastewater	1 Apr 2005	SM (18) 2320B
A85013Man	1.1	Preparation of Manure Samples for Phosphorus and Potassium Analysis	23 Apr 2001	AOAC (15) 942.05
B02523 B02123 B02223 B02323	2.7	Determination of BOD, Soluble BOD, Settable BOD, cBOD, Soluble cBOD, Settable cBOD and Dissolved Oxygen in Waste Waters, Effluent and Polluted Waters	27 Mar 2001	SM (18) 5210
B49023	Original	Colorimetric Determination of Hot Water Extractable Boron	20 May 1996	NCR 221 - Revised
C13011 M08011	Original	Determination of Exchangeable Calcium and Magnesium (M08011)	20 May 1996	NCR 221 - Revised
C34123	1	Chlorine in Water and Wastewater	1 Apr 2005	SM (18) 4500-H,B
C45023	1	Hexavalent Chromium in Water and Wastewater	1 Apr 2005	SM (18) 3111C
C66023	3	Total Coliform in Drinking Water	26 Sep 2001	SM (18) 9222B, 9221E
C82011 I68011 M17011 Z33011	Original	DTPA Extraction for Copper, Iron (I68011), Manganese (M17011) and Zinc (Z33011)	20 May 1996	NCR 221 - Revised
F20023	2	Fecal Coliform in Water, Wastewater and Sludge	26 Sep 2001	SM (18) 9222D
M30400	1	Preparation of Aqueous Samples for Flame Atomic Absorption Analysis	25 Feb 2002	SM (18) 3010A, 3030F, 3005A
M30410	1	Preparation of Solid Samples for Atomic Absorption Analysis	25 Feb 2002	EPA 3050B

TABLE 23: Nevada Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
M55013Man	1.1	Determination of Total Moisture in Manures	19 Apr 2001	AOAC (15) 930.15
N41023	3.2	Ammonia Nitrogen in Water, Wastewater, Sludge and Soil Titrimetric Distillation Procedure	1 Nov 2000	SM (18) 4500 NH3E
N41023A	2	Ammonia Nitrogen by Electrode Water, Wastewater, Sludge, Soil- Ion Selective Electrode	1 Apr 2005	SM (18) 4500 NH3E, Orion Instruction Manual
N41023Man	4	Ammonia Nitrogen in Manure	1 Apr 2005	AOAC 920.03
N42023	4	Nitrogen, Total Kjeldahl in Water, Wastewater, Sludge and Soil (Titrimetric Distillation Procedure)	15 Apr 2005	SM (18) 4500 Norg-B, 4500 NH3E
N43023	3.2	Determination of Nitrogen, Nitrate-Nitrite	26 Oct 2000	SM (18) 4500 NO3-F; Lachat Quik Chem Method 10-107-01- 1-A
N52013	4	Total Kjeldahl Nitrogen in Manure	1 Apr 2005	AOAC 955.04
O61011	Original	Determination of Soil Organic Matter by Loss of Weight on Ignition	20 May 1996	NCR 221 - Revised
P28011	Original	pH Determination in Soil with Orion pH Meter	20 May 1996	NCR 221 - Revised
P30511	Original	Determination of Lime Requirement by the SMP-Buffer Method	20 May 1996	NCR 221 - Revised
P35023	Original	Colorimetric Determination of Extractable Phosphorus by Bray-II Ascorbic Acid Method	20 May 1996	NCR 221 - Revised
P39013MAN	1.1	Determination of Phosphorus in Manure	23 Apr 2001	AOAC (15) 965.17 Modified
P40011	Original	Colorimetric Determination of Extractable Phosphorus by Bray-I Ascorbic Acid Method	20 May 1996	NCR 221 - Revised
P42011	Original	Colorimetric Determination of Extractable Phosphorus by Olsen Method	20 May 1996	NCR 221 - Revised
P57011 S56511	Original	Determination of Exchangeable Potassium and Sodium (S56511)	20 May 1996	NCR 221 - Revised
S68023	2	Total Suspended Solids in Water and Wastewater	1 Apr 2005	USGS, 1-3765-85
S72011	Original	Determination of Soluble Salts by the Measurement of Electrical Conductance of 1:1 Extract of Soil	20 May 1996	NCR 221 - Revised
S80023	2.1	Heterotrophic or Standard Plate Count	1 Apr 2001	SM (18) 9515B

TABLE 23: Nevada Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
S91511	Original	Colorimetric Determination of Extractable Sulfur	20 May 1996	NCR 221 - Revised
T20011	Original	Determination of Particle Size (Texture) by Hydrometer Method	20 May 1996	

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
A20051	1.4	Determination of Aflatoxins in Corn, Peanuts and Other Small Grains by HPLC	31 Jul 1995	AOAC
A50023	Original	Determination of Allantoin in A.S. 140-C Cream/Gel by HPLC	22 Oct 2002	Standard Analytical Method 2764MOI.2, Journal of Pharmaceutical Sciences
A58951	Original	Analysis of L. Cysteine in Do Flo	14 Apr 2002	Dionex Tech. Note 21, CN Labs Method Development
B15223	7	Determination of Base/Neutrals and Acids in Water and Soil by GC/MS	16 Apr 2003	40 CFR, Method 625; SW-846 3510C, 3550B, 8270C
B15311	4	Determination of Base/Neutral Pesticides in Soil by GC/MS	3 Mar 2004	SW-846 3545, 3550, 8270C Modified
B15323		Determination of Base/Neutral Pesticides in Water by GC/MS	22 Dec 2003	SW-846 3510, 8141, 8270C Modified
B28013	Original	Analysis of Biotin in Vitamin Premixes	14 Apr 2004	Dionex Tech Note 21, CN Labs Method Development
C09023	Original	Determination of Caffeine in Water by GCMS	4 Mar 2004	MVTL Research and Development
C30023 S82723	Original	Cetyl & Stearyl Alcohol % Purity Assay by Gas Chromatography	13 Dec 2002	Sponsor 26 Method GC 104 US Pharmacopeia, XXIII
C40551	1	Cholesterol in Foods - Direct Saponification	15 Sep 2004	AOAC Method 994.10

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
C41013	Original	Determination of Choline Chloride by HPLC	15 Sep 2004	MVTL Method Development, Dionex Application Notes.
D50011	1.5	Determination of Diuron in Soil Using HPLC	25 Jul 2000	Journal of Agriculture & Food Chemistry
D50023	1.3	Determination of Diuron in Water Using HPLC	2 Feb 2001	MVTL R&D
E74023	Original	Determination of Ethyl Alcohol in Isagel7 by HPLC	22 Oct 2002	-
E80223	2	Determination of Propylene, Ethylene and Di-Ethylene Glycol in Water by GC with an FID Detector	26 Dec 2002	MVTL R&D
E80311	1.2	Determination of Propylene and Ethylene Glycol in Soil By Gas Chromatography Using Flame Ionization Detection (FID).	16 Feb 2001	-
E95011	8	Extractable Petroleum Products and Related Low Volatility Organic Compounds in Soil/TEH/EPA DRO	15 Sep 2004	SW-846 3545, 3550B, 8000, and 8015B; WI Modified DRO Method; IA OA-2 Method
E95023	1	Extractable Petroleum Products and Related Low Volatility Organic Compounds in Water/EPA DRO/TEH	15 Jul 2002	EPA SW-846 3545, 3550B, 8000 and 8015B, LUST Method OA-2
F15051	2	Fatty Acid Profile in Oils and Fat by GC	26 Jun 2001	AACC 58-17
F46511	1.2	Determination of EL-171 (Fluridone) in Soil	24 Apr 2001	Eli Lilly, AM-AA-CA-R017-AD-755
F46523	2	Determination of EL-171 (Fluridone) in Water by HPLC with UV Detector	30 Aug 2002	Eli Lilly, AM-AA-CA-R031-AC-755
F46623	Original	Analysis for Sonar SRP (Fluridone) by HPLC With UV Detection	2 Nov 1999	Method of Analysis for Sonar SRP, Sponsor 22
F46723 F47023 A60123	Original	Purity Determination of Fluridone, Fluriprimidol, and Ancymidol in Analytical and Technical Formulas	15 Apr 2005	Analytical Methods for Pest and Plant Grow Regulators, Vol. XIII, 1984, pgs. 252-253, Method ARZ Determination of Ancymidol

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
F55013	Original	Analysis of Folic Acid in Vitamin Premixes	15 Apr 2004	AOAC 944.12 modified Ralston Lab
F56011	Original	Determination of Fonofos (Dyphonate, Difonate) in Foods, Silages and Soils		FDA, PAM 180.221
H95123	3	Determination of Petroleum Volatile Organic Compounds (PVOCs), Gasoline Range Organics (EPA GRO) and Gasoline by OA-1 in Water	1 Apr 2003	SW-846 8000, 8015B; OA-1 Method
H95211	2.3	Extraction and Analysis of Polynuclear Aromatic Hydrocarbons (H95223, H95323)	2 Jun 2998	EPA 610; SW-846 8310
H95423	4.3	Extractable Petroleum Products and Related Low Volatility Organic Compounds in Water	18 Jul 2998	SW-846 3510, 3520; WI Modified DRO Method; IA OA-2 Method
H96523	2	Determination of Light Hydrocarbons in Water	15 Jun 2004	SW-846, Method 8015B Modified
I30023	1	Analysis of Imidizolidinyl Urea in Gentle Rain Antibacterial	1 Feb 2003	Sponsor Supplied Method
I75023	1.3	Determination of Isopropanol and Ethanol in Water by GC with FID	30 Nov 2000	MVTL R&D
I80011	1.1	Determination of Isoxaben and its Metabolite in Soil by HPLC/UV	5 Apr 2001	Eli Lily AM-AA-CA-R042-AD-755
I80023	1.3	Determination of EL-107 (Isoxaben) in Water by HPLC	17 Nov 2000	Eli Lily AM-AA-CA-R053-AC-755
L03251	Original	The Determination of Dextrorotatory/Levorotatory (D-/L-) Lactic Acid in Cheese by UV/VIS Spectroscopy	1 Apr 2005	R-biopharm. 0502.2.1. 140 507
M22013	Original	Analysis of Menadione (Vitamin K) in Vitamin Premixes	15 Apr 2004	AOAC 974.30, HPLC Modified
M28023	1	HPLC Analysis of Methyl and Propyl Paraben	2 Aug 2004	Sponsor Supplied Method
M64211	3	Determination of % Moisture in Soils	16 May 2003	SW-846, Method 5030B
N22051	Original	Analysis of Natamycin in Cheese, Delvocid Poder and Devocid Salt	15 Apr 2004	International Dairy Federation, Standard 140A:1992

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
O62311	3	Method 8081A - Organochlorine Pesticides in Soil	15 Apr 2002	SW-846 3510C, 3545, 3660, 8000 and 8081A
O62323	6	Method 608 8081A - Organochlorine Pesticides and PCBs in Water	13 Feb 2002	40 CFR Part 136 Method 608, SW-846 Methods 3510C, 3660, 8000, 8080A
O62811	2	Determination of Organochlorine/Organophosphorus Pesticides in Soil	15 Nov 2001	SW-846 3545, 3550
P01013	Original	Analysis of Pantothenic Acid in Vitamin Premixes	15 Apr 2004	AOAC 945.73, 945.74 HPLC Modified
P10011	Original	Polychlorinated Biphenyls (PCBs) Method 608, 8082 in Soil	15 Aug 2002	EPA SW-846, Methods 3545, 3660
P10023	Original	Polychlorinated Biphenyls (PCBs) Method 608, 8082 in Water	8 Aug 2002	CFR40, Part 136, Appendix A, Method 608: EPA SW-846, Method 3510C, 3660B, 3665A, 8082
P10111	2	Determination of PCBs in Sludge and composts by ECD	13 Nov 2000	SW-846 8080
P11523	1.4	The Determination of Organophosphorous Pesticides in Water by GC-MS	17 Feb 2001	SW-846 method 3510, 8141, 8081
P11523A	Original	Determination of PCBs, Organochlorine, and Organophosphorus Pesticides in Corn Syrup, Molasses, and Beet Sugar	5 Apr 2002	EPA SW-846 Method 3510B
P12023	Original	Polychlorinated Biphenyls (PCBs) in Oil	23 Aug 2002	EPA SW-846, Method 3580A, 3660B, 3665A, and 8082
P12051	1.5	Determination of PCBs, Organochlorine and Organophosphorous Pesticides in Animal Fat, Grease, Tallow and Feed	27 Mar 2001	EPA, AOAC 984.21
P17051	2	Determination of PCMX in Health Care Products by HPLC	15 Nov 2004	MVTL R&D
P22823	1	Petrolatum in Critic Acid and Baza Clear	1 Apr 2002	-
P50823	Original	Determination of Piperalin (gamma-[alpha-Pipecoline]-propyl-3,4-dichlorobenzoate) in Formulations	28 Jan 2000	Method AQT, Sponsor 07

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
P80113	0	Analysis of Pyridoxine HCl (Vitamin B6) in Vitamin Premixes	15 Apr 2004	AOAC 961.15, HPLC Modified
R30013 N31513 N31413	Original	Analysis of Riboflavin, Niacin and Niacinamide in Vitamin Premixes	15 Apr 2004	AOAC 970.65, Skurray, G.R. Fd Chem, 7,77-80 (1981)
R40023	1	Determination of Rhodamine WT in Groundwater by HPLC using Fluorescence Detection	21 Nov 1997	Water Research Vol 18, Nov. 2, 1984
S00723	Original	HPLC Analysis of Salicylic Acid in Shampoo and Cream	30 Jan 2003	HPLC Analysis of Salicylic Acid, Sponsor Supplied Method
S74551	2	Determination of Sorbic Acid in Cheese and Cheese Products	2 Aug 2004	AOAC 974.10; MVTL R&D
S84813 O63013	Original	Analysis of Sulfadimethoxine and Ormetoprim in Animal and Fish Feeds	15 Apr 2004	Canadian Food Inspection Agency, Laboratory Services Division
S86551	1.4	Determination of Total Sugars in Egg Yolk, Shake Premix, Corn Syrup, Whey Products and Dried Milk Products by HPLC	31 Jul 1995	AOAC; MVTL R&D
S87613	1	Sugars in Feed by HPLC/PAD	15 Apr 2004	Dionex Corp, Application Note 21 and 92
S90813	1	Analysis of Sulfamethazine in Food using HPLC	15 Sep 2004	Journal Association of Official Analytical Chemistry, Vol. 71, #4, 1988
T00523	2	Chlorinated Acid Herbicides in Water by GC-MS	14 May 2001	SW-846 8150/8270C Modified
T30013	Original	Analysis of Thiamine Mononitrate (Vitamin B1) in Vitamin Premixes	15 Apr 2004	AOAC 942.23 Modified Ralston Lab
T58011	3	Determination of Chlorinated Acid Herbicides in Soil by GC/MS	19 Oct 2001	SW-846 Method 3545/8151A/8270 Modified
T72011	1.3	Determination of Atrazine, Simazine, Propazine, Metribuzin, Cyanazine and Pendamethalin in Soil by GC/FTD	15 Nov 2000	FDA PAM
T73023	Original	HPLC Analysis of Triclosan	14 Oct 2002	Sponsor Supplied Method
V37013	Original	Analysis of Vitamin A in Vitamin Premixes	10 Oct 2003	AOAC 974.29

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
V37051	1.2	Determination of Vitamin A in Premix and Food	23 Jun 1993	AOAC 974.29
V38013	0	Vitamin B12 in Vitamin Premixes and Complete Feeds	15 Apr 2004	AOAC 952.20, HPLC Modified
V38051	3	Determination of Added Vitamin A in Feeds, Premixes, Concentrates and Liquid Supplements by HPLC	1 Sep 2004	AOAC 43.008-43.013; Cargill Lab Note-book #933
V40551	2	Determination of Vitamin C in Food Products by Titration	15 Mar 2005	AOAC 967.21, 984.26; MVTL R&D
V40613	Original	HPLC Determination of Lascorbyl-2monophosphate (Stay C35)	1 Dec 2004	Roche Vit. Inc., Technical Marketing Analysis
V41013	1	Vitamin D3 in Premixes and Complete Feeds	15 Apr 2004	AOAC 982.29
V42013	Original	Vitamin E in Vitamin Premixes	11 Dec 2002	CN Laboratory Developed Method
V43013	Original	HPLC Determination of Phytonadione (Vit K) in 5% Vitamin Premix	1 Dec 2004	CN Labs/MVTL Methods Development
V49911	2	Determination of Volatile Organics in Soil by Purge and Trap Method	19 Mar 2003	MDH 466; SW-846 8021B
V50023D	5	Determination of Volatile Organics in Water by Purge and Trap Method	19 Mar 2003	MDH 466; 49 CFR 209, Method 601, 602; SW-846 8021B
V50323	4	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	17 Mar 2003	40 CFR 624, SW-846 Method 8260B
V56023	Original	Determination of Volatile Fatty Acids (VFA) in WW, Sludge, and Silage	15 Sep 2004	Metropolitan Council WW Lab
V70111	3	Determination of Gasoline Range Organic Compounds and Petroleum Volatile Organic Compounds in Soil and Water (WI)	1 Sep 2004	WI LUST Manual
V70511	5	Determination of Diesel Range Organics (DRO) in Soil	13 Feb 2002	WI LUST Manual, Modified DRO Method; SW-141
V70523	5	Determination of Diesel Range Organics (DRO) in Water	28 Jun 2001	WI LUST Manual; Modified DRO Method; SW-141

TABLE 24: Organic Laboratory Method Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
V80011	3	Determination of Petroleum Volatile Organic Compounds (PVOCs), Gasoline Range Organics (EPA GRO) and Gasoline by OA-1 in Soil	1 Apr 2003	SW-846 8000 and 8015, OA-1

TABLE 25: New Ulm Field Services Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
C18023	1	Carbon Dioxide - Field	7 Feb 1991	Standard Method 4500CO ₂ C
C34123	1	Determination of Chlorine - Field	21 Jan 1997	EPA Code 3236
C78023F	1.1	Determination of Conductivity - Field	29 Sep 1993	EPA 120.1
E40023F	1	Determination of EH in the Field	7 Feb 1991	Quantitative Chemical Analysis
P25023	1	Determination of Field pH	14 Feb 1991	Standard Method 2550B
P25023F	Original	Procedure for Monitoring Field pH in Surface, Well, Waste and Industrial Waters	13 Apr 1995	
T18023	1	Determination of Temperature - Field	14 Feb 1991	EPA 515.1

TABLE 26: Microbiology Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
A20151	4	Detection of Aflatoxin	16 Jan 2006	AOAC 990.32
A20213	1	Veratox® HS Quantitative Aflatoxin High Sensitivity Test	15 Jan 2006	Veratox® HS kit
A30551	1	Detection of Amylase Activity	15 Oct 2005	MVTL
A65051	4	Determination of β -Lactam Antibiotics in Dairy Products by the Bacillus stearothermophilus Qualitative Disc Assay Method	1 Jul 2005	BSDA Protocol, Revised June 2002
B03151	3	Bacillus Cereus Plate Count for Foods and Food Ingredients	15 Jan 2006	FDA, BAM
B03151A	Original	Bacillus cereus MPN for Food and Food Ingredients	15 Jan 2006	BAM (8)

TABLE 26: Microbiology Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
C56051 C55051	1	Detection of Clostridium in Starch Products and Detection of Clostridium Perfringens in Food, Food Ingredients and Feed	1 Dec 2005	AOAC (16); Client Specific 279; CMMEF (3)
C66023 E03523	6	Enumeration of Total Coliforms in Drinking Water by Membrane Filtration (E03523)	15 Jan 2006	SM (18) 9222B, 9221E
C67051 E03051A	Original	Enumeration of Coliforms in Swabs used for the HACCP Program	1 Sep 2005	BAM
C69123	1	Estimation of Total Coliforms by Most Probable Number (MPN) Dilution Technique for Water of Other than Drinking Water Quality (non-potable)	15 Apr 2005	SM (20) 9221B, 9221C, 9221E
D36551	2	Direct Microscopic Cell Count and Somatic Cell Count	1 Nov 2004	SM (Dairy), APHA
E01023	Original	Detection of Escherichia Coli in Water by Membrane Filtration Using mTEDC	15 Jul 2005	EPA 1603; SM (20) 9222B
E28051	1	Solid Medium Method for the Enumeration of Total Enterobacteriaceae	2 May 2005	CMMEF (3) Chapter 24
E93051	2	Extraneous Materials in Products	1 Oct 2004	AOAC
F12551	4	Enumeration of Enterococci (fecal streptococcus) in Foods	15 Jan 2006	CMMEF (3)
F20051	Original	Estimation of Fecal Coliform Bacteria in Foods and Food Ingredients by Plate Method	16 Jun 2004	CMMFE (3), APHA
F20123	2	Estimation of Fecal Coliform by Most Probable Number (MPN) Dilution Technique for Water and Wastewater	1 Mar 2005	SM (20) 9221E1
F83013	1	Veratox® Quantitative Fumonisin Test	16 Jan 2006	Veratox® fumonisin kit insert, Veratox® Software for windows insert, Bio-Tek® EL301 Operators Manual
K40051	2	Determination of Klebsiella pneumoniae in Pharmaceutical Articles	2 May 2005	USP
L05051	2	Determination of Lactobacilli	15 Apr 2005	CMMEF (3)
L05151	2	Determination of Heterofermentative Lactobacilli	2 May 2005	CMMEF (3)
L33151	4	Isolation and Identification of Listeria Species Using the FDA Long	15 Oct 2005	Dairy SM (16)

TABLE 26: Microbiology Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
		Method		
L33651	Original	Detection of Listeria ssp. Using PDX-LIB	15 Jan 2006	AOAC Certificate 040501; BAM (8)
M11751	2	Enumeration of Mesophilic Aerobic Spores	1 Jun 2005	CMMEF (3)
M11851	2	Detection of Mesophilic Anaerobic Spores	15 Apr 2005	CMMEF (3)
M11851A	1	Detection of Mesophilic Anaerobic Sporeformers in Granular Starch, Dextrin and CWS Products	2 May 2005	Client Method CML-274
M66051	3	Detection of Yeast and Mold Counts in Foods by the ISO-GRID7 Method	1 Sep 2005	AOAC 995.21, ISO-GRID7 (3)
P73051 P72023	2	Enumeration of Proteolytic Bacteria in Food, Food Ingredients, and Water	15 Sep 2004	CMMEF (3)
P76051 P75023	1	Determination of Pseudomonas	1 Dec 2005	Difco and BBI Manual, (1)
P76151	5	Determination of Pseudomonas in Samples Requiring the USP Test Method	15 Oct 2005	USP22 NF17
P76151A	1	Determination of Pseudomonas in Starch Samples	2 May 2005	Client Specific Method, USP23/NF18
P78551 P78023	2	Enumeration of Psychrotrophic Bacteria	1 Apr 2005	CMMEF (3)
S01251	Original	RapidChek Salmonella, AOAC Certificate No. 030301	2 May 2005	RapidChek Salmonella Test Users Guide
S25051	3	Detection of Shigella	15 Apr 2005	CMMEF (3)
S80051	2	Enumeration of Total Aerobic Microbial Count in Swabs for the HACCP Program	15 Jun 2004	BAM (8); FSIS regulations
S90551	2	Enumeration of Sulfide Spoilage Spores	1 Apr 2005	Client Specific Method CML-260
S90551A	Original	Enumeration of Sulfide Spoilage Spores	2 May 2005	CMMEF (3)
T11851	2	Determination of Thermophilic Anaerobic Spores	1 Jul 2005	CMMEF (3)

TABLE 26: Microbiology Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
T11851A	1	Thermophilic Anaerobic Spore Count for Foods and Food Ingredients	1 Jun 2005	BAM (8)
T28051 T28923	2	Thermophilic Aerobic Plate Count for Foods and Food Ingredients	2 May 2005	BAM (8)
T28251	1	Thermophilic Anaerobic Plate Count for Foods and Food Ingredients	1 Jun 2005	BAM (8)
T66051 F41951	2	Enumeration of Thermophilic Aerobic Spores and Flat Sour Spores (F41951)	2 May 2005	CMMEF (3)
V90213	1	Veratox® 5/5 Quantitative DON Test	15 Jan 2006	Veratox 5/5, BIOTEK EL301

TABLE 27: New Ulm Soil Laboratory Methods Effective Prior to 2006 – Still in Use

MVTL Method Number	Revision	Title	Effective Date	Reference
C23011	1.1	Cation Exchange Capacity (CEC) by Ammonium Saturation and Acid NaCl Method	6 Jan 1997	

TABLE 28: New SOPs Effective After 2006

New Numbers	Effective Date	Title	Reference
10-10001-0	15 Feb 2006	Writing, Revising, Approving and Circulating Standard Operating Procedures (SOPs) (Replaced SOPs 81-5, 81-9, 81-16, 81-65)	
10-10002-0	15 May 2006	Complaint, Corrective Action and Preventive Action Resolution (Replaced 81-62)	
10-10003-0	15 May 2006	Use of the Term A2LA and the A2LA Accredited Symbol	
10-10007-0	15 May 2006	Management Review	
10-10008-0	15 May 2006	Sample Receipt and Log-in of Organic, Inorganic, and Micro Samples (Replaced SOP 81-50)	

TABLE 28: New SOPs Effective After 2006

New Numbers	Effective Date	Title	Reference
10-10012-0	1 May 2006	Action Planning	
10-10013-0	15 Oct 2006	Distribution of External Documents (Reference Manuals)	
20-10001-0	15 May 2006	MVTL Price Quote Forms	
20-10002-0	15 May 2006	Client Specific Contract Approval	
30-16001-0	1 Jun 2006	Washing of Dishware for Micro Lab (Replaced SOP 41-54)	
40-10001-0	1 Sep 2006	The Calibration and Use of Temperature Monitoring Devices (Replaces SOP 81-21)	
40-10004-0	1 Jan 2007	Identification, Calibration, Use and Maintenance of Volumetric, Serological and Mechanical Pipets and Dispensers	
40-10007-0	1 Jan 2007	Monitoring and Maintenance of Ambient Storage areas, digestion blocks, freezers, incubators, ovens, refrigerators, and waterbaths (Replaces 81-49 and 81-53)	
40-25003-0	15 Jan 2007	Determination of Non-Protein Nitrogen in Animal Feed Samples	AOAC 941.04
40-32013-0	15 Dec 2006	Determination of Amino Acids in Foods, Feeds and Ingredients	MVTL Development
40-32014-0	15 Dec 2006	Determination of L-Tryptophan in Foods, Feeds and Ingredients	MVTL Development
40-40001-0	15 Dec 2006	Use of Reference Cultures in the Microbiology Laboratory (New Ulm)	
40-40002-0	1 Dec 2006	Growth Promotion of Media	
40-40003-0	15 Jan 2007	Routine and Non -Routine Maintenance of Equipment in the Microbiology Laboratory	CMMEF (4)
40-41001-1	1 Feb 2007	Guidelines for Preparation of Dehydrated Media and the QC of Prepared Media (Replaces SOP 41-31 and 41-49)	
40-42001-0	15 May 2006	Enrichment and Detection of E. Coli O157:H7 in Raw Ground Beef and Trim (Replaces E04251)	MLG 5A.00; AOAC Certificate #070201; AOAC Certificate #50501
40-42002-0	15 May 2006	USDA Culture Method for the Detection of Listeria monocytogenes	MLG 8.04
40-42003-1	1 Feb 2007	Detection of Listeria using the bioMerieux VIDAS Enzyme Linked Fluorescent Assay (ELFA) system (Replaces L33251B and 41-45)	AOAC, 2004.06, AOAC RI (No. 981201); FDA BAM; VIDAS Listeria insert.
40-42004-0	15 May 2006	Detection of Listeria monocytogenes Using the BAX System	MLG 8A.01, 8.04; AOAC 2003.12; BAX Users Guide

TABLE 28: New SOPs Effective After 2006

New Numbers	Effective Date	Title	Reference
40-42005-0	15 May 2006	Detection of Salmonella by an Enzyme Linked Fluorescent Assay (ELFA) - BioMerieux (Replaces S01051B)	AOAC 2004.03, BAM (8)
40-42006-0	1 Jun 2006	Detection of Salmonella in Foods by the ISO-GRID® Method (Replaced S02651)	AOAC 991.12
40-42007-0	15 May 2006	Detection of Salmonella Using BAX System	BAX Users Guide; AOAC 2003.08; FDA Bam
40-42008-0	1 Aug 2006	Rapid Identification of the Family Enterobacteriaceae Using the Remel MICRO-ID (Replaces 41-35)	AOAC 989.12; REMEL Insert
40-42009-0	15 May 2006	Set-up and Use of the BAX System (Replaces SOP 41-36)	BAX Users Guide
40-42010-0	15 May 2006	Preparation of Samples for Analysis in the BAX System (Replaced 41-37)	BAX Users Guide
40-42011-0	1 Jun 2006	Set-up, Use, Maintenance and Troubleshooting for the bioMerieux VIDAS® System (Replaced 41-41 and 41-42)	VIDAS Users Guide
40-42012-0	1 Aug 2006	Rapid Identification of Listeria Species Using the Remel MICRO-ID Listeria (Replaces 41-16)	AOAC 992.18; MICRO-ID Insert
40-42013-1	1 Nov 2006	Detection of Escherichia coli Using the USP Method (E72051)	USP
40-42017-0	1 Aug 2006	Traditional Culture Method for the Identification of Salmonella (BAM Method)	FDA BAM
40-43001-0	15 May 2006	Detection of Coliforms, E. Coli, and Fecal Coliforms by Most Probable Number (MPN) Technique (Replaces C69051, E02051, E02051A, F20251)	BAM, CMMEF
40-43002-0	15 May 2006	Enumeration of Escherichia coli and Coliform Bacteria in Food, Food Ingredients, Liquids and Swabs by Pour Plate Method (Replaces C70051/E03051)	BAM, SMEDP (17)
40-43003-0	15 May 2006	Enumeration of Escherichia coli and Coliform Bacteria in Foods, Food Ingredients, Liquids and Swabs by Petrifilm™ Method (Replaces C70251/E03151)	3M, AOAC 991.14, 998-08
40-43004-0	15 May 2006	Enumeration of Molds and Yeasts in Foods, Food Ingredients, Feeds, Swabs, and Liquids (Replaces M66051A)	BAM
40-43005-0	15 May 2006	Aerobic Plate Count for Body Care Products, Cosmetics (Replaces	BAM

TABLE 28: New SOPs Effective After 2006

New Numbers	Effective Date	Title	Reference
		S80351)	
40-43006-0	15 May 2006	Detection of Staphylococcus aureus by Direct Plate Count and Most Probable Number (MPN) (Replaces S81551, S82051)	BAM (8)
40-43007-0	15 May 2006	Total Enterobacteriaceae Count (TEC) by Petrifilm	3M Petrifilm Insert; AOAC 2003.01
40-43008-0	15 Aug 2006	Use, Calibration and Maintenance of the Delta Dilutor (Replaces SOP 41-40)	Delta Users Guide
40-43009-0	1 Aug 2006	Counting Colonies on Exposure Petri, Petrifilm, and Rodac Plates Including Air Quality Monitoring of the Microbiology Laboratory (New Ulm) (Replaces SOP 41-34, S80051C/S80451)	SM (16); 3M inserts
40-43010-0	15 May 2006	Aerobic Plate Count for Foods, Food Ingredients, Liquids and Swabs by Pour Plate (Replaces S80051A)	BAM (8); SM (16); CMMEF (4)
40-43011-1	15 Dec 2006	Total Aerobic Microbial Count USP Method (Replaces S80023B, S80051B, S80151/S80251)	USP 30 NF25 Chapter <61>
40-43013-0	1 Aug 2006	Enumeration of Escherichia coli and Coliform Bacteria for the HACCP Program by Petrifilm Method (Replaces C70351/E03251, C67051/E02051A)	3M insert; AOAC 991.14; 998.08
40-43014-0	15 May 2006	Detection of S. aureus by Staph Express 3M Petrifilm	AOAC 2003.07, 2003.08, 2003.11
40-43015-0	15 May 2006	Aerobic (Heterotrophic) Plate Count in Waters by Pour Plate Method (Replaces S80023A)	SM (18) 9215A and 9215B
40-43016-0	1 Feb 2007	Detection of Staphylococcus aureus Using the USP Method	USP 30 NF25 Chapter <62>
40-43017-0	15 Dec 2006	Detection of Molds and Yeasts Using the USP Method (Replaces M66251)	USP 30 NF25 Chapter <61>
40-44002-0	1 Jan 2007	Detection of Escherichia coli by using the USP method for Sponsor 29 GLP Study	USP 28 NF23
40-45002-0	15 Dec 2006	Determination of Fecal Coliforms in Water by Membrane Filtration (Replaces F20023)	SM (20) 9221D
40-45004-0	15 Dec 2006	Detection of Coliforms in Potable and Nonpotable Water by Colilert (SM (20) 9223B) (Replaces C66123)	SM (20) 9223B

TABLE 28: New SOPs Effective After 2006

New Numbers	Effective Date	Title	Reference
40-45005-1	15 Dec 2006	Determination of Fecal Streptococcus and Enterococcus Groups in Water by Membrane Filtration (MF) (Replaces E30023 and F12423)	SM (20) 9230C
40-45007-0	15 Dec 2006	Determination of Pseudomonas aeruginose in Water by Membrane Filtration (MF) (Replaces P75023A)	SM (20) 9213E
40-45008-0	1 Aug 2006	Aerobic (Heterotrophic) Plate Count Water by Membrane Filtration (MF) (Replaces S79923)	SM (20) 9215D
40-50001-0	1 Dec 2006	Physical Characteristics of Pet Foods, Feeds, and Ingredients	NA
40-50002-0	1 Sep 2006	Moisture Determination in Feeds, Feedstuff and Forages (Replaces M55013)	NFTA; AOAC 930.15
40-50003-0	1 Sep 2006	Ash Analysis in Feeds and Feedstuff (Replaces A85013)	AOAC 942.05, 936.07
40-50004-0	1 Sep 2006	Moisture Determination in Oilseeds (Replaces M55013)	AOCS Ba 2A 38
40-50005-0	1 Sep 2006	Moisture Determination in Minerals (Replaces M55013)	AFPC
40-50006-0	15 Nov 2006	Calcium by Flame AA	AOAC 968.08 (17)
40-50007-0	1 Dec 2006	Determination of Nitrogen Protein by Combustion by Using the FP 428 FP or FP528 (Replaces N34513)	AOAC 990.03 (17)
40-50008-0	20 Dec 2006	Daily Operation and Maintenance of the Leco FP 528	Instrument Manual
50-10001-0	15 Jul 2006	Managing Retain Room Critical supplies	
50-10002-0	15 Aug 2006	Conducting Phase Audits (Replaced SOP 61-4)	
50-10003-0	15 May 2006	Recording, Distributing and Responding to an Internal MVTL Quality Assurance Audit (Replaced SOP 61-8)	
70-14001-0	15 May 2006	Performance Evaluations for Critical Supply Vendors	
70-14002-0	15 May 2006	Supplier Qualification for Critical Supply Purchases	