

ILLINOIS POLLUTION CONTROL BOARD
September 13, 1990

IN THE MATTER OF:)
)
SAFE DRINKING WATER ACT) R90-21
CORRECTIONS) (Rulemaking)
)

PROPOSAL FOR PUBLIC COMMENT

PROPOSED OPINION AND ORDER OF THE BOARD (by J. Anderson):

On August 9, 1990, the Board entered a final Opinion and Order in R88-26, which involved adoption of regulations which are identical in substance to USEPA regulations implementing the Safe Drinking Water Act (SDWA). The Board will utilize this Docket to make needed corrections to the regulations adopted in R88-26. The Board will receive public comment on this Proposal until 45 days after the date of publication in the Illinois Register.

Section 17.5 of the Act provides for quick adoption of regulations which are "identical in substance" to federal regulations; Section 17.5 provides that Title VII of the Act and Section 5 of the Illinois Administrative Procedure Act (APA) shall not apply. Because this rulemaking is not subject to Section 5 of the APA, it is not subject to first notice or to second notice review by the Joint Committee on Administrative Rules (JCAR).

The SDWA program was drawn from 40 CFR 141, 142 and 143 (1989).

The Board is aware of two areas in the R88-26 Order which may require correction. First, on August 6, 1990, the Environmental Protection Agency (Agency) filed a supplemental post-adoption comment, which included the text of the materials it asked to be incorporated by reference in its July 20, 1990, comment. (PC 14 in R88-26) The August 6 comment did not arrive in time to be reviewed in advance of the August 9 meeting. However, it will be necessary to revise the titles of the incorporations by reference to conform with the actual titles in the documents.

Second, on September 2, 1990, the Board received a request from Access Analytical Systems, Inc. (Access) for inclusion of the "MMO-MUG" or "Colilert" methods for bacterial analysis. As was discussed on page 47 of the August 9, 1990, Opinion in R88-26, these were omitted since 40 CFR 141.21(f) references only journal articles which do not actually set forth the methods. Access has provided supplemental materials which actually describe the methods.

The Board will make the August 6, 1990, Agency comment in R88-26 PC 2 in this Docket, and the September 2, 1990, Access comment PC 1. Also, on September 12, 1990, the Board received a letter from the Agency requesting inclusion of the MMO-MUG test. (PC 3)

PROCEDURAL HISTORY OF R88-26 and R90-4

The SDWA rules were recently adopted in Docket R88-26. The Board entered a Proposed Opinion and Order on October 5, 1989. The proposal appeared on December 1, 1989, at 13 Ill. Reg. 18690. Following the public comment period, the Board adopted a "Final" Opinion and Order on May 24, 1990. The Board then allowed a post-adoption comment period. On August 9, 1990, the Board withdrew the May 24 Opinion and Order, and substituted a new Opinion and Order. The final rules will appear in the Illinois Register in the near future.

In R88-26 the Board adopted regulations to correspond with USEPA rules adopted through June 30, 1989. The Board reserved Docket R90-4 to update the rules through December 31, 1989. However, on June 21, 1990, the Board dismissed R90-4, after determining that the USEPA amendments affected only language which was not to be adopted in R88-26.

APA AND INCORPORATIONS BY REFERENCE

The rulemaking concerns mainly mainly "incorporations by reference". In Part 611 these are mainly references to analytical methods published by a variety of sources. The Illinois Administrative Procedure Act (APA), and derived regulations, restrict the use of such references in rules. (Ill. Rev. Stat. 1989, ch. 127, par. 1006.02) An Illinois agency may incorporate such standards or guidelines into a rule without publishing the standard or guideline in full if:

1. The standard is from a federal agency or a nationally recognized organization.
2. The rule contains the address of the agency or organization for purposes of ordering the standard.
3. The agency or organization makes copies readily available to the public.
4. The rule includes the date of the standard.
5. The rule states that it does not include later editions or amendments.
6. The agency maintains a copy of the standard in its files for public inspection and copying.

Incorporations by reference have been a major issue in several identical in substance rulemakings, including the underground storage tank program adopted in R88-27 (April 27, 1989; 13 Ill. Reg. 9519, effective June 12, 1989).

Section 7.2(a)(4) authorizes the Board to incorporate USEPA rules by reference where it is possible to do so without causing confusion to the public. Section 7.2(a)(4) concerns "normal" incorporations by reference, in which the Board references a USEPA rule rather than adopting the verbatim text. "Normal" incorporations are usually placed at the appropriate point in the verbatim text. Section 611.102 concerns "abnormal" incorporations by reference. These mainly consist of technical documents which are referenced

in the body of the verbatim text. "Abnormal" incorporations also include USEPA rules which are referenced in the verbatim text, but which are not a part of the program the Board is supposed to adopt. For example, in the drinking water rules, USEPA may cite to analytical standards for wastewater.

The APA requirements on incorporation by reference are "enforced" by way of JCAR review of the documents during the first and second notice periods pursuant to Section 5 of the APA. Because Section 17.5 of the Act provides that Section 5 of the APA does not apply to identical in substance rulemaking, the Board is not required to obtain JCAR prior approval of these documents. However, Section 17.5 does not include a specific exemption from the APA limitations on incorporation by reference.

There is a potential conflict between the requirements of the APA and the identical in substance mandate if a USEPA rule cites to a document which the APA prohibits. In such a situation the Board balances the requirements of the APA and the Act. The Board considers: whether the reference is really necessary to the identical in substance program; whether the APA violation amounts to a due process question; and, whether there are alternative ways, such as setting forth the substance of the standard in the rule.

MMO-MUG TEST

40 CFR 141.21(f)(3)(iv) allows the use of the "MMO-MUG test" ("minimal medium ortho-nitrophenyl-beta-d-galactopyranoside - 4-methyl-umbelliferyl-beta-d-glucuronide test") or "Autoanalysis Colilert System" as a method for total coliform analysis. The corresponding Board rule is 35 Ill. Adm. Code 611.526. USEPA cites to a series of journal articles for these methods. The initial problem was that the APA authorizes incorporation by reference of "standards or guidelines", but not journal articles. This was discussed in the R88-26 Proposed Opinion as follows:

The fifth category is journal articles. These relate to two articles concerning P-A Coliform tests in the AWWA journal "Applied and Environmental Microbiology". The APA definitely does not authorize incorporation by reference of journal articles. Hopefully the contents of these will be in the 17th Edition of Standard Methods. If not, the Agency and USEPA will need to obtain permission from the authors and publisher to reprint the articles in the rules.
(R88-26 Proposed Opinion, October 5, 1989, p. 13)

The Board received no response whatsoever to this issue in the Proposed Opinion. (See PC 5 in R88-26, items 25 through 27) The Board therefore undertook to find the journal articles and attempt to obtain permission from the publisher. This led to several discoveries: First, the the journal is in fact published by the American Society for Microbiology (ASM), rather than AWWA as implied in the USEPA rule. Second, although the journal articles discuss the "MMO-MUG" test, they do not tell a person how to perform the test. Therefore, in the May 24, 1990, Opinion and Order, the Board dropped this method from the rules. The discussion was as follows:

The fifth category is Journal articles. These relate to two articles concerning Coliform tests in the ASM journal "Applied and Environmental Microbiology". These are referenced in 40 CFR 141.21(f) (Section 611.526). The APA does not authorize incorporation by reference of journal articles. In the Proposed Opinion, the Board expressed hope that the contents of these will be in the 17th Edition of Standard Methods. They do not appear to be present. The Board indicated that if standard methods were not available, the Agency or USEPA would need to obtain permission from the authors and publisher to reprint the articles in the rules. No one obtained permission.

These journal articles are reporting the results of field trials of new methods. The articles do not include the details of the methods themselves, such that a person read the articles and carry out the method. As such, they are not "standards or guidelines" which can be incorporated pursuant to Section 6.02(a) of the APA.

The USEPA rule indicates that these journal articles are available from the AWWA. The Board called AWWA. They had never heard of them. The journal is in fact published by the American Society for Microbiology, ASM Publications Department, 1913 I St., N.W., Washington, D.C. 20006 (202) 833-9680. They make reprints available, but in minimum orders of 100 copies.

54 Fed. Reg. 29998, July 17, 1989, appears to be the only USEPA action during the first update period for these rules. (July 1 through December 31, 1989.) This adds to this reference additional journal articles, which suffer the same flaws. The Board requests clarification of the agencies' position during the final comment period. (R88-26 Opinion of May 24, 1990, p. 30)

The Board received no response whatsoever to this issue during the post-adoption comment period. (See PC 14 in R88-26, p. 18 - 21, 47) On August 9, 1990, the Board therefore adopted the rules without reference to the MMO-MUG test. (R88-26 Opinion of August 9, 1990, p. 47)

As is discussed in the final paragraph of the above quotation, on July 17, 1989, USEPA added additional journal articles discussing the MMO-MUG test. This was the only USEPA action during the July 1 - December 31, 1989 update period. On June 21, 1990, the Board dismissed R90-4, after determining that the journal articles would not appear in the Board rules in the first place. The Board received no comment whatsoever on R90-4.

Following the final adoption of R88-26, the Board was contacted by Access. The MMO-MUG test is a proprietary method in which Access sells tubes containing the a culture medium and the "Colilert reagent". Coliform bacteria metabolize the ortho-nitrophenyl-beta-d-galactopyranoside, freeing o-nitrophenol, which is detected through color change.

Access has provided the Board with a number of documents describing the test. As noted above, the journal articles cited by USEPA discuss the MMO-MUG test, but do not describe it. Rather, they start with the assumption that the reader is already familiar with the test itself. Access has also provided an article describing the test, entitled "Rapid specific environmental coliform monitoring", by S. Stratman, American Laboratory, July, 1988. However, this is still a journal article. The better reference appears to be the instruction sheet which Access provides with the culture medium and reagent.

Although the instruction sheet has the format of a "standard or guideline", it comes from a private company. However, in view of USEPA's incorporation by reference of this method, the Board will accept Access as a "nationally recognized organization" for purposes of this identical in substance rulemaking.

There are two types of colilert test: a presence absence (P/A) test and a most probable number (MPN) test. The latter actually exists in at least three variations. All appear to be encompassed within the USEPA references.

A possible conflict exists between 40 CFR 141 and the colilert methods. While the former requires sample collection in accordance with the 16th Edition of Standard Methods, the latter requires the 17th Edition.

As discussed above, USEPA added additional references to the MMO-MUG test in the July 17, 1989, Federal Register. However, these amendments appear to amend USEPA language which had been repealed on June 29, 1990. Since the repealed language does not appear in the Board rules, there is no place to insert these additional references. The Board has therefore proposed no changes in response to the July 17, 1989, USEPA amendments, but **solicits comment.**

OTHER INCORPORATION BY REFERENCE QUESTIONS

In PC 14 in R88-26, the Agency indicated that certain out-of-date analytical methods had to be referenced in Part 611. On August 6, 1990, the Agency provided the Board with a collection of many of the methods it wanted referenced, but this was not received in time to aid in preparing the Order in R88-26. The Board attempted to follow the Agency's recommended Methods, but many of the references were inaccurate or incomplete, since the Board did not yet have the documents in front of it at the time the Order was drafted.

The Board has below corrected and completed the references to correspond with the documents received from the Agency. The following items referenced in R88-26 are still missing:

ASTM Method D992-71

611.606(g)(1)(3)

ASTM Method D1688-84D	611.606(m)(1)
Standard Methods, 13th Edition:	
Methods 302, 303, 304, 305 and 306	611.720(a)(2)
Standard Methods, 14th Edition:	
Methods 404A and B(4)	611.606(a)(2)(B)
Methods 419C and D	611.606(g)(2)(3)
Method 605	611.606(g)(2)(C)
Standard Methods, 16th Edition:	
Method 43A and C	611.606(j)(A)
Methods 408C, D, E and F	611.531(e)
Method 412D	611.606(o)(2)
Methods 413 B and E	611.606(j)(2)
Method 908D	611.531(a) and (b)
Method 909C	611.531(a)

The Board has left these in the proposal on the assumption that copies will be forthcoming from the Agency. However, the Board emphasizes that, **unless it receives copies of these documents, the documents and analytical methods will be deleted from the rules.**

SECTION-BY-SECTION DISCUSSION

Section 611.102

This is the incorporations by reference Section. It includes the complete "library-type" reference to the documents which are used in subsequent Sections.

As is discussed in general above, the Board has added a definition of "MMO-MUG test", the term which will be used in the rules. The test is available from Access, whose address and phone number are now the first entry in subsection (b).

Most of the ASTM and Standard Methods references have been amended to conform with the numbers and titles in the documents submitted by the Agency. The Board has proposed to delete ASTM Methods D1067, D1126 and D1293. These were used in the corrosivity monitoring in Proposed Sections 611.621 et seq. in the R88-26 Proposal. Corrosivity monitoring was dropped, as was discussed on page 92 of the August 9, 1990 Opinion in R88-26. In that this appears to have been the only use made of these references, the Board has

proposed to delete them.

The Board has proposed to delete the reference to Standard Methods, 16th Edition, Method 912K. As was discussed on page 62 of the August 9, 1990, Opinion in R88-26, this reference was used in the draft Guidance Manual for the determination of "groundwater under the direct influence of surface water", which is reflected in Section 611.212. However, in that the reference was dropped from the final version of the Guidance Manual, the Board dropped it from Section 611.212. In that this appears to be the only use of Method 912K, the Board has proposed to delete it from the incorporation by reference Section.

Section 611.526

To this Section is added the reference to the MMO-MUG test discussed above.

Section 611.606

In subsection (a), the reference to "ASTM 2972" has been modified to "ASTM 2972A or B", to conform with the Agency documentation.

Section 611.610

In subsection (d), Standard Methods, 14th Edition, "Method 325B" has been modified to "Method 320 and 320A" to conform with the Agency documentation.

Section 611.720

In subsection (b)(1), "NTIS" has been specified as the source of "Procedures for Radiochemical Analysis...", to conform with Section 611.102.

ORDER

The Board proposes to amend 35 Ill. Adm. Code 611 to read as follows. The Board will receive written public comment for a period of 45 days after the date of publication in the Illinois Register.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 611
PRIMARY DRINKING WATER STANDARDS

SUBPART A: GENERAL

Section	
611.100	Purpose, Scope and Applicability
611.101	Definitions
611.102	Incorporations by Reference
611.103	Severability
611.108	Delegation to Local Government
611.109	Enforcement

611.110 Special Exception Permits
611.111 Section 1415 Variances
611.112 Section 1416 Variances
611.113 Alternative Treatment Techniques
611.114 Siting requirements
611.115 Source Water Quality
611.120 Effective dates
611.121 Maximum Contaminant Levels
611.125 Fluoridation Requirement
611.126 Prohibition on Use of Lead

SUBPART B: FILTRATION AND DISINFECTION

Section
611.201 Requiring a Demonstration
611.202 Procedures for Agency Determinations
611.211 Filtration Required
611.212 Groundwater under Direct Influence of Surface Water
611.213 No Method of HPC Analysis
611.220 General Requirements
611.230 Filtration Effective Dates
611.231 Source Water Quality Conditions
611.232 Site-specific Conditions
611.233 Treatment Technique Violations
611.240 Disinfection
611.241 Unfiltered PWSs
611.242 Filtered PWSs
611.250 Filtration
611.261 Unfiltered PWSs: Reporting and Recordkeeping
611.262 Filtered PWSs: Reporting and Recordkeeping
611.271 Protection during Repair Work
611.272 Disinfection following Repair

SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

Section
611.280 Point-of-Entry Devices
611.290 Use of other Non-centralized Treatment Devices

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCL's)

Section
611.300 Inorganic Chemicals
611.310 Organic Chemicals
611.311 VOCs
611.320 Turbidity
611.325 Microbiological Contaminants
611.330 Radium and Gross Alpha Particle Activity
611.331 Beta Particle and Photon Radioactivity

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.480 Alternative Analytical Techniques
611.490 Certified Laboratories
611.491 Laboratory Testing Equipment
611.500 Consecutive PWSs

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.521 Routine Coliform Monitoring
611.522 Repeat Coliform Monitoring
611.523 Invalidation of Total Coliform Samples
611.524 Sanitary Surveys
611.525 Fecal Coliform and E. Coli Testing
611.526 Analytical Methodology
611.527 Response to Violation
611.531 Analytical Requirements
611.532 Unfiltered PWSs
611.533 Filtered PWSs

SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.560 Turbidity

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.601 Requirements
611.602 Violation of State MCL
611.603 Frequency of State Monitoring
611.606 Analytical Methods
611.607 Fluoride Monitoring
611.610 Special Monitoring for Sodium

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.641 Sampling and Analytical Requirements
611.645 Analytical Methods
611.648 Sampling for VOCs
611.650 Monitoring for 36 Contaminants
611.657 Analytical Methods for 36 Contaminants

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.680 Sampling, Analytical and other Requirements
611.683 Reduced Monitoring Frequency
611.684 Averaging
611.685 Analytical Methods
611.686 Modification to System

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section
611.720 Analytical Methods
611.731 Gross Alpha
611.732 Manmade Radioactivity

SUBPART T: REPORTING, PUBLIC NOTIFICATION AND RECORDKEEPING

Section
611.830 Applicability
611.831 Monthly Operating Report

611.832	Notice by Agency
611.833	Cross Connection Reporting
611.840	Reporting
611.851	Reporting MCL and other Violations
611.852	Reporting other Violations
611.853	Notice to New Billing Units
611.854	General Content of Public Notice
611.855	Mandatory Health Effects Language
611.856	Fluoride Notice
611.858	Fluoride Secondary Standard
611.860	Record Maintenance
611.870	List of 36 Contaminants
Appendix A	Mandatory Health Effects Information
Appendix B	Percent Inactivation of G. Lamblia Cysts
Appendix C	Common Names of Organic Chemicals
Table A	Total Coliform Monitoring Frequency
Table B	Fecal or Total Coliform Density Measurements
Table C	Frequency of RDC Measurement

AUTHORITY: Implementing Sections 17 and 17.5 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1017, 1017.5 and 1027.

SOURCE: Adopted in R88-26 at 14 Ill. Reg. , effective ; amended in R90-21 at 14 Ill. Reg. , effective

SUBPART A: GENERAL

Section 611.102 Incorporations by Reference

- a) Abbreviations. The following abbreviated names are used for materials incorporated by reference:

"AEPA-1 Polymer" is available from Advanced Polymer Systems.

"ASTM" means American Society for Testing and Materials

"Indigo method" is as described in "Standard Methods", 17th Edition, Method 4500-03 B.

"Inductively Coupled Plasma Method" means "Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis in Water and Wastes -- Method 200.7, with appendix" See 40 CFR 136, Appendix C.

"Inorganic Methods" means "Methods for Chemical Analysis of Water and Wastes", available from NTIS

"Microbiological Methods" means "Microbiological Methods for Monitoring the Environment, Water and Wastes", available from NTIS.

"MMO-MUG Test" means "minimal medium ortho-nitrophenyl-beta-d-galactopyranoside - 4-methyl-umbelliferyl-beta-d-glucuronide test", available from Access Analytical Systems, Inc.

"NCRP" means "National Council on Radiation Protection".

"NTIS" means "National Technical Information Service".

"Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water", available from USEPA.

"Pesticide Methods" means "Methods for Organochlorine Pesticides and Chloro-phenoxy Acid Herbicides in Drinking Water and Raw Source Water", available from USEPA.

"Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water", available from NTIS.

"SPE Test Method" means "Solid Phase Extraction Test Method", available from J.T. Baker Chemical Company.

"Standard Methods", means "Standard Methods for the Examination of Water and Wastewater", available from the American Waterworks Association.

"Technicon Methods" means "Fluoride in Water and Wastewater", available from Technicon.

"USGS Method" means "United States Geological Survey Method"

- b) The Board incorporates the following publications by reference:

Access Analytical Systems, Inc., 21 Business Park Drive,
Branford, CT 06405 800/321-0207

MMO-MUG tests: Colilert P/A or Colilert MPN.

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19103

ASTM Method D858-88, "Standard Test Methods for Manganese in Water", approved August 19, 1988.

ASTM Method D992-71

-ASTM Method D1067-88, "Standard Test Methods for Acidity of Alkalinity of Water", approved August 19, 1988.

ASTM Method D1126-86, "Standard Test Method for Hardness in Water", approved August 29, 1988.

ASTM Method D1179-72A or B "Standard Test Methods for Fluoride in Water", approved July 28, 1972, reapproved

1978.

-ASTM Method D1293-84, "Standard Test Methods for pH of Water", approved October 26, 1984--

ASTM Method D1428-64, "Standard Test Methods for Sodium and Potassium in Water and Water-Formed Deposits by Flame Photometry", approved August 31, 1964, reapproved 1977.

ASTM Method D1687-77D, "Standard Test Methods for Chromium in Water", approved February 18, 1977.

ASTM Method D1688-84D or E, "Standard Test Methods for Copper in Water".

ASTM Method D1889-88a, "Standard Test Method for Turbidity in Water", approved June 24, 1988.

ASTM Method D2459-72, "Standard Test Method for Gamma Spectrometry in Water," 1975, reapproved 1981, discontinued 1988.

ASTM Method D2907-83, "Standard Test Methods for Microquantities of Uranium in Water by Fluorometry", approved May 27, 1983.

ASTM Method D2972-78A or B, "Standard Test Methods for Arsenic in Water", approved August 18, 1978.

ASTM Method D3086-79, "Standard Test Methods for Organochlorine Pesticides in Water", approved November 30, 1979.

ASTM Method D3223-79, "Standard Test Method for Total Mercury in Water", approved November 30, 1979.

ASTM Method D3478-85, "Standard Test Method for Chlorinated Phenoxy Acid Herbicides in Water", approved November 29, 1985.

ASTM Method D3557-78A or B, "Standard Test Methods for Cadmium in Water", approved July 28, 1978.

ASTM Method D3559-78A or B, "Standard Test Methods for Lead in Water", approved July 28, 1978.

ASTM Method D3859-79, "Standard Test Methods for Selenium in Water", approved November 30, 1979.

ASTM Method D3867-79A or B, "Standard Test Methods for Nitrite-Nitrate in Water", approved November 30, 1979.

American Waterworks Association et al., 6666 West Quincy Ave.,

Denver, CO 80235 (303) 794-7711

Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971.

Methods 302, 303, 304, 305 and 306

Standard Methods for the Examination of Water and Wastewater, 14th Edition, 1976.

Method-s- 301A II, -III, IV, VI and VII-Determination of Cadmium, etc. by Direct Aspiration into an Air-Acetylene Flame.

Method 301A III, Determination of Low Concentrations of Cadmium, etc. by Chelation with Ammonium Pyrrolidine Dithiocarbamate, and Extraction into Methyl Isobutyl Ketone

Method 301A IV, Determination of Aluminum, etc. by Direct Aspiration into a Nitrous Oxide Acetylene Flame

Method 301A VI, Determination of Mercury by Cold Vapor (Flameless) Atomic Absorption

Method 301A VII, Determination of Arsenic and Selenium by Conversion to their Hydrides and Aspiration of the Gas into the Argon-Hydrogen Flame

Method -325B-320 and 320A, Sodium, Flame Photometric Method

Method 404A and B(4)

Method 413D, Cyanide, Colorimetric Method

Method 419C and D

Method 509A- and B-, Organochlorine Pesticides (TENTATIVE)

Method 509B, Chlorinated Phenoxy Acid Herbicides (TENTATIVE)

Method 605

Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985.

Method 43A and C

Method 212, Temperature

Method 214A, Turbidity, Nephelometric Method --
Nephelometric Turbidity Units

Method-s- 303A- and B-, Determination of Antimony,
etc. by Direct Aspiration into an Air-Acetylene Flame

Method 303B, Determination of Low Concentrations of
Cadmium, etc. by Chelation with Ammonium Pyrolysine
Dithiocarbamate (APDC) and Extraction into Methyl
Isobutyl Ketone (MIBK)

Method 304, Determination of Micro Quantities of
Aluminum, etc. by Electrothermal Atomic Absorption
Spectrometry

Method 408C, D, E and F

Method 410B- and C-, Chlorine Dioxide, Amperome
Method

Method 410C, Chlorine Dioxide, DPD Method (TENTATIVE)

Method 412D

Method 413 B and E

Method 423, pH Value

Method 907A, Pour Plate Method

Method 908-, 908A, B, C, D and E-, Multiple Tube
Fermentation Technique for Members of the Coliform
Group

Method 908A, Standard Coliform Multiple-Tube (MPN)
Tests

Method 908B, Application of Tests to Routine
Examinations

Method 908C, Fecal Coliform MPN Procedure

Method 908D

Method 908E, Presence-Absence (P-A) Coliform Test
(TENTATIVE)

Method 909-, 909A, B and C-, Membrane Filter Technique
for Members of the Coliform Group

Method 909A, Standard Total Coliform Membrane Filter
Procedure

Method 909B, Delayed Incubation Total Coliform Procedure

Method 909C, Fecal Coliform Membrane Filter Procedure

~~Method 912K-~~

Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989.

Advanced Polymer Systems, 3696 Haven Avenue, Redwood City, CA 94063 415/ 366-2626:

AEPA-1 Polymer. See 40 CFR 141.22(a). Also, as referenced in ASTM D1839.

ERDA Health and Safety Laboratory, New York, NY

HASL Procedure Manual, HASL 300, 1973. See 40 CFR 141.25(b)(2).

J.T. Baker Chemical Company, 22 Red School Lane, Phillipsburg, NJ 08865:

Solid Phase Extract (SPE) Test Method Number SPE-550. See 40 CFR 141.24(e), footnote 6.

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD (301) 657-2652.

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, June 5, 1959.

NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4600.

"Methods of for Chemical Analysis of Water and Wastes", J. Kopp and D. McGee, Third Edition, March, 1979. EPA-600/4-79-020, Doc. No. PB84-128677

"Microbiological Methods for Monitoring the Environment: Water and Wastes", R. Bodner and J. Winter, 1978. EPA-600/8-78-017, Doc. No. PB290-329/LP

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", H.L. Krieger and S. Gold, EPA-R4-73-014, May, 1973, Doc. No. PB222-154/78A

Technicon Industrial Systems, Tarrytown, NY 10591

"Fluoride in Water and Wastewater", Industrial Method #129-

71W, December, 1972 See 40 CFR 141.23(f)(10), footnotes 6 and 7.

"Fluoride in Water and Wastewater", #380-75WE, February, 1976. See 40 CFR 141.23(f)(10), footnotes 6 and 7.

United States Environmental Protection Agency, (202) 382-4359

"The Analysis of Trihalomethanes in Drinking Waters by the Purge and Trap Method", Method 501.1. See 40 CFR 141, Subpart C, Appendix C.

"The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," Method 501.2 See 40 CFR 141, Subpart C, Appendix C.

"Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis in Water and Wastes -- Method 200.7, with Appendix to Method 200.7" entitled, "Inductively Coupled Plasma-Atomic Emission Analysis of Drinking Water", March 1987. See 40 CFR 136, Appendix C.

"Interim Radiochemical Methodology for Drinking Water", EPA-600/4-75-008 (Revised) March, 1976.

"Methods for the Determination of Organic Compounds in Drinking Water", EPA/600/4-88/039, December, 1988.

"Methods for Organochlorine Pesticides and Chloro-phenoxy Acid Herbicides in Drinking Water and Raw Source Water"

"Methods of for Chemical Analysis of Water and Wastes". See NTIS

Microbiological Methods for Monitoring the Environment, Water and Wastes". See NTIS

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions". See NTIS

United States Environmental Protection Agency, Science and Technology Branch, Criteria and Standards Division, Office of Drinking Water, Washington D.C. 20460

"Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", October, 1939

USGS. United States Geological Survey.

Techniques of Water-Resources Investigation of the United States Geological Survey:

Book 5, Chapter A-1, "Methods for Determination of Inorganic substances in Water and Fluvial Sediments", 1979

Book 5, Chapter A-3, "Methods for Analysis of Organic Substances in Water," 1971

- c) The Board incorporates the following federal regulations by reference:

40 CFR 136, Appendix B and C (1989)

40 CFR 141.22(a) (1989)

40 CFR 141.23(f)(10), footnotes 6 and 7 (1989)

40 CFR 141.24(e), footnote 6 (1989)

40 CFR 141.25(b)(2) (1989)

40 CFR 141, Subpart C, Appendix C (1989).

- d) This Part incorporates no future amendments or editions.

(Source: Amended at 14 Ill. Reg. , effective)

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.526 Analytical Methodology

- a) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.
- b) Suppliers need only determine the presence or absence of total coliforms, a determination of total coliform density is not required.
- c) Suppliers shall conduct total coliform analyses in accordance with one of the following analytical methods, incorporated by reference in Section 611.102:
- 1) Multiple-Tube Fermentation (MTF) Technique, as set forth in:
 - A) Standard Methods, 16th Edition, Method 908, 908A and 908B, except that 10 fermentation tubes must be used; or
 - B) Microbiological Methods, Part III, Section B 4.1-4.6.4, pp. 114-118, (Most Probable Number Method), except that 10 fermentation tubes must be used; or
 - 2) Membrane Filter (MF) Technique, as set forth in:
 - A) Standard Methods, 16th Edition, Method 909, 909A and 909B; or

- B) Microbiological Methods, Part III, Section B.2.1-2.6, pp. 108-112; or
- 3) P-A Coliform Test, as set forth in: Standard Methods, 16th Edition, Method 908E-~~r~~-; or
- 4) MHO-MUG test.
- d) In lieu of the 10-tube MTF Technique specified in subsection (c)(1), a supplier may use the MTF Technique using either five tubes (20-ml sample portions or a single culture bottle containing the culture medium for the MTF Technique, i.e., lauryl tryptose broth (formulated as described in Standard Methods, 16th Edition, Method 908A, incorporated by reference in Section 611.102) as long as a 100-ml water sample is used in the analysis.
- e) Suppliers shall conduct fecal coliform analysis in accordance with the following procedure:
 - 1) When the MTF Technique or P-A Coliform Test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A bottle vigorously and transfer the growth with a sterile 3-mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium, defined below, to determine the presence of total and fecal coliforms, respectively.
 - 2) For Microbiological Methods, referenced above, which use a membrane filter, remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium. (The laboratory may first remove a small portion of selected colonies for verification). Gently shake the inoculated EC tubes to insure adequate mixing and incubate in a waterbath at 44.5 +/- 0.2 degrees C for 24 +/- 2 hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test.
 - 3) The preparation of EC medium is described in Standard Methods, 16th Edition, Method 908C.
 - 4) Suppliers need only determine the presence or absence of fecal coliforms, a determination of fecal coliform density is not required.

BOARD NOTE: Derived from 40 CFR 141.21(f) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

(Source: Amended at 14 Ill. Reg. , effective)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.606 Analytical Methods

Analyses conducted to determine compliance with Section 611.300 must be made in accordance with the following methods, incorporated by reference in Section 611.102. For approved analytical procedures for metals, the technique applicable to total metals must be used.

a) Arsenic:

- 1) ASTM Method D2972A or B; or
- 2) Standard Methods, 14th Edition:
 - A) Method 301A VII; or
 - B) Method 404A and 404B(4); or
- 3) USGS Methods, Method I-1062-78, pp. 61-63, Atomic Absorption - Gaseous Hydride; or
- 4) Inorganic Methods:
 - A) Method 206.2, Atomic Absorption Furnace Technique; or
 - B) Method 206.3; or
 - C) Method 206.4; or
- 5) Inductively Coupled Plasma Method 200.7.

b) Barium:

- 1) Standard Methods, 14th Edition, Method 301A IV; or
- 2) Inorganic Methods:
 - A) Method 208.1; or
 - B) Method 208.2, Atomic Absorption Furnace Technique; or
- 3) Inductively Coupled Plasma Method 200.7.

c) Cadmium:

- 1) ASTM Method D3557 A or B; or
- 2) Standard Methods, 14th Edition, Methods 301A II or III; or
- 3) Inorganic Methods:
 - A) Method 213.1; or
 - B) Method 213.2, Atomic Absorption Furnace Technique; or

- 4) Inductively Coupled Plasma Method 200.7.
- d) Chromium:
- 1) ASTM Method D 1327; or
 - 2) Standard Methods, 14th Edition, Methods 301A II or III; or
 - 3) Inorganic Methods:
 - A) Method 213.1; or
 - B) Method 213.2, Atomic Absorption Furnace Technique; or
 - 4) Inductively Coupled Plasma Method 200.7.
- e) Lead:
- 1) ASTM Method D 3551 A or B; or
 - 2) Standard Methods, 14th Edition, Methods 301A II or III; or
 - 3) Inorganic Methods:
 - A) Method 239.1; or
 - B) Method 239.2, Atomic Absorption Furnace Technique.
 - 4) Inductively Coupled Plasma Method 200.7.
- f) Mercury:
- 1) ASTM Method D 3224; or
 - 2) Standard Methods, 14th Edition, Method 301A VI, Cold Vapor Technique; or
 - 3) Inorganic Methods:
 - A) Method 245.1; or
 - B) Method 245.2, Automated Cold Vapor Technique.
- g) Nitrate:
- 1) ASTM:
 - A) Method D 3063 A or B; or
 - B) Method D 992; or
 - 2) Standard Methods, 14th Edition:

- A) Method 419C, Spectrometric, Cadmium Reduction;
 - B) Method 419D, Colorimetric Brucine; or
 - C) Method 605, Automated Cadmium Reduction.
- 3) Inorganic Methods:
- A) Method 352.1; or
 - B) Method 353.1, Automated Hydrazine Reduction; or
 - C) Method 353.2; or
 - D) Method 353.3; or
- h) Selenium:
- 1) Inorganic Methods
 - A) Method 270.2, Atomic Absorption Furnace Technique; or
 - B) Method 270.3; or
 - 3) USGS Methods, Method I-1667-78, pp. 237-239; or
 - 4) ASTM Method D 3859; or
 - 5) Standard methods, 14th Edition, Method 301A VII, Hydride Generation - Atomic Absorption Spectrophotometry.
- i) Silver:
- 1) Standard Methods, 14th Edition, Methods 301A II; or
 - 2) Inorganic Methods:
 - A) Method 272.1; or
 - B) Method 272.2, Atomic Absorption Furnace Technique; or
 - 3) Inductively Coupled Plasma Method 200.7.
- j) Fluoride:
- 1) ASTM D 1179 A or B; or
 - 2) Standard Methods, 16th Edition:
 - A) Methods 43A and 43C;
 - B) 413B; or

C) 413E; or

3) Inorganic Methods:

A) Method 340.1;

B) Method 340.2;

C) Method 340.3; or

4) Technicon Methods, Methods 129-71W or 330-75WE

BOARD NOTE: Derived from 40 CFR 141.23(f) (1989).

k) Manganese:

1) ASTM D 853;

2) Standard Methods, 16th Edition, Method 303A.

3) Inorganic Methods: Methods 243.1 or 243.2; or

4) Inductively Coupled Plasma Method 200.7.

BOARD NOTE: These methods are used for additional State requirements.

l) Iron:

1) Inorganic Methods: 236.1 or 236.2; or

2) Inductively Coupled Plasma Method 200.7.

3) Standard Methods, 16th Edition, Method 303A

BOARD NOTE: These methods are used for additional State requirements.

m) Copper:

1) ASTM D 1508 D or E;

2) Standard Methods, 16th Edition:

A) Methods 303A or B;

B) Method 304; or

BOARD NOTE: These methods are used for additional State requirements.

3) Inorganic Methods: 220.1 or 220.2; or

4) Inductively Coupled Plasma Method 200.7.

n) Zinc:

1) Inorganic Methods 289.1 or 289.2; or

2) Standard Methods, 16th Edition, Method 303A

BOARD NOTE: These methods are used for additional State requirements.

o) Cyanide:

1) Inorganic Method 335.2; or

2) Standard Methods, 16th Edition, Method 412D

BOARD NOTE: These methods are used for additional State requirements.

(Source: Amended at 14 Ill. Reg. , effective)

Section 611.610 Special Monitoring for Sodium

- a) CWS suppliers shall collect and analyze one sample per plant at the entry point of the distribution system for the determination of sodium concentration levels; samples must be collected and analyzed annually for CWSs utilizing surface water sources in whole or in part, and at least every three years for CWSs utilizing solely groundwater sources. The minimum number of samples required to be taken by the supplier is based on the number of treatment plants used by the supplier, except that multiple wells drawing raw water from a single aquifer may, with the Agency approval, be considered one treatment plant for determining the minimum number of samples. The Agency shall require the supplier to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.
- b) The CWS supplier shall report to the Agency the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as specified by special exception permit, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was received.
- c) The CWS supplier shall notify the Agency and appropriate local public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this subsection must be sent to the Agency within 10 days of its issuance.

- d) Analyses for sodium must be performed by the following methods, incorporated by reference in Section 611.102:
- 1) Standard Methods, 14th Edition, Method ~~320~~ 320 and 320A, flame photometric method;
 - 2) Inorganic Methods:
 - A) Method 273.1, Atomic Absorption - Direct Aspiration; or
 - B) Method 273.2, Atomic Absorption - Graphite Furnace; or
 - 3) ASTM Method D1428.

BOARD NOTE: Derived from 40 CFR 141.41 (1989).

(Source: Amended at 14 Ill. Reg. , effective)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.720 Analytical Methods

- a) The methods specified below, incorporated by reference in Section 611.102, are to be used to determine compliance with Sections 611.330 and 611.331, except in cases where alternative methods have been approved in accordance with Section 611.430.
- 1) Radiochemical Methods;
 - 2) Standard Methods, 13th Edition:
 - A) Gross Alpha and Beta: Method 302;
 - B) Total Radium: Method 304;
 - C) Radium-226: Method 305;
 - D) Strontium-89,90: Method 303;
 - E) Tritium: Method 306.
 - 3) ASTM Methods:
 - A) Cesium-134: ASTM D-2459;
 - B) Uranium: ASTM D-2907.
- b) When the identification and measurement of radionuclides other than those listed in subsection (a) is required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

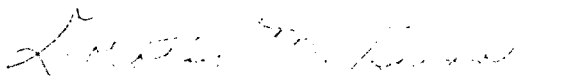
- 1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available from -USEPA-NTIS.
 - 2) HASL Procedure Manual, HASL 300.
- c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96 sigma where sigma is the standard deviation of the net counting rate of the sample).
- 1) To determine compliance with Section 611.330(a) the detection limit must not exceed 1 pCi/L. To determine compliance with Section 611.330(b) the detection limit must not exceed 3 pCi/L.
 - 2) To determine compliance with Section 611.331 the detection limits must not exceed the concentrations listed in that Section.
- d) To judge compliance with the MCLs listed in Sections 611.330 and 611.331, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 (1989).

(Source: Amended at 14 Ill. Reg. , effective)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 15th day of September, 1990, by a vote of 7-1.


Dorothy M. Gunn, Clerk
Illinois Pollution Control Board