

standard methods

for the Examination of Water and Wastewater

How To Prepare JTG Manuscripts

The end result of JTG activities will be a manuscript to appear in *Standard Methods* upon completion of the consensus approval process. It is the responsibility of JTG Chairs to ensure that the final manuscript submitted to their Part Coordinator (PC) is in the proper format and style outlined below. The following procedures should make this task as easy as possible while eliminating the need for JTG members to reconsider material that has not changed.

A smooth-flowing and properly written JTG manuscript can greatly expedite the method through the development and approval process. A manuscript that is not produced according to the style guide can seriously delay the publication of a *Standard Methods* section. **Any manuscript not in accordance with the Style Guide may be returned to the JTG for further work.**

1. For All Manuscripts

- a. Submit a neat, legible manuscript with ample space for editing. After the manuscript leaves the JTG, the work of reviewers, editors, and word-processors will be much easier if the manuscript meets these criteria. Never use copies of faxes – send only an original.
- b. Provide clear figures, with proper labels and captions, along with the manuscript.
- c. Denote sources of all figures and tables.
- d. Use active voice whenever possible; use imperative mode when giving directions.
- e. Spell out the entire name of any organization or publication. Do not use acronyms. The managing editor will provide uniform abbreviations.
- f. If the managing editor, Standard Methods Manager, PC, or Joint Editorial

Board (JEB) members pose questions during the initial editing, please answer or provide missing information promptly.

2. New Methods or Sections

- a. Prepare new sections or methods according to the *Standard Methods Style Guide*, the current edition of *Standard Methods*, or *Standard Methods Online*. An example shows the format to be used (2120E).
- b. Carefully consider the scope of the work for the section or method. Keep introductory material brief; avoid extensive literature reviews. Focus on clear, practical guidance for material, procedures, and quality control.
- c. Place the proposed title and number of the method at the top of the first page and **double-space** the text with one-inch margins.
- d. In text, provide generic descriptions of apparatus and reagents. Insert footnotes mentioning models, trade names, manufacturers, etc., where such information would be helpful to the user.
- e. Place references and/or bibliography at the end of each letter-designated subsection. List references in order of citation in the text; list bibliography items chronologically, oldest first. Designate reference citations by superscript numbers. Do not embed references in text or format as footnotes.
- f. Provide complete author names, paper and book titles, periodical names, dates, and places of publication for references and bibliographies according to the formats given in the *Style Guide*, the current edition of *Standard Methods*, or *Standard Methods Online*. This will save unnecessary library time at the end of the process. Also avoid the use of un-refereed and unpublished references.
- g. Number each page at the bottom including the method number, e.g., 6610 - 1.
- h. Make sure that all tables and figures are mentioned specifically in the text.
- i. Properly reference new figures and tables and include the publication of origin so permission can be obtained to use the material. Also indicate if tables or figures originated within the JTG, such as from the chair's own work.
- j. For figures, provide reproduction of sufficient quality so that drawings can be made from them. In the case of photographs, supply glossy prints suitable for reproduction.

- k. Provide adequate documentation for precision and bias data.

3. Changes to Existing Sections and Methods

- a. Once your JTG has approved its entire section (not just a method or subsection) make revisions only on the MS Word version of the section supplied by the Standard Methods Manager. DO NOT re-enter material into a new document.
- b. Indicate added and deleted material on the manuscript in strikeover and boldface. An example shows the format to be used (4500-O₃). If material is not to be changed, leave exactly as-is; DO NOT rework or retype. Strikeovers and additions are included in the text for general balloting so Standard Methods Committee (SMC) members can see the changes.
- c. Additional copies of a section in the current edition or from *Standard Methods Online* are available from the Standard Methods Manager.
- d. Review footnotes concerning reagents and apparatus; if items are no longer available provide information about alternatives.

4. Clerical Assistance

Normally, JTG Chairs will be able to utilize their company or organization's word-processor or will arrange for separate clerical support. If the above procedures are too burdensome for your own clerical staff, please check to see if other members of the JTG can provide assistance. As a last resort, a limited amount of clerical help may be available from the Standard Methods Manager (name and address above). Requests for assistance from the Standard Methods Manager must be prearranged to insure that time and personnel are available.

4500-O₃ OZONE (RESIDUAL)*

4500-O₃ A. Introduction

1. Sources

Ozone, a potent germicide, is used also as an oxidizing agent for the destruction oxidation of organic compounds that produce taste and odor in drinking water, for the destruction of organic coloring matter, and for the oxidation of inorganic compounds such as hydrogen sulfide and reduced iron and or manganese salts plus other organic and inorganic compounds. to insoluble oxides.

2. Selection of Method

Ozone residual in water is determined by the indigo method. Excellent results are achieved using high purity indigo. Reported residuals might be under-valued by 20% or more using impure and/or degraded indigo.¹⁻³ Improvements in this method include additional clarification concerning indigo purity and modifications to the gravimetric procedure to improve consistency and ease of implementation while maintaining accuracy. Residual ozone decays rapidly. Depending on water quality, the ozone residual half-life may be several seconds to a few minutes. This method addresses the measurement of ozone residual in water.

* Approved by Standard Methods Committee, 1997, 200 . Joint Task Group: Kerwin L. Rakness (chair), Michael Elovitz, Gilbert Gordon, Kevin G. Graff, David J. Rexing

Methods ~~also~~ are available for determining ozone in process gases. ^{1,2}~~4-5~~

3. References

1. GORDON, G., R.D. GAUW, Y. MIYAHARA, B. WALTERS & B. BUBNIS. 2000. Using indigo absorbance to calculate the indigo sensitivity coefficient. *J. AWWA*, 92(12):96.
2. RAKNESS, K.L., G. GORDON, D.J. REXING & E.C. WERT. 2002. Reported ozone residual data might be undervalued. *Proceedings of the AWWA 2002 Annual Conference, New Orleans.*
3. GORDON, G. AND B. BUBNIS. 2002. Residual ozone measurement: Indigo sensitivity coefficient adjustment. *Ozone: Sci. & Eng.* 24:17.
14. RAKNESS, K.L., G. GORDON, B. LANGLAIS, W. MASSCHELEIN, N. MATSUMOTO, Y. RICHARD, C.M. ROBSON & I. SOMIYA. 1996. Guideline for measurement of ozone concentration in the process gas from an ozone generator. *Ozone: Sci. Eng.* 18:209.
25. RAKNESS, K.L., L.D. DEMERS, B.D. BLANK & D.J. HENRY. 1996. Gas phase ozone concentration comparisons from a commercial UV meter and KI wet-chemistry tests. *Ozone: Sci. Eng.* 18:231.

2120 E. Tristimulus Spectrophotometric Method

1. General Discussion

a. Principle: Tristimulus values are a set of three numbers obtained from a spectrophotometer or colorimeter that, when combined in various ways, describe how the human eye perceives a given color. Calculations using the three tristimulus values typically are used to define the color of a specimen for color matching specifications or for routine control purposes.

The percentage of tristimulus light transmitted by the solution is determined and the transmittance values are then converted to trichromatic coefficients and color characteristic values.

b. Application: This method is applicable to potable and surface waters and to domestic and industrial wastewaters.

c. Interference: See Section 2120C.1c.

2. Apparatus

a. Spectrophotometer with narrow spectral band width (10 nm or less), an effective operating range of 380 to 780 nm, and a Tungsten lamp light source. Instrument must be able to obtain transmittance values at a multitude of wavelengths and calculate tristimulus values X , Y , and Z^1 to produce a final color result.* Calibrate calculation algorithm software against platinum-cobalt standard reference.

* Hach DR/4000 Spectrophotometer, Program No. 1666, or equivalent.

b. Spectrophotometer cells, 1 cm.

c. Filtering apparatus and filter: See 2120 B.2c.

3. Procedure

a. Sample collection: See 2120B.5a.

b. Sample preparation: Filter turbid samples according to 2120B.5b.

c. Spectrophotometric measurement: Let spectrophotometer warm up in accordance with manufacturer's directions. Set instrument to pre-programmed calibration curve for tristimulus color. Zero instrument and perform measurements according to manufacturer's method directions. Express results as prescribed in 2120D.5.

Alternatively, obtain tristimulus values for color by a published computation method.¹

4. Quality Control

See Section 2120B.7.

5. Reference

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS. 1995. Standard practice for computing the colors of objects by using the CIE system. E308-95, ASTM Standards on Color and Appearance Measurement, 5th ed. American Soc. Testing & Materials, West Conshohocken, Pa.

6. Bibliography

HACH COMPANY. 1999. Hach DR/4000 Spectrophotometer Procedures Manual, 9th ed.

Hach Co., Loveland, Colo.

STANDARD METHODS STYLE GUIDE

A. Method Format

The format outlined below is applicable to sections in Parts 2000 through 7000. Formats for sections in Parts 1000 and 8000 - 10000 will necessarily be somewhat different, given the differences in subject matter. For these sections, use the formats in the current edition of *Standard Methods* or *Standard Methods Online* as a general guide. **It is important that you follow the formats as written.**

0000 CONSTITUENT

0000 A. Introduction

1. Significance/Occurrence/Chemistry as applicable
2. Selection of Method
3. Sampling and Storage
4. References
5. Bibliography -- Sources pertaining to above subjects or to section as a whole, rather than a particular method.

0000 B. XYZ Method

1. General Discussion
 - a. *Principle:*
 - b. *Interference:*
 - c. *Minimum detectable concentration:*

2. Apparatus

a. *Item: either*

1) Type 1 or

2) Type 2

b to n. Other items

3. Reagents

a. *Reagent: either*

1)

2)

b to n. Other items

4. Procedure

(May in some cases be subdivided if there are certain stages to process or repetitions of a subprocedure.)

5. Calculation

6. Quality Control

7. Precision and Bias

8. References

9. Bibliography

0000 C. UVW Method

Same plan as XYZ Method

Please note: Every section has an introductory subsection A. Provide only *necessary* background information, and guide user to important references or bibliography for further background. **Do not include extensive literature review.** Every method has a name, even if it is the only method for the constituent. Place references and bibliographies at the end of each subsection, rather than form an additional subsection at the end of the section.

B. Reference and Bibliography Format

1. References

List references in the order in which the citations appear in the text, tables, and figures. Indicate citations with superscript numbers. List all authors, with surname and initials, and provide place names for publishers and organizations. Spell out the name of any organization or publication in full. (Uniform abbreviations will be supplied during the editing process.) **Do not use acronyms.** The formats for the most frequently encountered types are as follows:

Book:

1. FURMAN, N.H. 1962. Standard Methods of Chemical Analysis, 6th ed. D. Van Nostrand Co., Inc. Princeton, N.J.

In the title of a book or other stand-alone publication, use initial capital letters for all major words.

Paper in periodical:

1. KOCH, B., S.W. KRASNER, M.J. SCLIMENTI & W.K. SCHIMPPFF. 1991. Predicting the formation of DBPs by the simulated distribution system. *Journal American Water Works Association*. 83(10):62.

Capitalize only the first letter of the first word of the title of a paper in a periodical (unless proper names are part of the title).

Paper in collection:

1. KAVANAUGH, M.C., C.H. TATE, A.R. TRUSSELL, R.R. TRUSSELL & G. TREWEEK. 1980. Use of particle size distribution measurements for selection and control of solid/liquid separation processes. *In* M.C. Kavanaugh & J. Leckie, eds. *Particulates in Water*. Advances in Chemistry Series, No. 189, American Chemical Society, Washington, D.C.

Government publication:

1. U.S. ENVIRONMENTAL PROTECTION AGENCY. 1991. Methods for the Determination of Metals in Environmental Samples. Method 218.6, EPA-600/4-91-010, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio.

Institution publication:

1. DAHLBERG, M.D. 1975. Guide to Coastal Fishes of Georgia and Nearby States. Univ. Georgia Press, Athens.
2. PECKARSKY, B.L., P.R. FRAISSINET, M.A. PENTON & D.J. CONKLIN, JR., eds. 1990. Freshwater Macroinvertebrates of Northeastern North America. Cornell Univ. Press, Ithaca, N.Y.

If an institution or agency is listed as the author of a publication, write out its name in full. If it is the publisher, abbreviate the institutional word (Dep., Univ., Soc., etc.) only, and omit prepositions and articles ("of, the"). If the name of the state is part of the institution name, do not repeat state after city of publication.

Do not use U.S. Postal Service abbreviations for state names but abbreviations such as Ill., Miss., Colo., etc.

2. Bibliography

List bibliographic materials in chronological order, the oldest first. The format is the same as for references except that all lines after the first are indented and numbering is not used:

KOCH, B., S.W. KRASNER, M.J. SCLIMENTI & W.K. SCHIMPF. 1991.
Predicting the formation of DBPs by the simulated distribution system. *Journal American Water Works Association*. 83(10):62.

C. Style Notes

1. Voice and Mode

Use the active voice in text whenever possible. Use imperative mode when giving directions.

"Remove needle from solvent and draw 1 uL of sample extract into barrel."

NOT: "The needle should then be removed from the solvent and 1 uL of sample extract drawn into the barrel."

2. Abbreviations and Units of Measure

For basic list, refer to inside back cover of the current edition of *Standard Methods* or *Standard Methods Online*. Always write out in full the names of longer units of time (week, month, year).

3. Solution Concentration

Use normality for concentrations of the common acids and bases for which preparation directions are given inside the front cover of the current edition or in *Standard Methods Online*. Use molarity for all other reagents.

4. Ionic and Oxidation States

Express ionic charge by a superscript consisting of a number and the sign of the charge, e.g., Ca^{2+} for calcium ion. Express oxidation state within a compound by Roman numeral in parentheses, e.g., Cr (VI).

5. Trade Names

Do not put trade names in the text. Instead, use a generic name for the equipment or reagent, and supply a footnote at the bottom of the page specifying the trade name "or equivalent." Include other suppliers if possible.

Example of apparatus with footnote:

- 1) Solid support--Dimethyl dichlorosilane-treated diatomaceous earth, §100 to 120 mesh.

§ Gas-Chrom Q™, Supelcoport, or equivalent.

6. Tables

Do not put boxes around tables or separate columns by lines.

Example:

TABLE 3030:I. ACIDS USED IN CONJUNCTION WITH HNO₃ FOR SAMPLE PREPARATION

Acid	Recommended for	May Be Helpful for	Not Recommended for
HCl	Ag	Sb, Ru, Sn	Th, Pb
H ₂ SO ₄	Ti	—	Ag, Pb, Ba
HClO ₄	—	Organic materials	—
HF	—	Siliceous materials	—