



Journal of AOAC INTERNATIONAL

Author Resource

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About the Journal of AOAC INTERNATIONAL

The Journal of AOAC INTERNATIONAL publishes original research articles and reports of the development, validation, and application of analytical methods for agricultural commodities (feeds, fertilizers, pesticides), foods (including food additives, vitamins, residues, biological and chemical contaminants, alcoholic beverages), drugs, cosmetics, dietary supplements, sampling, laboratory quality management, and the environment. A limited number of invited or feature articles on selected subjects are also published, as well as then proceedings from some symposia.

The Journal is the forum for the exchange of information among method researchers who must keep informed of new technology and techniques in industry. The Journal publishes the fully refereed reports on developing, improving, and testing uniform, precise, and accurate methods. It is used and referenced repeatedly.

The Journal is unique in that it also publishes types of papers not found in any other analytical science journal: Standard Method Performance Requirements (SMPRs[®]), AOAC First and Final Action Official Methods, and stakeholder panel related single- and multi-laboratory validation reports, as well as the validation reports from AOAC's Performance Tested Method program, providing independent review of test kit performance. The publication of "stakeholder output," an essential function of the Journal, is scheduled throughout the year.

In addition, twice each year, in the January/February and July/August issues, the Journal publishes the "List of Standards, including Standard Method Performance Requirements and First and Final Action Official Methods." This listing composes the content of the stakeholder output and AOAC's standard development process from AOAC's midyear and annual meetings, and appears in a special section of the Journal, separate from the papers that undergo regular peer review.

For the Journal's regular submissions, each contributed paper is submitted to one of the eight section editors of the Journal who is actively involved in the appropriate technical area: Animal and Plant Nutrition, Health, and Safety; Dietary Supplements; Drug Formulations and Clinical Methods; Food Biological Contaminants; Food Chemical Contaminants; Food Composition and Additives; Infant Formula and Adult Nutritionals; Microbiological Methods; Residues and Trace Elements; Statistical Analysis and Chemometrics; and Veterinary Drug Residues. The section editor, in turn, selects at least two reviewers qualified to judge the scientific merit of the paper. Acceptance, rejection, or revision of the paper, determined by the section editor, is based on reviewer recommendations.

Reports and papers are grouped in each issue by subject. Submissions should be no more than 35 double spaced, one-sided pages, including text, references, tables, figure captions, and figures. Longer manuscripts should be modified to meet that level by designating material to be published as supplemental material online only. The Journal also publishes Letters to the Editor, Reviews, Special Guest Editor papers, Technical Communications, symposium papers, and extended abstracts.

The Editorial Board supervises and determines the policies of the Journal, and recommends the appointment of section editors. The Board, consisting of a chairman, who also serves as Editor-In-Chief, and other appointed members, meets whenever publication business warrants, but not less than once a year at the AOAC annual meeting.

The cost of editing, typesetting, and printing, and distribution is met by subscription income from university and industry technical libraries and by members of AOAC INTERNATIONAL.

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Anthony D. Hitchins—*Food Biological Contaminants*
Albert E. Pohland—*Food Chemical Contaminants*
Sarwar Gilani—*Food Composition and Additives*
Sarwar Gilani—*Infant Formula and Adult Nutritionals*
Anthony D. Hitchins—*Microbiological Methods*
Alexander J. Krynitsky—*Residues and Trace Elements*
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Scope of Journal Sections

Animal and Plant Nutrition, Health, and Safety – Nancy Thiex

The scope of this section includes sampling studies of agricultural commodities, ingredients, and products, and sample preparation of agricultural laboratory samples. Such studies should report error associated with specific protocols for specific materials and include a scholarly description of the study design for a specific analyte, analyte concentration, acceptable error, incorporation of sampling quality control.

Single-laboratory validation reports are published for new analytical methods for matrices such as grain, feed ingredients, forage, mixed feeds, fertilizers, blended fertilizers, soil amendments, pesticide formulations, animal tissues, soils, etc. Examples of analytes are nutrients, minerals, additives (e.g. drugs, antibiotics, vitamins) and contaminants or non-nutritive target analytes that are naturally occurring or adulterants. Generally, these methods are of importance for commerce (labeling or pricing) or for the purposes of animal health and food/feed safety.

The *Journal* also publishes studies comparing analytical methods and bias and new analytical techniques as applied to matrices and analytes described above. Modifications of analytical methods to improve method performance, or expansion of scope of currently validated methods. Review articles for any of the above topics. Manuscripts that are of significance in the regulation of commerce of materials, other than analytical method validation. These may discuss analytical tolerances, analytical error or data acceptance criteria, risk assessment, etc.

Dietary Supplements, and Food Chemical Contaminants – Albert E. Pohland

The *Journal* publishes basic and applied research in the analytical sciences related to food chemical contaminants (seafood toxins, mycotoxins) and dietary supplements, with emphasis on the development of new analytical methods, particularly those used in the regulation of foods, the application of such methods to new matrices, the validation of such methods, and occasionally, the use of such methods in surveys and in check sample programs (proficiency testing programs). Priority is given to analytical methods arising from the activities of AOAC stakeholder panels and the working groups associated with such panels.

Drug Formulations and Clinical Methods – Samir Wahab

This section focuses on analytical methods used to identify and analyze pharmaceutical ingredients and products. Concerns that are secondary include the analysis of chemicals and products related to pharmaceutical excipients and dietary supplements. The scope spotlights modern analytical methodologies and technologies and, at the same time, provides opportunities to include some basic methodologies for assisting less developed countries in screening and guarding against any substandard and counterfeit drugs in their areas and marketplaces. Biological work and dosage form performance testing and studies are outside the scope of this section.

Food Biological Contaminants, and Microbiological Methods – Anthony D. Hitchins

Publications of the *Journal* include single- and multilaboratory collaborative studies of qualitative and quantitative methods for the detection and identification of the pathogenic, indicator and beneficial microbes, and the natural microflora found in foods, feeds, cosmetics, drugs and their production environments. Manuscripts about immunological, nucleic acid, whole

genome, and biochemical detection and identification, are considered, including microbe based bioassays. Also considered are reports of studies on detection of airborne biothreat microbes. The analytes of interest include bacteria, fungi and molds, protozoa, algae and viruses. In addition, manuscripts about methods for assessing the efficacy of disinfectants and preservatives and the microbial properties of biofilms are appropriate. Clinical microbiology methods submissions, especially reviews, can be considered only if they indicate their relevance and/or potential applicability to the pathogenic microbes that may occur in the *Journal's* listed matrixes of interest.

Food Composition and Additives, and Infant Formula and Adult Nutritionals – *Sarwar Gilani*

This section publishes basic and applied original research in the analytical sciences, including development of precise, accurate, and sensitive methods, related to major (macronutrients), and minor components (micronutrients, bioactive constituents, additives, and contaminants) of food; chemistry and biochemistry; physiological; nutritional and health; sensory and flavor aspects; and effects of processing and other technologies on compositional quality and safety of foods. This section encourages publication of reviews and invited special sections dealing with methodology, nutritional, health and safety, and regulatory aspects of major and minor components of food.

Residues and Trace Elements – *Alexander J. Krynitsky*

The section on Residues and Trace Elements seeks unpublished original methods; further studies of previously published methods; and background work leading up to a method. The emphasis is on research, development, and validation of accurate, sensitive methods for the analysis of foods, dietary supplements, cosmetic products, and the environment with regard to trace elements and organic chemical residues. The organic chemical residues include classes of compounds such as pesticides; polynuclear aromatic hydrocarbons (PAHs); persistent organic pollutants (POPs, i.e., halogenated hydrocarbons) and other industrial chemicals that could potentially affect the public health and the environment.

Statistical Analysis and Chemometrics – *George W. Latimer, Jr.*

The Journal invites papers which provide statistical information about analytical method performance, e.g., both method reproducibility and repeatability; comparison of actual method statistics versus those calculated for a method (the HorRat); conformance to analytical models of response to data, e.g., calibration, comparison of methods, or how a given statistical approach can be used to mine more information from given sets of data.

Chemometric papers should extend the possibilities of analytical techniques or provide re-interpretation of previously published data. Examples are (1) prediction of elution order in a given chromatographic system based on structure, (2) qualitative and quantitative estimation of particular ingredients in mixtures using appropriate preprocessing and multivariate calibration to resolve overlapped chromatographic or spectrographic peaks, and (3) discussion on when noise and background removal techniques can be used to increase sensitivity.

Veterinary Drug Residues – *Joe O. Boison*

The section on veterinary drug residues will consider high-quality analytical methods developed and validated to monitor and safeguard the use of veterinary drugs in raw or processed foods

(fruits and vegetables, dairy, honey, etc.) and agriculture and aquaculture matrixes. Manuscripts dealing with existing and/or previously published analytical methods should offer a significant, original application of the method or a major improvement other than just state-of-the-art. Such manuscripts describing the application of an existing method, even when modified, should be driven by the application (e.g., drug residue depletion studies, pharmacokinetic studies in edible animal tissues and offal, regulatory monitoring studies, etc.) intended to protect the health of the consumer of the edible food product and to facilitate both domestic and international trade.

The section will consider for publication, original research that is expected to have a definable impact on the advancement of science and technology, incorporating a significant component of innovative chemistry and/or molecular biology; reviews that comprehensively summarize information in a field in which the literature is scattered and/or treat published data or other information so as to provide a new approach or stimulate further research; and, presentations at symposia or selected topics comprising a series of manuscripts reporting or synthesizing original research that are presented in a symposium held at AOAC annual meetings or otherwise clustered around a single topic on drug residues.

How to Submit a Journal Manuscript

Authors can submit their manuscripts online at: https://mc.manuscriptcentral.com/aoac_jaoac.

For full details on how to login to the Scholar One Peer review site *see* the tutorial at: <http://mchelp.manuscriptcentral.com/gethelpnow/tutorials/author.pdf>. If you are having difficulty uploading your manuscript please visit: <http://mchelp.manuscriptcentral.com/gethelpnow/tutorials/authorfileupload.pdf>

Journal Review Process

All contributed and solicited manuscripts are subject to peer review and revision in accordance with good journalistic practice. Each contributed paper is submitted to a section editor who chooses two or more reviewers who are qualified to pass on the scientific merit of the paper, and acceptance, rejection, or revision of the paper is based on their recommendations. Exceptions to this policy are review papers, which are reviewed by the appropriate Journal section editor, and Special Guest Editor sections, which are reviewed by the guest editor outside of the regular peer review Journal process. The guest editor's review should be supplemented by at least one more review from another expert in the field. (If there are co-guest editors for a Special Guest Editor section, their two independent reviews are usually sufficient unless they prefer to use one or more outside reviewers.)

Author Services

An English-language editing service is available for the Journal, and authors have the option to use this service in preparing their scientific manuscripts/validation reports for submission. A subject-expert editor will copyedit for grammar, spelling, punctuation, tense, phrasing, and diction, with careful attention to the technical terms related to the Journal's subject matter. For this English language editing service, charges will apply.

For more information, contact Sharon Brunelle at sbrunelle@aoac.org.

How to Write a Journal Article

In preparing a report for publication, two elements must be considered: style and organization. Use of a consistent style and organization permits the *Journal's* regular readers to scan each article quickly and locate the material of special interest to them.

Style.—Style refers to the mode of expression. It includes choice of words, sentence structure, clarity, conciseness, and coherence. To the publisher, style also means a certain consistency in handling details of capitalization, punctuation, spelling, numbers, symbols, mathematical expressions, bibliographic references, footnotes, typography, and other elements of publication that often escape the notice of authors and readers. The *Journal* has a characteristic style, which will be discussed in detail below.

Organization.—Organization refers to the manner in which the material is selected and the order in which it is set forth. Every scientific investigation produces a volume of facts and data, part of which must be discarded in preparing the published account. Organization controls the choice of what material is to be included, what must be omitted because it is not essential to the presentation, and what sequence is to be followed. Organization is, thus, largely a matter of proper emphasis.

A. Organization

The author should give first consideration to the organization of the manuscript. Once the structure has been established, they can turn their attention to style. A helpful colleague or editor can often assist with matters of style, but no one other than the author can salvage a badly organized paper. Moreover, a reviewer's criticisms of style can be easily answered and faults can be corrected, but deficient organization may mislead a reviewer as to the true worth of the study and may influence him to recommend rejection of potentially useful material.

Most papers follow a common flow. Papers are generally arranged as follows, with appropriate subheadings:

Title

Author(s) name(s) and affiliation(s)

Abstract

Introduction

Method or experimental

Results, including tables and/or figures

Discussion

Conclusions

Acknowledgments

References (bibliography)

Sometimes Results and Discussion are combined into a single section. If the author wishes to acknowledge special assistance, he may include a section headed Acknowledgments immediately before References.

1. Title

Choose a title that is as descriptive of the paper's content as possible. Do not try to make the title clever or "catchy." Use specific terms that will serve as index entries; information services increasingly rely on titles for indexing. Avoid the use in the title of symbols, formulas, and terms that must be defined.

2. Author(s) and Affiliation(s)

Give the full first name, middle initial, and surname of each author. Do not include academic titles. List the affiliation(s) of the author(s) in a form that will serve as a complete mailing address, including zip code, and e-mail address, to which correspondence can be addressed. Use the affiliation at which the work was performed; if authors have moved to a different affiliation or if any of the authors have moved to a different address, give the address in a footnote, indicated by a superscript arabic numeral. Put other supplemental information in footnotes, e.g., supported by a grant or contract, taken from a thesis or dissertation, publication authorized by an institution, or part of the institution's publication series. The corresponding author needs to be identified and e-mail address supplied in the footnote.

It is generally assumed that all persons listed as co-authors of a paper or report have made substantial contributions to the work reported.

3. Abstract

Write informative abstracts which contain the significant content of the paper, rather than indicative abstracts consisting of one or more descriptive sentences. Assume that your readers have some knowledge of the subject but have not read the paper. Avoid extremely general statements such as "data are given...", "a method is described," etc., with no indication of the nature of the data or the principles of the method. Use standard scientific nomenclature, rather than proprietary terms. Prepare the abstract so that it is completely self-explanatory and intelligible in itself. Do not include any information that is not a part of the full report or paper; omit references to tables, figures, and bibliographic citations within the text, since the reader must then depend on the full paper and the abstract is not self-explanatory.

(a) Indicate the objectives of the study and the topics covered, but do not repeat the information given in the title.

(b) State what methods were used. When reporting a new method, give the basic principle, the range of application and interferences, and the degree of accuracy and precision.

(c) Call attention to new reactions, compounds, materials, apparatus, data, concepts, and theories.

(d) Include a brief summary of results and conclusions. Give actual averages, percentage recoveries, standard deviations, etc. A limit of 200 words is suggested for the report or paper of average length. It should not be a confining factor, however.

4. Introduction

Include a statement of the purpose of the work, together with enough background to enable the reader to attain the proper understanding and perspective. State the use of the compound being discussed. Cite the work of others which contributed directly to the present paper but do not attempt to survey the entire literature of the field unless the paper is intended to be a review. Consider the following hypothetical questions in deciding what information to include in the

introduction: Why was the work done? Why was a method needed? Did any methods exist previously, and if so, why were they not suitable? If a new method had to be developed, upon what established chemical, biological, or physical principles was it based? What general approach was used?

If an interlaboratory study is being reported and a background report has already been published, do not repeat all the introductory material; instead, cite the earlier report and go directly to the description of the interlaboratory study.

5. *Method or Experimental*

Method.—Consult section D of this Guide on preparing methods. Follow these general principles: Write the method in imperative style ("add 10 mL"; evaporate the solution to dryness," instead of "10 mL was added;" "the solution was evaporated to dryness"). Place important reagents and apparatus in separate sections (or combine them into one separate section) before the actual determination; indicate specifications, source of supply, and instructions for preparation of working solutions where pertinent. List, each reagent or piece of apparatus as a separate item. Provide enough detail so that the reader can repeat the method if he wishes, and indicate how the results are to be calculated, if a calculation is required.

Experimental.—Most papers for the *Journal* involve a method, but if you are describing experimental work, rather than presenting a method, give the experimental details in narrative form, using past tense. Place important reagents and apparatus in a separate section before the experimental details, and indicate specifications and source of supply where this is pertinent. Limit abbreviations to units of measure and other commonly accepted forms.

6. *Results and Discussion*

Present the results in the form of tables and/or figures; see the appropriate section below for the proper format of tables and figures. Mention every table and every figure somewhere in the text, in numerical order (do not discuss Table 3 before Table 2, for example), so that the reader will grasp the importance of the data and their relation to the whole study.

Discuss the results fully enough so that their significance is evident and conclusions can be drawn from them, but do not use the Discussion merely to repeat data that are given in tables and figures. Provide a statistical treatment of the data if a interlaboratory study has been conducted and where appropriate in other reports and papers. Indicate whether certain data have been rejected and name the statistical test which was the basis for rejection. Try to provide an explanation for unexpected results if possible or, if you cannot explain them, state this fact.

In general, do not present the same quantitative data in both a table and a figure in the same paper, because this is expensive and a waste of journal space and money; choose one form or the other. (The exception to this rule is Youden's diagrams.) Although it is difficult to generalize consider using figures where trends or relationships are especially important and using tables where individual results should be reported, e.g., interlaboratory studies. If a method is being studied, give both recovery data obtained on known samples (usually prepared by the author) and results on unknown samples of the type encountered in regulatory work. Except in unusual cases, do not include straight-line graphs; instead, state in the text the curve is linear in the range of interest.

7. Acknowledgments

If you have conducted a interlaboratory study, whether or not it was successful, acknowledge all collaborators by name and affiliations, including city and state. List the affiliations as the place at which the work was done, even when the collaborator has since moved to a different affiliation. List collaborators alphabetically according to surname. Be especially careful to check the correct spelling of the collaborators names and the presentation of their affiliations. Acknowledge other assistance in a separate statement, briefly indicate the reason for the acknowledgment. Do not use academic degrees for either collaborators or others being acknowledged.

Contributed papers.—Acknowledge special assistance and gifts of reagents, samples, etc. in a concise statement under the appropriate subheading. Use concise, simple, and dignified language, e.g., "We thank John Smith, Blank Co., for samples and Mary Green, XXX Agency, for interpretation of spectra." Do not use academic titles and do not employ effusive, extravagant language. Limit acknowledgments to real contributions; do not acknowledge help normally to be expected from a supervisor or the duties normally performed by an administrative assistant.

8. References

For the format of references, refer to the section under *Style*.

Document any statements, data, or information taken from the work of others by a citation as a bibliographic reference. Cite every reference somewhere in the text in order of appearance. Collect citations, number them, and list them at the end of the report or paper under the heading, "References." If the referenced work has not been published (oral communication, letter, memorandum) and, thus, cannot be retrieved for verification, do not include it in the list at the end, but insert it directly in the text in parentheses, with author's name and affiliation, and year.

In citing references in the text, use either the reference number alone or the surname(s) of the author(s) followed by the number in parentheses set on the normal line of type (*not* superscript). If names are used, include the names of both authors of the referenced material if there are two; if there are three or more, give the name of the first author followed by "et al." or "and coworkers." Do *not* cite the first author alone as though to imply that he was the sole author. In citing several references related to the same point, enclose all the numbers within a single set of parentheses (1, 3, 7); cite consecutive references as inclusive rather than separate, e.g., (3, 7); cite consecutive references as inclusive rather than separate, e.g., (4-6), *not* (4, 5, 6). Place the numerical citation before a punctuation mark.

B. Style

In this guide, the term "style" is used to designate format and consistency as well as literary expression. Some of the details of *Journal* format are based on typographic requirements and the mechanics of printing; see the appendix for examples.

1. Language and Expression

Write as clearly, concisely, and simply as you can. Observe the accepted principles of English grammar and syntax; when in doubt, refer to a standard textbook or handbook. Use accepted scientific terms in their recognized meanings; avoid slang, laboratory jargon, undefined abbreviations, and technical catchwords. Where standard English, rather than scientific terminology, is appropriate, prefer the short, simple word to the long, complex, unfamiliar one; do not attempt to impress the reader with your vocabulary. Use simple declarative sentences

freely, but not exclusively. Avoid excessive use of qualifying clauses, but if they must be used for accuracy, consider itemizing them.

Use the active form of the verb as much as possible; it is shorter and more readable. Do not avoid the use of the personal pronoun where it is appropriate to say "We obtained low recoveries by Method A" rather than "low recoveries were obtained by the authors using Method A."

Use headings and subheadings to guide the reader and to capture his attention. Be sure, however, that all headings of equal importance are phrased in similar grammatical construction and typed in the same format.

2. List of References

Note that it is the author's responsibility to verify all information given in the list of references: spelling of author(s) names; their correct initials; correct title of the journal or book; correct volume numbers, editions, publishers, page numbers, year of publication. Contrary to popular belief, it is NOT the editor's job to verify these details. Make sure that every name you have cited in the text is spelled the same way in the list of references.

References to Journal articles.—Include the following information: last name, and initials of *all* authors (not just the senior author) in reverse order, with a comma before the ampersand (&); year of publication, in parentheses; title of journal; italicized and abbreviated according to accepted style; volume number (do not give the issue number unless each issue begins on page 1); first and *last* pages of the article. Do *not* place a period at the end of the references.

For consecutive citations of the same journal, always repeat the journal name, because some data retrieval systems use citations out of context.

Never use a *Chemical Abstracts* listing as the only reference to an article; always give the original source as well, even though it may not be readily available.

When the same article in the same journal is cited more than once, list it only once in the references, and use the same number in the text for all citations to it.

References to books, bulletins, pamphlets, etc.—Include the following information: last name, first, and middle initial, if any, of authors or editors, in the same style as for journals; year of publication, in parentheses; full title of book, italicized; volume number of edition, unless it is the first edition; name of editor, in the regular order, if it is different from authors; publisher and publisher's location; and pages or chapter.

Examples of references are as follows:

Journal Article Reference

(1) McCleary, B.V., & Draga, A. (2016) *J. AOAC Int.* **99**, 364–373. doi: 10.5740/jaoacint.15-0289

Book Chapter Reference

(1) Hurn, B.A.L., & Chantler, S.M. (1980) in *Methods in Enzymology*, Vol. 70, H. Van Vunakis & J.J. Langone (Eds), Academic Press, New York, NY, pp 104–142

Book Reference

(1) Siegel, S. (1956) in *Nonparametric Statistics for the Behavioral Sciences*, McGraw-Hill Book Co., New York, NY, pp. 107-159

Official Methods Reference

(1) *Official Methods of Analysis* (2016) 20th Ed., AOAC INTERNATIONAL, Rockville, MD, Method **2000.01**. www.eoma.aoc.org [accessed on May 25, 2016]

3. Footnotes to the Text

Keep the text footnotes to a minimum; they distract the reader. Group general footnotes which pertain to the entire article, e.g., presentation of the paper at a meeting, funding, official action taken by AOAC, on a separate sheet at the end of the paper. If text footnotes are essential, e.g., the present address of one of the authors, indentify them by consecutive arabic number set above the line of type (superscript); do not use asterisks or similar symbols.

4. Tables

Number tables by arabic numbers and cite each table in the text in consecutive order. Give each table a descriptive title, sufficient so that the table can stand by itself without a reference to the text, but do not include any new information in the table title that cannot be found in the text. Keep the title brief, clear, and in topic form rather than as a complete sentence; include (a) the subject, (b) the data, and (c) the classification of the data. If a full statement of the subject would make the title overlong and clumsy, put the details in a footnote. Do not place a period at the end of the title. Examples of poor and satisfactory table titles follow:

Poor: Table 2. Collaborative results

Good: Table 2. Collaborative results for determination of mercury in fish by cold vapor atomic absorption

Provide a descriptive heading for every column of the table. If the column contains quantitative data, include the units in which the data are measured (e.g., %, ppm, mg) as part of the column heading. Remember that the column headings serve as indexes to the data *below* them, not across from them, so divide complex headings into rows, going from the general to the more specific; similarly if the same or a similar heading applies to several columns, place it at the top of the row subtending the appropriate columns. Example:

Table 1. Accuracy for AFs and OTA determinations in optimal HPLC conditions for mycotoxin standard solution

		Mycotoxin standard solution			
		Within-day ($n = 2$)		Between-day ($n = 10$)	
Mycotoxins	Spiked concn, $\mu\text{g}/\text{kg}$	Accuracy, %	RSD, % ^a	Accuracy, %	RSD, %
AFB1	1.25	100.01	0.02	1.56	100.50
	2.0	99.67	0.50	1.67	108.42
AFB2	1.25	101.24	0.45	2.34	100.24
	2.0	100.87	0.88	1.05	98.34

^a RSD, relative standard deviation.

If more than three ranks (rows) of headings are required, divide the table into several sections or into two shorter tables. Consult recent issues of the *Journal* to determine how much data can conveniently be placed in one table. Try to arrange the tables so that they fit into the type format

of a normal page, preferably a single column. Avoid making the table so wide that it must be printed broadside (at a 90° angle to normal placement).

Consider the first column of the table (the stub, or reading column) as an index or explanation of the data. Arrange the data for easy comparison with this concept in mind. Example: To indicate footnotes to the table, use superscript lowercase letters of the alphabet, not numbers or symbols. Do not use asterisks except to indicate statistical possibilities. Try to keep the number of footnotes proportional to the size of the table; if a table requires an excessive number of footnotes, consider treating the data by some other means. Relate the footnote to the portion of the table which subtends the greatest quantity of data; i.e., if the footnote pertains to all the data, place the footnote symbol at the title; if it pertains to an entire column of data, place the footnote symbol at the column heading, and so on.

Use the following sequence of footnotes within a table: First, title; next, column heads, from left to right and from top row to bottom row if multiple headings are used; then line by line of the body of the table, going from left to right.

Place a horizontal rule (line) beneath the title, another horizontal rule beneath the column heads, and a third beneath the body of the table and above the footnotes, if any. Do not use vertical rules.

Do not use the word ditto or its symbol. Either insert a footnote, repeat the information, or try to combine the information with the table title or with a subheading within the table. Do not leave blank spaces in a column; insert a dash, and if necessary, an explanatory footnote. If an entire column or line is filled with dashes or footnotes, it should be eliminated.

In tabulating numerical data, align them within a column by the decimal point, and always precede the decimal point by a zero for quantities less than unity. To facilitate reading, separate five or more digits on either side of the decimal by a space into groups, i.e., 14 000, or 01.57 61 (but 1.1576).

Avoid tabulating small quantities of data, e.g., only two lines and/or two columns; attempt to express them in sentence form in the text.

Reduce extremely large quantities of data by treating them statistically. **NOTE, HOWEVER, THAT REPORTS OF COLLABORATIVE STUDIES WHICH HAVE RESULTED IN ADOPTION OF METHODS MUST INCLUDE ALL VALUES OBTAINED BY ALL COLLABORATORS.** If outliers have been eliminated by a recognized statistical test, include them in the table with an explanatory footnote. If averages of replicates are given, the individual results must also be reported, unless the method requires that the final reported result be an average of replicates. Results in a collaborative study that did not lead to adoption of a method may be summarized for publication.

Also see *Requirement for Submission*

5. Figures

Number figures (illustrations) by arabic numbers and cite each figure somewhere in the text in numerical order. Refer to them as Figure 1, Figure 2, etc.

Provide each figure with a descriptive caption complete enough so that the figure can stand by itself without the need to refer to the text, but do not include any new information in the caption

that cannot be found in the text. Construct the caption in topic, rather than sentence, form and end it with a period. Use the following form:

Figure 1. Gas chromatograms of (a) chloronaphthalenes (26 ng), (b) aroclor 1254 (18 ng), and (c) DDT (30 ng).

Identify each figure by number when uploading the files.

Do not clutter the face of the drawing with identifying words, notations; identify curves, peaks, etc., with a single letter or number which can be explained in the caption. Place other supplementary or explanatory material in the caption also. Make sure that abbreviations used in the figures or captions agree with those used in the text of the paper. CHECK ALL SPELLING, NUMBERS, SYMBOLS, AND OTHER MATERIAL ON THE FIGURE FOR ACCURACY; it cannot be corrected in the galley proof.

C. Guidelines for Writing a Method

1. Introduction

AOAC methods are designed to be performed by trained scientist who staff the analytical laboratories or regulatory, industrial, and research institutions concerned with commodities of interest to agriculture and public health. Because many of the methods are used to define the legal status of regulated materials, it is essential that the directions are uniformly interpreted by both the regulating and regulated laboratories. This attribute leads to the basic AOAC requirements of reporting: clarity, completeness, consistency, and brevity.

The AOAC style for preparing methods of analysis has evolved over the years to include the following essentials: (a) use of standardized form which follows the flow of laboratory operations; (b) use of the imperative mode; (c) use of standardized abbreviations, definitions, terminology, and style.

The language of the method should be concise and completely free from ambiguity. Conciseness is desirable, both to ensure clarity and to save space. Whenever there is a conflict between clarity and style, clarity is more important. Most abbreviations are the same as those used by *Chemical Abstracts*.

2. Format

The main sections of a method should be placed to ensure a smooth flow of action from one operation to the next as they will be performed, in so far as possible. Interruptions in operations for preparing reagents, assembling apparatus, and making standard curves must be kept to a minimum. Preparing methods in terms of performance often uncovers omissions of steps involving transfer or clarification (filtering, centrifuging), as well as critical conditions such as concentration, temperature, and time. Similar methods in the official Methods of Analysis should be examined for guide in arrangement. The main sections of a method and possible major subdivisions in lengthy methods are as follows:

Title.—State the substance being determined in terms of its common name, and indicate the commodities to which the method is applicable.

Performance Parameters.—Include statistical data if the collaborative study provides sufficient information with regard to the reliability of the method.

Principle.—Explain the purpose of various steps or the basis of unfamiliar or unusual reactions. Include the scope and sensitivity of the method—its applicability to certain types of samples and its nonapplicability, because of interference, solubility, or other reasons, to other types of samples. Identify special safety or operational precautions.

Apparatus.—To conserve space, do not list ordinary apparatus—beakers, flasks, funnels, etc.—which are usually part of the standard equipment of the ordinary analytical laboratory, or which are listed in the catalogs of the larger supply houses. List apparatus that requires assembly and/or specification, or which may not be readily available.

Reagents.—Do not list common reagents which would ordinarily be expected to be available in a well equipped analytical laboratory. Reagents without specifications are automatically reagent grade, conforming to the specifications of the American Chemical Society (ACS) when such specifications exist. Also use the Reagents section for materials requiring directions for preparation, purification, or standardization. Standard compounds will often need specifications or a source of supply.

Determination.—If a method is fairly straightforward or consists only of single major step, describe all operations under this heading. If the method is complex, however, divide the determinative section into several parts which may be characterized by the type of operation performed. Be sure to identify all critical control points.

Calculations.—Include calculations in a method for convenience to avoid the need for looking up factors and deriving equations, particularly when a series of multiple dilutions or aliquots are used at various steps in the method. Take particular care to ensure that there is no ambiguity with regard to the entries in the numerator and the denominator.

Figures.— Make sure you use uniform lettering and sizing of your original artwork. Aim to use the following fonts in your figures: Arial, Times New Roman, Symbol, or fonts that look similar. Number the illustrations according to their sequence in the text, Label illustrations consecutively Figure 1, Figure 2, etc. Provide captions to figures separately after the references in the main document.

Acceptable formats.—If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then supply 'as is' in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings, embed all used fonts; TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi; TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi; TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

Color Illustrations.—Please make sure that illustration files are in an acceptable format and with the correct resolution. If, together with your accepted article, you submit usable color figures then we will ensure, at no additional charge, that these figures will appear in color online. Color images will not be reproduced in color in the printed version.

Bibliographic References.—Check all references for accuracy.

Terminology.—For names of chemical compounds use the spelling, hyphenation, and word division given in Chemical Abstracts. Use the U.S. Pharmacopeia, National Formulary, and U.S.

Accepted Names for drugs. Use ISO nomenclature for pesticides. Follow the U.S. Code of Federal Regulations for names of food additives and color additives.

Safety.—Review all methods for potential hazards. Authors and editors should automatically incorporate safety statements, or bring questioned conditions to the attention of the Safety Committee for resolution. Decisions regarding inclusion of safety statements should be practical; overuse will be self-defeating. For methods which create toxic, obnoxious, or environmentally hazardous fumes and waste, include practical directions for materials disposal.

Examples of Journal Submissions, including Single- and Multi-Laboratory Validation Reports

(Please note that the examples include both the Word file of the articles as originally submitted to the Journal by the author, and the article after being copyedited and typeset for Journal publication.)

Example of a New Journal Submission prior to publication

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Example_of_a_New_Regular_Submission.pdf

Sample of a Published Journal Submissions

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Sample_of_a_Published_Regular_Manuscript.pdf

Example of a Single-Laboratory Validation Report prior to publication:

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Example_of_an_SLV_Report_Submission.pdf

Sample of a Published Single-Laboratory Validation Report:

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Sample_of_a_Published_SLV.pdf

Example of a Multi-Laboratory Validation Report prior to publication

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Example_of_an_MLV_Report_Submission.pdf

Sample of a Published Multi-Laboratory Validation Report:

http://www.aoac.org/aoac_prod_imis/AOAC_Docs/Journal/Sample_of_a_Published_MLV.pdf

Top Reasons Why Papers are Returned

- The article contains elements that are suspected to be plagiarized, or it is currently under review at another journal. (Republishing articles or parts of articles, submitting to one or more journals at the same time or using text or images without permission is not allowed.)
- The manuscript is not complete; it may be lacking key elements such as the title, authors, affiliations, abstract, main text, references, and all tables and figures).

- The English is not sufficient for the peer review process; there are a large number of careless errors like poor grammar or spelling mistakes.
- The figures are not complete, are not clear enough to read, or are not numbered consecutively. They should come at the end of the article, and not placed or indicated for position within the main text.
- The article does not conform to the Instructions to Authors of the Journal of AOAC INTERNATIONAL, or the format doesn't match what the Journal publishes.
- References are incomplete or very old, don't have end pages, or don't appear in the order in which they are cited in the main text.

Typographic Requirements Appendix

Title

Type the title in caps and lower case (that is, initial caps only), flush left (beginning each new line at the left margin), not centered. Do not put a period after the title.

Authors' Names and Addresses

Begin authors' names flush left on a new line below the title. Type the authors' names in full caps and place their address(es) on the next line, flush left and underlined.

Abstract

Put the abstract on the same page; leave the rest of the page blank and begin the body of the paper on a new page.

Text: General

1. Indent paragraphs; do not use block style on manuscripts.
2. In typing any kind of quantity or measurement, use numerals, but never begin a sentence with a numeral; always spell out.
3. All items which are underlined in the text will appear *in italics* when printed in the *Journal*. Please take this into consideration when underlining.
4. Do *not* put periods after abbreviations for units of measure. Examples: mL, mg, nm, mm, cm, g (do not use gm), µg, L, µm, min, s, h, ppm etc.

Units need to be quoted in SI unit in both the manuscript and the Tables and Figures. The Journal of AOAC prefers the use of the front solidus (*/*) (i.e., **g/mL**) line instead of the reciprocal (**g mL⁻¹**) to describe cases where two units together are expressed as a ratio. JAOAC prefers to use L (NOT l) for Litres and therefore mL is written as such and NOT as ml.

5. Place reference numbers within parentheses, set on the line of type, *not* above it.
Example:

The studies of Jones and Brown (1) . . . As several authors have shown (6–9).

6. Use arabic numbers for tables and figures.
7. Italic the names of all items listed under *Reagents and Apparatus* and precede each item by a small bold letter in alphabetical order (enclosed in parentheses). Follow the italic name by a period and two hyphens. Begin a new paragraph for each item. Example:
(a) *Phosphoric acid.*--8 M. Dilute 270 mL 85% H₃PO₄ to 500 mL with distilled water and mix well.

Headings

1. Type the following headings in Bold initial caps, flush left. Do NOT italic, Do NOT underline. **Abstract, Introduction, Experimental or Method; Discussion; Recommendations; Conclusions; Acknowledgments; References**
2. Type the following headings flush left, initial caps, and italic. *Reagents, Apparatus, Preparation of Sample; Cleanup; Determination; Calculations*

Footnotes

Should be below the addresses and should include the following: Corresponding author's email and funding or support information. Please include the grant number, affiliation supporting the work, city, state and country of funding agent.

Tables

1. Tables should be placed at the end of the manuscript, not on the same page with text material. (Several short tables may be combined on one page).
2. Do not use vertical lines in tables and use horizontal lines sparingly, usually between the table title and the headings to separate the headings from the body of the table, and at the bottom of the table, above the footnotes if there are any.
3. Do not place a period after the table title. Type table titles as follows:
Table 1. Results for the recovery of insect fragments from ground spices.
4. Indicate footnotes within a table by small letters, italic, set above the line of type.

Example:

0.01	94.7
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0.05 ^a	110.2
-------------------	-------

^a Not included in average.

Do not use asterisks or similar symbols, except for statistical probabilities.

5. In typing the column headings, capitalize only the first letter of the first word of the heading.

Figure Captions

1. Type figure captions on a separate page after the references.
2. Type caption as follows:
Figure 1. Mass spectra of aflatoxin RB₁ and aflatoxin RB₂

Other Journal Submissions

Full Manuscripts and Validation Report Submissions

The *Journal of AOAC INTERNATIONAL* publishes refereed papers and reviews in the fields of chemical, biological, and toxicological analytical chemistry for the purpose of showcasing the most precise, accurate, and sensitive methods for analysis of foods, food additives, supplements and contaminants, cosmetics, drugs, toxins, hazardous substances, pesticides, feeds, fertilizers and the environment available at that point in time. The scope of the *Journal* includes unpublished original research describing new analytical methods, techniques and applications; improved approaches to sampling, both in the field and the laboratory; better methods of preparing samples for analysis; collaborative studies substantiating the performance of a given method; and statistical techniques for evaluating data. The *Journal* will also publish other articles of general interest to its audience, e.g., technical communications; cautionary notes; and comments on techniques, apparatus, and reagents.

Letters to the Editor

The *Journal* publishes Letters to the Editor related to papers published in the *Journal*, and where appropriate, the *Journal* will send letters commenting on the *Journal* article to the author of the paper for a response, and publish the letter and the response at the same time.

Reviews

Reviews are published on topics within the scope of the *Journal*. Published reviews will be a critical evaluation of recent work, which may include or reference the historical background. Review papers are reviewed by the appropriate section editor, who may accept without change, accept with revision, or reject the original submission.

Special Guest Editor Sections

Special Guest Editor sections are published on topics of which are appropriate to the work of AOAC's analytical communities and allow for in-depth treatment of an issue. They are intended to bring together papers from the best scientific minds on the topic. The guest editor is responsible for submitting a proposal, soliciting four to 10 papers, obtaining two peer reviews for each paper, acting as a reviewer or co-reviewer, and writing an introduction to the section, as well.

Joseph Sherma, the *Journal*'s acquisition editor, is available to guide guest editors through the process. (shermaj@lafayette.edu)

Technical Communications

Technical Communications are types of papers, briefer than full research papers, typically less than 10 double spaced, one-sided pages, including text, references, tables, figure captions, and figures, which will be reviewed, with the editor determining the extent of review needed, and published in a separate section of the *Journal*; Technical Communications may include:

- Note on attendant hazard within a method
- Design and description of nonproprietary laboratory apparatus

- Preliminary findings or observations
- Brief note elaborating on an existing method
- Critical comments (not research) on existing methods, especially First Action methods
- Minor modifications to existing analytical methods

Symposium Papers

It is general policy that AOAC has first right of refusal of material first presented in symposia at AOAC annual meetings. A symposium containing fewer than 10 papers may be considered for publication as a group in a regular issue of the *Journal*. Symposium organizers collect the papers and submit them to the AOAC Publications Department, but should notify the AOAC Publications Department of their wish to have a symposium considered for publication soon after accepting their role as symposium organizer.

Extended Abstracts

Extended abstracts are restricted length (4-5 double spaced, one-sided pages) papers, including all text, references, tables, figure captions, and figures. Expanded abstracts are lightly reviewed, and fast tracked into a separate section of the *Journal*. Extended abstracts and full research papers are nearly the same, but the extended abstracts are especially meant to promote communication and discussion of subjects that are usually associated with posters, and have yet to be established or completed as research projects, and to provide a venue for early experimental work.