June 2008

codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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Agenda Item 3 **ORIGINAL LANGUAGE ONLY**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION

Thirty-first Session

International Conference Centre, Geneva (Switzerland), 30 June - 4 July 2008

AMENDMENTS TO THE PROCEDURAL MANUAL

(Comments submitted as of 16 June 2008)

1. Proposed Draft Provisions Applied to Contaminants in the "*Relations between Commodity Committees and General Committees*" as presented in ALINORM 08/31/41 Appendix II and reproduced in ALINORM 08/31/4 Annex II.

CIAA

Supportive of adoption.

2. Proposed Amendment to the *Working Instructions for the Implementation of the Criteria Approach in Codex* as presented in ALINORM 08/31/23 Appendix II and reproduced in ALINORM 08/31/4 Annex V.

AUSTRALIA

Australia supports the proposed amendments outlined in ALINORM 08/31/23 Appendix II to the Procedural Manual.

BRAZIL

Brazil supports the adoption of the Proposed Amendment.

NORWAY

CORRECTION TO THE APPENDIX II IN ALINORM 08/31/23

Extract from Alinorm 08/31/23:

> 76) The Delegation of Egypt, supported by other delegations, expressed the view that the precision value for ML< 0.1 mg/kg RSD_R of 44% was too high. The Observer from NMKL indicated that this was based on the application of the Thompson calculation whereby for concentration below 0.12 ppm the theoretical relative standard deviation (RSD_{TR})was 22% and that the RSD_R was twice that value. After some discussion, the Committee agreed to refer to the RSD_{TR} of 22% in the Table.

Based on the above discussion, the 4th row regarding Precision in the table of the Appendix II, was changed during the meeting to the following:

Precision:	For ML $\geq$ 0.1 mg/kg, HorRat value $\leq$ 2 For ML < 0.1 mg/kg, the RSD_{TR} < 22%. RSD_R[2] = relative standard deviation of reproducibility

[2] The RSD_R should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the $RSDs_R$ from an appropriate method performance study.

In the new text, the precision for ML < 0.1 mg/kg states the theoretical value and not the obtained result's relation to the theoretical value. Further the footnote 2 refers to a parameter which is no longer in the table. The footnote includes a typographical error "RSDSR" should be "RSDR".

As pointed out by the delegation of UK (however not referred to in the Alinorm), the precision is often presented as 2σ. Based on the relative standard deviation of the reproducibility from collaborative validation, RSDR, the precision in the table in Appendix II should be generalized and simplified to:

Precision	$RSD_R \leq 2 \cdot RSD_{TR}$* RSD_R = the relative standard deviation of the reproducibility obtained in a method performance study * The RSD_{TR} should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the RSD_R from an appropriate method performance study.

Below is a revised version of the Appendix II. The new text is double-underlined and the"overlined" text is suggested to be deleted.

PROPOSED AMENDMENT TO THE PROCEDURAL MANUAL

WORKING INSTRUCTIONS FOR THE IMPLEMENTATION OF THE CRITERIA APPROACH IN CODEX

(This replaces the *Working Instructions for the Implementation of the Criteria Approach in Codex* in the *Principles for the Establishment of Codex Methods of Analysis*)

Any Codex Committee may continue to propose an appropriate method of analysis for determining the chemical entity and/or develop a set of criteria to which a method used for the determination must comply. In either case the specified maximum level, minimum level, any other normative level or the concentration range of interest has to be stated.

When a Codex Committee decides that a set of criteria should be developed, in some cases the Committee may find it easier to recommend a specific method and request the Codex Committee on Methods of Analysis and Sampling (CCMAS) to "convert" that method into appropriate criteria. The Criteria will then be considered by the CCMAS for endorsement and will, after the endorsement, form part of the standard. If a Codex Committee wishes to develop the criteria, it should follow instructions given for the development of specific criteria as outlined in table 1.

Table 1: Guidelines for establishing numeric values for the criteria:

<table>
<tr><td>Applicability:</td><td>The method has to be applicable for the specified provision, specified commodity and the specified level(s) (maximum and/or minimum) (ML). The minimum applicable range of the method depends on the specified level (ML) to be assessed, and can either be expressed in terms of the reproducibility standard deviation (s_R) or in terms of LOD and LOQ.</td></tr>
<tr><td>Minimum applicable range:</td><td>For ML ≥ 0.1 mg/kg, [ML - 3 s_R , ML + 3 s_R]
For ML < 0.1 mg/kg, [ML - 2 s_R , ML + 2 s_R]
s_R [1] = standard deviation of reproducibility</td></tr>
<tr><td>Limit of Detection (LOD):</td><td>For ML ≥ 0.1 mg/kg, LOD ≤ ML · 1/10
For ML < 0.1 mg/kg, LOD ≤ ML · 1/5</td></tr>
<tr><td>Limit of Quantification (LOQ):</td><td>For ML ≥ 0.1 mg/kg, LOQ ≤ ML · 1/5
For ML < 0.1 mg/kg, LOQ ≤ ML · 2/5</td></tr>
<tr><td>Precision:</td><td>~~For ML ≥ 0.1 mg/kg, HorRat value ≤ 2~~
~~For ML < 0.1 mg/kg, the RSD_{TR} < 22%~~ **$RSD_R \leq 2 \cdot RSD_{TR}$** [(2)]
RSD_R = relative standard deviation of reproducibility obtained in a method performance study</td></tr>
<tr><td>Recovery (R):</td><td>
<table>
<tr><td>Concentration</td><td>Ratio</td><td>Unit</td><td>Recovery (%)</td></tr>
<tr><td>100</td><td>1</td><td>100% (100 g/100g)</td><td>98 – 102</td></tr>
<tr><td>≥10</td><td>10^{-1}</td><td>≥ 10% (10 g/100g)</td><td>98 – 102</td></tr>
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<tr><td>0.0000001</td><td>10^{-9}</td><td>1 µg/kg</td><td>40 – 120</td></tr>
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Other guidelines are available for expected recovery ranges in specific areas of analysis. In cases where recoveries have been shown to be a function of the matrix other specified requirements may be applied.</td></tr>
<tr><td>Trueness:</td><td>For the evaluation of trueness preferably certified reference material should be used.</td></tr>
</table>

[1] The s_R should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the s_R from an appropriate method performance study.

[2] The RSDTR should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the RSDR from an appropriate method performance study.

The criteria in Table 1 must be approved for the determination in question.

However, the primary responsibility for supplying information about the specified CODEX level(s), methods of analysis and criteria resides with the referring Committee. If the Committee fails to provide a method of analysis or criteria despite numerous requests, then the CCMAS may establish appropriate criteria as above.

CONVERSION OF SPECIFIC METHODS OF ANALYSIS TO METHOD CRITERIA BY THE CCMAS

When a Codex Committee submits a Type II or Type III method to CCMAS for endorsement, it should also submit information on the specified Codex level(s) along with the provision to enable the CCMAS to convert it into suitable generalized analytical characteristics:

- trueness
- applicability (matrix, concentration range and preference given to 'general' methods)
- limit of detection
- limit of quantification
- precision; repeatability intra-laboratory (within laboratory), reproducibility inter-laboratory (within laboratory and between laboratories), but generated from method performance study data rather than measurement uncertainty considerations
- recovery
- selectivity
- sensitivity
- linearity

These terms are defined in the Analytical Terminology for Codex Use, as are other terms of importance.

The CCMAS will assess the actual analytical performance of the method which has been determined in its validation. This will take account of the appropriate precision characteristics obtained in method performance studies which may have been carried out on the method together with results from other development work carried out during the course of the method development. The set of criteria that are developed will form part of the report of the CCMAS and will be inserted in the appropriate Codex Standard.

In addition, the CCMAS will identify numeric values for the criteria for which it would wish such methods to comply.

ASSESSMENT OF THE ACCEPTABILITY OF THE PRECISION CHARACTERISTICS OF A METHOD OF ANALYSIS

The calculated repeatability and reproducibility values can be compared with existing methods and a comparison made. If these are satisfactory then the method can be used as a validated method. If there is no method with which to compare the precision parameters then theoretical repeatability and reproducibility values can be calculated from the Horwitz equation. (M. Thompson, *Analyst*, 2000, 125, 385-386).

UNITED STATES OF AMERICA

The United States supports the amendment to the Working Instructions for the Implementation of the Criteria Approach in Codex and its adoption by the Codex Alimentarius Commission.

NMKL

CORRECTION TO THE TABLE IN APPENDIX II, ALINORM 08/31/23:

Extract from Alinorm 08/31/23:

76) The Delegation of Egypt, supported by other delegations, expressed the view that the precision value for ML< 0.1 mg/kg RSD_R of 44% was too high. The Observer from NMKL indicated that this was based on the application of the Thompson calculation whereby for concentration below 0.12 ppm the theoretical relative standard deviation (RSD_{TR})was 22% and that the RSD_R was twice that value. After some discussion, the Committee agreed to refer to the RSD_{TR} of 22% in the Table.

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In the text, the precision for ML < 0.1 mg/kg is stricter than for ML at 0.1 mg/kg (HorRat ≤ 2 corresponds to RSDR ≤ 44%) to 10 mg/kg (HorRat ≤ 2 corresponds to RSDR ≤ 22%). Not only is it inconsequent, but the result would be that it would be hard to find any methods fulfilling the requirement. (E.g. None of the methods for lead in foods (except for drinking water) would fulfill the precision criterion at levels below 0.1 mg/kg). Further the footnote 2 refers to a parameter which is no longer in the table. The footnote includes a typographical error "RSD_{SR}" should be "RSD_R".

The precision is often presented as 2σ (95% confidence interval). Based on the relative standard deviation of the reproducibility from collaborative validation, RSD_R, the precision in the table in Appendix II could be generalized and simplified to:

Precision	$RSD_R \leq 2 \cdot RSD_{TR}$* RSD_R = the relative standard deviation of the reproducibility obtained in a method performance study * The RSD_{TR} should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the RSD_R from an appropriate method performance study.

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s_R[4] = standard deviation of reproducibility</td></tr>
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<u>Rest of the text unchanged</u>

[4] The s_R should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the s_R from an appropriate method performance study.

[5] The **RSDTR** should be calculated from the Horwitz / Thompson equation. When the Horwitz / Thompson equation is not applicable (for an analytical purpose or according to a regulation) or when "converting" methods into criteria then it should be based on the **RSDR** from an appropriate method performance study.