

CODEx ALIMENTARIUS COMMISSION



Food and Agriculture
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Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 2.1, 6.2

MAS44/CRD17 Rev.1

May 2025

ORIGINAL LANGUAGE ONLY

JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

44th Session

Virtual

5 – 8 May and 14 May 2025

COMMENTS OF NEW ZEALAND

Agenda item 2.1: Matters referred to the Committee by CCFA55

[CX/MAS 25/44/2 Add.1](#): Sampling plans in [CXS 150-1985](#)

The provision for NaCl content in CXS 150-1985 for food grade salt specifies that the salt content must exceed 97% measured on a dry basis.

The standard includes a sampling plan that requires that a composite sample be formed from a number of individual increments depending on the lot size, with lots accepted provided the average of two or more results exceeds 97%.

However, NZ notes that the sampling plan and acceptance criterion are not compatible. The provision specifies a minimum level for the salt content, so that lots containing only a small percentage of product below the 97% salt should be accepted, whereas the acceptance criterion is expressed in terms of the average level in a lot.

So as not to lose the sampling plan from CXS 150-1985 as the method and sampling plan are intended to be moved to CXS 234-1999, NZ proposes to advise CCFA of this comment above and are willing to assist with the design of a sampling plan.

Agenda item 6.2: Review of sampling plans in CXS 234

New Zealand and Germany as Chair and co-Chair of the EWG acknowledge the comments submitted by Colombia, Egypt, Indonesia, Japan, Kenya, Norway, Philippines, and Thailand to CL 2025/18–MAS on the INFORMATION DOCUMENT: *GENERAL GUIDELINES ON SAMPLING* (CXG 50-2004) E-BOOK WITH SAMPLING PLANS APPLICATIONS, as well as the comments submitted by El Salvador (CCC) and by Eurachem (direct) and other CCMAS participants (directly):

1. New Zealand thanks Colombia, Egypt, Indonesia, Kenya, Norway, Philippines and El Salvador for their support for their support for publication of the Information Document on the CCMAS website. We also acknowledge agreement of the content including practical examples of sampling plans and information to support design of sampling plans for isolated lots and sampling plan app as well as more detail on statistical information, measurement uncertainty and Bayesian approaches.
2. New Zealand also notes the support of other CCMAS participants provided.
3. New Zealand thanks Eurachem and Thailand for their support for publication of the Information Document on the CCMAS website, and their support for the content including classical sampling plans based on CXG 50, specifying producer's and consumer's risks and information on Bayesian plans. We appreciate the useful questions raised. Please see our *responses* below:
4. New Zealand thanks Japan for their support for the Information Document supporting the scope of CXG50, and that the focus is on acceptance sampling plans for the inspection of isolated homogeneous lots. We also note that Japan does not agree to introduce a new concept of Bayesian plans into this information document and if CCMAS wants to introduce Bayesian sampling plans, it should be done through elaboration of a Codex standard or text rather than an information document. Please see our *response* below:

Specific comments with responses from the Chair and co-Chair:

Eurachem:

The comments focussed on Section 5.4, from the Eurachem Uncertainty from Sampling Working Group (UfS-WG), along with Prof Tom Fearn, who as an expert on Acceptance Sampling (AS).

Eurachem along with Prof Fearn considered that this document, and particularly Section 5.4, now generally explains more clearly the role of measurement uncertainty in general (MU), and its component from sampling (UfS), in Acceptance Sampling (AS). Some places in Section 5.4 were identified where the wording needed to be improved in order to make the meaning clearer.

All the changes suggested in Section 5.4 of the Information Document have been made.

Thailand:

CL 2025/18–MAS: General Comments, point 2:

2. We have no objection with the inclusion of Bayesian plans in the document. They address the need for sampling plans with low sample sizes, thus reducing the costs of inspecting product safety and quality.

For clarity and to avoid confusion for users, the description and information of Bayesian plans should be clearly separated from classical sampling plans based on CXG 50, specifying producer's and consumer's risks. Therefore, a new appendix should be developed for Bayesian plans, alongside the text for the classical sampling plans.

Thank you for this suggested approach and in response to this, we have amended the Information Document to include a separate PART THREE containing the information on Bayesian plans.

Response to MAS44/CRD16:

1. The terminology used in CX/MAS 25/44/9 relating to the inclusion of sampling plans in CXS 234:

3.1: "sampling method" is the same as the "physical sampling procedure"

3.2: "sampling inspection plan" is the same as "sampling plan", as in CXG 50 the latter has been used for brevity

2. Microbiological sampling plans (Information Document Section 4.7):

3.3. information on 3-class plans appears in CXG 50 and is included for completeness, whereas the discussion on the plans for *Cronobacter* and *salmonella* based on the work by Zweiterung et al. is new material.

3. Further information on the use of the same sampling plan by producers and consumers (Information Document Section 2.2.3 paragraph 16):

The risks involved with the use of the same sampling plan by both producers and consumers is discussed in Section 2.2.3 (paragraph 16).

The key principle is that if a sampling plan has a reasonable chance of accepting marginal product, then there will also be a reasonable chance of rejecting that same product when it is reinspected using the same sampling plan.

This can be explained using a simple example:

*If the chance of accepting a lot using a particular sampling plan is 50%, then the chance of rejecting the lot using the same plan will also be 50%, so that the chance that a lot might pass initially but then fail will be $50\% * 50\% = 25\%$, noting that any lot for which the probability of acceptance is 50% must be considered to be of marginal quality.*

This principle can be expressed as formula: if the chance of accepting a lot is 'p', where p lies between 0 and 1, then the chance of rejecting the lot will be 1-p, so that the chance that a lot might pass then fail will be given by:

Prob(pass then fail) = $p(1-p)$. This expression $p*(1-p)$ has a maximum value of 0.25 when $p=0.5$.*

To avoid this problem the producer must use a more stringent plan than the plan used by the consumer; so that, as remarked in section 2.2.3, producers are disadvantaged in adversarial sampling situations.

Although it is not explicitly stated, this is the why the OIML R087 Guideline, mentioned in section 2.2. of the information document, contains the following statement in the scope:

Legal metrology requirements for prepackaged products (also called prepackaged commodities or prepackaged goods) labeled in predetermined constant nominal quantities of weight, volume, linear measure, area, or count; and Sampling plans and procedures for use by legal metrology officials in verifying the quantity of product in prepackages.

Note: The sampling plans are not for use in the quantity control processes of prepackagers [producers].

Specifically, the OIML plans have been designed to ensure that there is a small chance (0.5%) of failing a lot that is truly compliant, whose true average level (i.e. if the average level had been calculated from the weights of all the blocks in a lot) exceeds the nominal label weight whereas to avoid disputes, producers would also want a reasonable chance of not accepting lots that do not comply.

4. Advisement of CCCF:

Thailand also noted that CCCF be advised in the matter of applying a Bayesian approach in developing an acceptance sampling plans for mycotoxins in food and feed. The Codex secretariat will provide guidance on this process.

5. Update to numbering in the Information Document:

The reference to App3 in section 2.3.1 has been corrected to refer to 3.3.2.

6. Clearer separation between classical and Bayesian plans:

We fully agree that clarity is essential for users, particularly when different statistical paradigms are involved. However, we would like to point out that the distinction between classical and Bayesian approaches is not always clear-cut in practice. Both frameworks rely on a variety of criteria and decision principles, and their boundaries often overlap. In fact, a given sampling plan can frequently be assessed from both perspectives. For instance, classically developed plans—such as those based on producer's and consumer's risks as defined in CXG 50—can also be evaluated using Bayesian measures, such as posterior risks or expected utility. Conversely, Bayesian plans can be interpreted using classical performance indicators.

In this context, we believe it is more productive to focus on transparency in the underlying assumptions and evaluation criteria, rather than enforcing a strict methodological separation.

That said, we support the general intention of the comment in that an appendix dedicated to Bayesian approaches could indeed offer valuable guidance to users—especially if it emphasizes the ways in which Bayesian and classical assessments can complement and inform each other.

Japan:

At CCMAS43 considerable interest was expressed in plans that could allow reductions in the amount of testing required. On this basis, it was decided to include information on Bayesian plans in the Information Document as an example of another type of sampling plans not mentioned in CXG 50. CXG 50 contains information on only the simpler and most frequently used sampling plans; bearing in mind that CXG 50 cannot be comprehensive and include information on all types of sampling plans.

Significant progress on the development of Bayesian plans has been made by the ISO TC69 SC5 WG10 team during the last year since the finalization of CXG 50 the Guidelines on Sampling so it was not possible to include this information in CXG 50. In any case, the Information Document contains only an overview of Bayesian plans, – more details are provided in papers submitted for publication by the ISO group. The work of the ISO group is on-going and it is planned to extend the current work to include variables plans and the effect of measurement uncertainty. It is expected that the information document will be updated in the future as the research is completed.

The comment about the Bayesian plans being applicable to continuing series of lots is not accurate. The distinction between isolated lots and a continuing series is an artefact of way plans have been developed in the ISO standards but it does not apply beyond the ISO plans. In fact, Bayesian plans could be applied to either case depending on how one chooses to apply the prior distribution, however, as in the example in the webinar, it is prudent to base the prior on a previous inspection of the same lot to guard against lot to lot variation. As far as lots are concerned, the scope of the present ISO work includes both the inspection of isolated lots and serial lot inspection. The term “isolated lot inspection” does not mean that the consumer has no access to information regarding lot quality prior to the inspection of the current lot. Rather “isolated lot inspection” means that there are no switching rules and that the acceptance sampling plan is calculated separately for each new lot. In particular, the consumer having past experience with or knowledge regarding the producer of the lot currently under inspection is perfectly compatible with the concept of “isolated lot inspection”.