Jordanian Accreditation System
نظام الاعتماد الأردني
Accreditation Unit

ACCREDITATION UNIT

POLICY FOR USING REFERENCE MATERIALS

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Purpose

The **JAS-AU** has set this document to ensure consistency in using reference materials based on international requirements. This document is part of accreditation requirements for testing and calibration laboratories

Scope

This document is intended for all **JAS-AU** accredited and enrolled calibration and testing laboratories.

Authorship

This publication has been written by the Technical Committee, and approved by the Accreditation Director.

Official language

The text may be translated into other languages as required. The English language version remains the definitive version.

Copyright

Further information

This policy is mandatory for laboratories, and shall be implemented within two months from its issuance date.

For further information about this publication, kindly contact **JAS-AU.**

This document is also available at our web site where you can check updates directly.

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1 Introduction

Reference materials are an important tool in realizing a number of aspects of measurement quality and are used for method validation, calibration, estimation of measurement uncertainty, training and for internal quality control (QC) and external quality assurance (QA) (proficiency testing) purposes [4].

2 Definitions

2.1 Reference Material RM:

Material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process [3].

2.2 Certified reference material CRM:

Reference material (RM) characterized by a metrologically valid procedure for one or more specified properties, accompanied by an RM certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability. [3]

2.3 Candidate reference material:

Material, intended to be produced as a reference material (RM)

Note 1 to entry: A candidate material has yet to be characterized and tested to ensure that it is fit for use in a measurement process. To become an RM, a candidate material needs to be investigated to determine if it is sufficiently homogeneous and stable with respect to one or more specified properties, and is fit for its intended use in the development of measurement and test methods that target those properties.

[7]

2.4 Matrix reference material:

Reference material that is characterized for the composition of selected properties such as the content of specified chemical constituents. Such materials may be prepared from naturally

occurring materials, or by synthesis;[3]

2.5 homogeneity

uniformity of a specified property value throughout a defined portion of a reference material (RM) : **Tests for homogeneity are described in ISO Guide 30 [7]**

2.6 stability

characteristic of a reference material, when stored under specified conditions, to maintain a specified property value within specified limits for a specified period of time[7]

3 Selection of Reference Materials (RMs)

3.1 When selecting RMs the user shall take into account the level of uncertainty, availability, and chemical and physical suitability for the intended purpose [3].

3.2 The user shall undergo the following sequence of priorities in selecting the RMs:

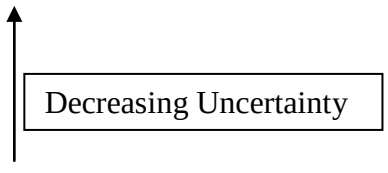
- CRM (Certified Reference Material).
- RM (Reference Material).
- In house working Reference Material [4].

3.3 . It is mandatory for a CRM that all certified values are accompanied by an associated uncertainty at a stated level of confidence and a statement on the metrological traceability of these values.

In the absence of a certificate of analysis with documented traceability, experimental evidence of demonstrated comparability from participation to international comparisons.

The following classes of reference materials may be encountered: [5]

- Primary reference material
- Secondary reference material
- In –house or working reference material



3.4 The first approach in selecting RMs is to compare the tentative specification of the CRMs required with the lists of CRMs available on the international market. The user may consult:

- The catalogues of the different manufacturers.
- The COMAR data bank (www.comar.bam.de).

- If available, branch publications or recommendations examining the best choices of CRM in specific field.
- The recommendations of **ISO 17034:2016** [6]
- The recently internet released database for selection of RMs such as (www-naweb.iaea.org/nahu/nmrm/contens.asp) [4] or (www.dar.bam.de) or others.

3.5 The user who decides not to choose CRMs must justify the basis of his choice and have an official approval of **JAS-AU**.

3.6 In case the market fail to offer a RMs and/or CRMs to meet laboratory's identified needs, the laboratory may attempt to develop its own in-house reference material [2].

3.7 An in house RM shall be prepared by a procedure that guarantees the following:

- Sufficient availability over several years.
- Demonstrated homogeneity and stability.
- An internal certification analysis assuring demonstrated traceability and ensuring the absence of bias which might have an adverse effect on the required uncertainty of the calibration [2].
- Accuracy and validity regularly over the intended period of use.

4 Contents of RMs Certificates & Labels

4.1 Information Provided On the Label:

4.1.1 Name **and contact details of the RM producer.**

4.1.2 Name of **RM.**

4.1.3 Producer's code for the RM.

4.1.4 The batch number.

4.1.5 Relevant health, safety& environmental regulations if applicable [1].

4.1.6 Storage and handling conditions

4.1.7 Period of validity

4.2 Essential Contents of Certificate:

4.2.1 Name of RM.

4.2.2 Producer and producer's code for the RM.

4.2.3 General description of the material.

4.2.4 Intended use.

4.2.5 Certified property value(s), each accompanied by a statement of uncertainty.

4.2.6 Method(s) used to obtain property value (with full details where values depend on the methods of measurement). **Mandatory whenever applicable**

4.2.7 Period of validity or **expiry date according to the guide it should be stated**.

4.2.8 Name **and function** of certifying officers.

4.2.9 Title of certificate.

4.2.10 Minimum sample size (Mandatory whenever applicable).

4.2.11 Commutability (Mandatory whenever applicable).

4.2.12 Storage information. [1]

4.2.13 Property of interest, property value and associated uncertainty

4.2.14 Metrological traceability.

4.2.15 Instruction of handling and uses.

4.2.16 document version.

4.2.17 Page number and number of pages.

5 Handling and storage of RMs

5.1 User shall establish, document and implement a procedure for receiving, inspecting, storing, handling, using and disposing or withdrawing of RMs.

5.2 The user of RMs shall insure that the received RMs are handled and stored according to the procedure in paragraph (6.1) and producer's requirements to avoid deterioration and to guarantee the best performance upon use.

6 Use of Reference Materials

6.1 The user shall apply the same analytical procedure for both the reference material and the tested sample [3].

6.2 The user shall keep records and timetable for using the RMs.

6.3 The user shall follow the conditions presented in the certificate of the CRMs under use [1]. **CRMs should not be used beyond the expiry date.**

6.4 In case of using hazardous RM, a safety procedure shall be established, documented and implemented considering all precaution actions stated by the producer, the local, and the international regulations [1].

6.5 It is recommended to cross-check "old" and "new" batches of RMs to verify any inconsistency or inhomogeneity or displacements of reference values. The cross-check should be documented.

7 Periodical inspection of RM

The user of RMs shall use the procedure in paragraph (6.1) for periodical inspection of RMs including scheduled inspections to check:

7.1 Validity of RMs.

7.2 Proper handling and storage of RMs.

7.3 General appearance of the material.

7.4 Availability of a proper number and quantity of RMs as alternatives for recertified and / or expired RM.

8 Withdrawal or disposal of RMs

The user of RMs shall use the procedure in paragraph (6.1) to insure proper disposing or withdrawal of RMs based on their hazard to humans and environment according to producer's recommendations, national and international regulations.

9 References

[1] ISO Guide 31:2015, Reference materials contents of certificates ,labels. and accompanying documentation.

[2] certified reference materials. ISO Guide 32:1997, Calibration in analytical chemistry and use of certified reference material.

[3] ISO Guide 33:2015, good practice in using reference materials.

[4] EEE/RM/062 rev3, The selection and use of reference materials.

[5] ILAC-G9:2005, Guidelines for the Selection and Use of Reference Materials

[6] ISO 17034:2016, General requirements for the competence of reference material producers

[7] ISO Guide 30:2015. Reference materials -- Selected terms and definitions