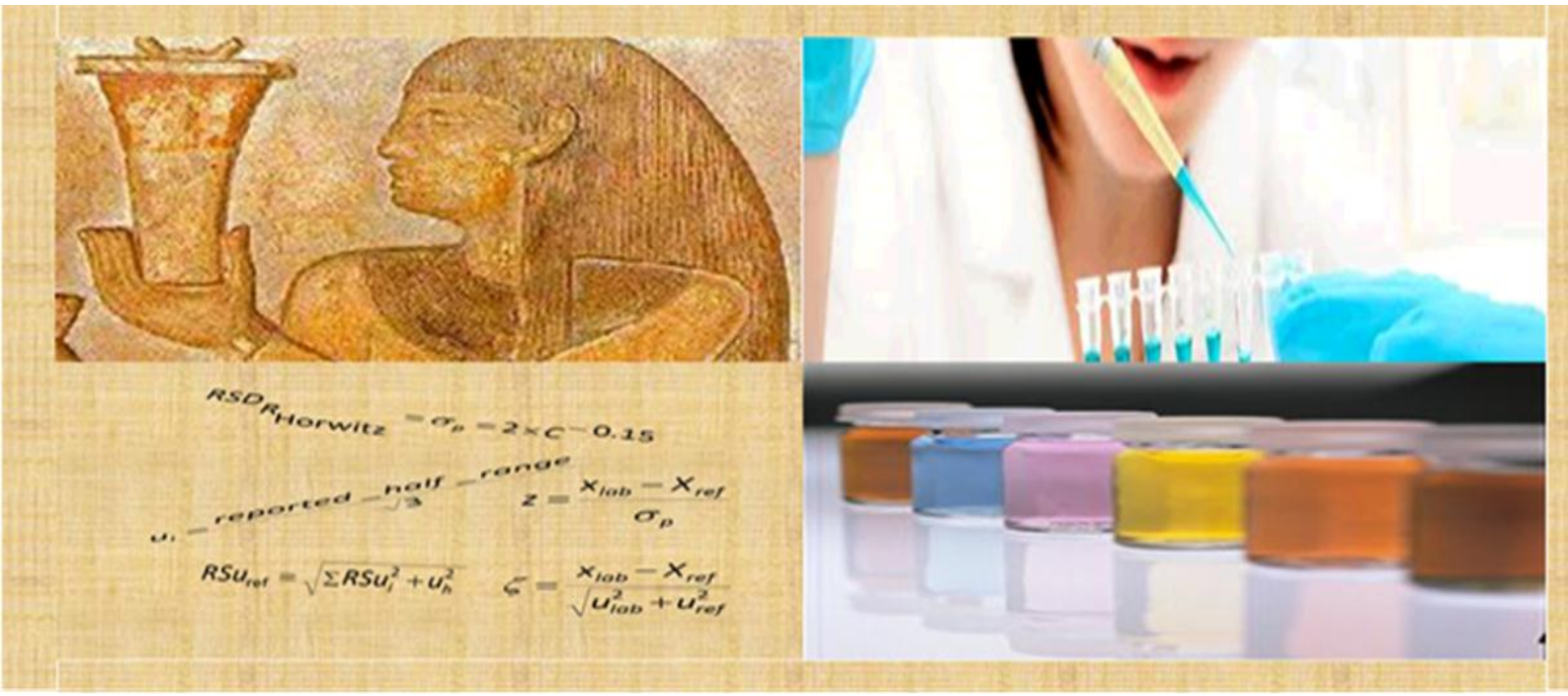
European Commission

JRC TECHNICAL REPORT



JRC Guidelines for 1 - Selecting and/or validating analytical methods for cosmetics 2 - Recommending standardization steps for analytical methods for cosmetics

Implementation of Regulation (EC) No 1223/2009 of the European Parliament and of the Council

Ursula Vincent

2015

Joint Research Centre

Report EUR 27284

European Commission
Joint Research Centre
Institute for Reference Materials and Measurements

Contact information
Ursula Vincent
Address: Joint Research Centre, Retieseweg 111, 2440 Geel, Belgium
E-mail: ursula.vincent@ec.europa.eu
Tel.: +32 14 57 1207

JRC Science Hub
https://ec.europa.eu/jrc

JRC96082

EUR 27284

ISBN 978-92-79-48534-3 (PDF)

ISSN 1831-9424 (online)

doi: 10.2787/412553

Luxembourg: Publications Office of the European Union, 2015

Printed in Belgium

Abstract

JRC-IRMM was requested by the Technical Committee 392 of the European Committee for Standardization (CEN/TC 392 - Cosmetics) to provide advice and guidelines on an appropriate approach for method validation to allow the analysis of cosmetic products in the frame of Art. 12 of Regulation (EC) No 1223/2009 of the European Parliament and of the Council. This document describes a pragmatic approach not only for validation of methods necessary for market surveillance of cosmetics but also for further standardisation of the methods if deemed necessary.. The document emphasizes a 'cascade approach' as regards the type of methods to be used depending on their validation status and establishes a global concept for the analysis of cosmetics.
The document was discussed and endorsed by the three main stakeholders active in the field of cosmetics analysis, namely the Platform of European Market Surveillance Authorities for Cosmetics Analytical Methods group (PEMSAC AM), set up by the European Commission, the Official Cosmetics Control Laboratories (OCCL) Network, set up by the Council of Europe – European Directorate for the Quality of medicines (EDQM) and CEN/TC 392 'Cosmetics'. All three groups are composed of Member States Competent Authorities for control; the manufacturers' representatives participate in the work of the CEN/TC 392.

JRC Technical Report

JRC Guidelines for

1 - Selecting and/or validating analytical methods for cosmetics

2 - Recommending standardization steps of analytical methods for cosmetics

Endorsed by three relevant stakeholder groups, namely the Platform of European Market Surveillance Authorities for Cosmetics (PEMSAC) Analytical Methods group, the CEN/TC 392 'Cosmetics' and the Official Cosmetics Control Laboratories Network (OCCL at EDQM, Council of Europe)

Author

Ursula Vincent

June 2015

Executive summary

The analysis of cosmetics constitutes a challenge mainly due to the large variety of ingredients and formulations, leading to huge matrix complexity and variability. Regulation (EC) N° 1223/2009 of the European Parliament and of the Council establishes the requisites for cosmetic products and the responsibilities of stakeholders. According to ISO 22716:2007 (Cosmetics – Good Manufacturing Practices (GMP) – Guidelines on Good Manufacturing Practices) manufacturers are responsible to ensure the safety of the products they put on the market and for selecting the most appropriate method for their production, quality control, storage and shipment, whereas the Competent Authorities shall ensure the analytical control of the products in the frame of market surveillance. Regulation (EC) No 1223/2009 also establishes that "the sampling and analysis of cosmetic products shall be performed in a reliable and reproducible manner. In the absence of any applicable Community legislation, reliability and reproducibility shall be presumed if the method used is in accordance with the relevant harmonised standards, the references of which have been published in the Official Journal of the European Union".

In this frame JRC-IRMM was requested by Technical Committee 392 of the European Committee for Standardization (CEN/TC 392 - Cosmetics) to provide advice and guidelines on an appropriate approach for method validation to allow the analysis of cosmetic products in the frame of Art. 12 of Regulation (EC) No 1223/2009 of the European Parliament and of the Council.

This document describes a pragmatic approach not only for validation of methods necessary for market surveillance of cosmetics but also for further standardisation of the methods if deemed necessary.

The document was discussed and endorsed by the three main stakeholders active in the field of cosmetics analysis, namely the Platform of European Market Surveillance Authorities for Cosmetics Analytical Methods group (PEMSAC AM), set up by the European Commission, the Official Cosmetics Control Laboratories (OCCL) Network, set up by the Council of Europe – European Directorate for the Quality of medicines (EDQM) and CEN/TC 392 'Cosmetics'. All three groups are composed of Member States Competent Authorities for control; the manufacturers' representatives participate in the work of the CEN/TC 392.

Table of Contents

ACRONYMS

PEMSAC: Platform of European Market Surveillance Authorities for Cosmetics

AM: Analytical Methods

CEN: Comité Européen de Normalisation (European Committee for Standardization)

CEN/TC: CEN Technical Committee

WG: Working Group

OCCL: Official Cosmetics Control Laboratories

EDQM: European Directorate for the Quality of Medicines & HealthCare

ISO: International Standardization Organization

OJ: Official Journal of the European Union

GMP: Good Manufacturing Practices

JRC: Joint Research Centre

NWIP: New work item proposal

NWI: new work item

ILC: Inter-Laboratory Comparison

UV: Ultra-Violet

LOD: limit of detection

LOQ: limit of quantification

CHAPTER I: Guidelines for the selection and/or validation of analytical methods for cosmetics

I. Preamble

These guidelines are given in the framework of harmonising the implementation of regulatory compliance testing of cosmetic products by manufacturers and Competent Authorities.

Within the European Union, cosmetics are regulated through Regulation (EC) No 1223/2009 of the European Parliament and of the Council [2], which in respect to these guidelines establishes:

- That *"A cosmetic product made available on the market shall be safe for human health …" (Article 3 - Safety)*

- *"Restrictions for certain substances" (Chapter IV)* including *"restrictions for substances listed in the Annexes" (Article 14)* and *"Traces of prohibited substances." (Article 17).* The latter permits *"the non-intended presence of a small quantity of a prohibited substance …"/ "… which is technically unavoidable in good manufacturing practice …"/ "… provided that such presence is in conformity with article 3."*

- *"Good manufacturing practice" (Article 8)*

- That *"Sampling and analysis of cosmetic products shall be performed in a reliable and reproducible manner. In the absence of any applicable Community legislation, reliability and reproducibility shall be presumed if the method used is in accordance with the relevant harmonised standards, the references of which have been published in the Official Journal of the European Union." (Article 12) "In-market control" (Article 22) where "Member States shall monitor compliance with this Regulation via in-market controls of the cosmetic products made available on the market. They shall perform appropriate checks of cosmetic products and checks on the economic operators on an adequate scale, through the product information file and, where appropriate, physical and laboratory checks on the basis of adequate samples" and that "Member States* shall also monitor compliance with the principles of good manufacturing practices…"

- That a *"harmonised standard"* is *"a standard adopted by one of the European standardisation bodies listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services*[1] *on the basis*

[1] OJ L 204, 21.7.1998.p. 37.

of a request made by the Commission in accordance with Article 6 of that Directive", e.g. European Committee for Standardization (CEN).

Important note: Common approach of all participating stakeholders

In the absence of harmonized standards as defined above, and the current 'Cosmetics Directives' being under review, the guidelines set out in the current document aim at establishing a common understanding for all parties by providing a useful tool to implement the new Regulation. Following its adoption by all stakeholders, represented by the European Commission PEMSAC Analytical Methods group, the European network of Official Cosmetics Control Laboratories OCCL and the CEN/TC 392, this document will be associated to more detailed and technical guidelines when deemed necessary.

In order to ensure that testing results related to official controls are sufficiently robust and reliable, the analysis should be performed in accordance with the principles laid down in ISO 17025:2005 – General requirements for the competence of testing and calibration laboratories [1].

The need for formal accreditation to ISO 17025:2005 or for audits[2] against the ISO 17025 Standard will depend on circumstances and will not be always appropriate e.g. for laboratories of manufacturers.

The manufacturers' and other stakeholders' responsibility to ensure the safety of the products put on the market is established by legislation (Regulation (EC) N° 1223/2009 [2]).

The manufacturers are responsible for the selection of the most appropriate method to perform the production, the quality control, the storage and the shipment of their cosmetic products according to the EN ISO 22716:2007 Standard [3].

Even though the alignment to the ISO 17025 Standard is not a requisite for the daily work of manufacturers and related third parties, it has to be acknowledged that a common approach to selection and validation of analytical methods, which possibly cause concern by delivering results not in compliance with the European Cosmetic Regulation is important and that the

[2] These audits are organised and performed within the OCCL network to ensure that principles laid down in ISO 17025:2005 are respected even if the laboratories would not hold formal accreditation.

selection of appropriate analytical methods should be based on international recognised validation[3] criteria (see also Annex I and II).

Note that all stakeholders including e.g. consumer organisations should also be mindful of these guidelines when analysing samples taken from the market.

II. Objectives

The primary objective of these guidelines is to ensure a uniform application of the Cosmetics Products Regulation (EC) No 1223/2009 throughout European countries. In particular these guidelines aim at:

- helping all stakeholders (e.g. industry and official control laboratories) to set up a harmonized strategy for the selection and validation of analytical methods for cosmetics in order to support regulatory compliance. Because of the complexity of cosmetic products, in particular due to huge matrix variability, there is a crucial need for a well-established, pragmatic yet reliable guideline for validation of methods used to detect and determine traces especially of prohibited substances or ingredients of interest, e.g. restricted substances in cosmetic products[4].
- establishing the requirements that should be fulfilled to reach the final goal of sharing a satisfactory operating procedure that would allow the manufacturers[5] and the Competent Authorities' testing laboratories to meet fit for purpose analytical performance standards.

III. Compliance decision and analytical requirements

Product compliance checks should be performed using analytical methods that allow confirmation of the product's compliance with Article 14 of Regulation (EC) No 1223/2009 [2].
If analytical results are a cause of concern for the competent authorities/official control laboratories, discussions between all parties should take place as part of in-market control. Note that for facilitating discussions and as part of the investigation, all parties should have access to the method used during the official control and to the validated method (according to

[3] "Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specified intended use are fulfilled…." (extracted from e.g. ISO 17025 [1] or ISO 12787 [16] standards)
[4] These guidelines may also be used for mixtures and raw materials.
[5] The production of cosmetic products is to be done according to EN ISO 22716:2007 [3] defining the GMP. The current guidelines are to be considered as a complement for manufacturers with the aim of harmonising the further control of cosmetic products.

the current guidelines) used by the body[6] which may have performed the verification of potential non-compliance.

III.1 Traces of prohibited substances with limit values

If the presence of a substance in cosmetic products is prohibited by legislation, art 17 of Regulation (EC) No 1223/2009 [2] (Traces of prohibited substances) applies. A sample will be declared as non-compliant if the concentration of this analyte is at or above the limit value established on the basis of a health risk assessment taking into account the technical unavoidability.

III.2 Traces of prohibited substances without limit values

When regulatory limits do not exist, a target limit value should be set beforehand, taking into account (i) levels technically achievable under good manufacturing practices and (ii) the toxicological guideline values (e.g. thresholds of toxicological concern or toxicological evaluation based on the presence in substances of specific structural alerts of concern). This value has no legal standing but it is important in order to orientate the method towards a suitable working range. It also allows for a considered judgement to be made in the case of a potential non-compliance. Through in-market control this may be compared to the conclusions of the responsible person in terms of the technically unavoidable presence of the trace in question in terms of GMP and human safety.

III.3 Permitted substances with limit values

Permitted substances with limit values should be in accordance with restrictions laid down in Annex III, in Annex IV for dyes, in Annex V for preservatives and in Annex VI for UV filters. When maximum limits are set in the legislation, the sample can only be declared as non-compliant if the concentration is above[7] the regulated maximum limit.

[6] Person responsible for placing the product on the market or its representative conducting e.g. a third party counter expertise analysis.
[7] see footnote 7.

IV. Challenges

The main issue is that few Community or standardized methods exist for cosmetics. Nevertheless, ensuring safety of cosmetic products on the EU market by performing reliable and efficient analytical control[8] is crucial.

The second key issue relates to the method validation approach for cosmetics analysis and/or to the applicability of standards. As already mentioned above, the laboratories involved in compliance control of the products are faced with a broad variety of matrices, renewed on a frequent basis and a large number of substances. Therefore a pragmatic approach is needed in order to allow effective and efficient analytical cosmetics control.

Consequently, JRC recommends applying a "*cascade approach*" similar to the one described in Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules [10], which is quoted below:

1. *Sampling and analysis methods used in the context of official controls shall comply with relevant Community rules*

or,

(a) *if no such rules exist, with internationally recognised rules or protocols, for example those that the European Committee for Standardization (CEN) has accepted or those agreed in national legislation;*

or,

(b) in the absence of the above, with other methods fit for the intended purpose or developed in accordance with scientific protocols.

2. Where paragraph 1 does not apply, validation of methods of analysis may take place within a single laboratory according to an internationally accepted protocol.

3. Wherever possible, methods of analysis shall be characterised by the appropriate criteria set out in Annex III.

The Annex III of the Regulation (EC) No 882/2004 is recalled in Annex I of the current document.

[8] *analytical control* is to be understood as analysis performed in the frame of official control either by competent authorities/official control laboratories or by industry or third parties laboratories e.g. in the frame of counter-expertise analysis.

V. Approach for the selection and validation of analytical methods

Key principles of method validation as laid down in ISO 17025 [1], in verification guidelines, in ISO 5725 [4] or in the harmonized IUPAC guidelines for single-laboratory validation of methods of analysis should be followed [6].

V.1 Cascade approach: Decision tree for selection and validation of methods of analysis for cosmetics

The decision tree to be applied when selecting appropriate methods of analysis for cosmetics is presented hereafter in Figure 1.

Step 1: Review of appropriate analytical methods

The selection of the appropriate method is based on a cascade approach similar to the one described in the Challenges section III of this document. When an analytical need is identified (combination of target analyte, target matrix and target concentration), a review of existing methods and of their validation status should be made. If no international or European standard is available the relevant Competent Authorities or other valuable sources may be consulted (e.g. OCCL network, collections of industry or sub-contractors laboratories' in-house methods).

Step 2: Selection of the method based on its validation status

If a validated method matching the scope of the current analytical need exists according to the following priority:

1-Community method[9];

2-CEN European standard (EN) or ISO/CEN standard (EN ISO)[10];

3-Other internationally harmonised protocols (e.g. OCCL harmonised and validated methods[11]; CEN Technical Specifications (CEN/TS));

4-Ring-trial validated method;

5-Single-laboratory validated method;

this method should be applied to perform the analysis.

[9] Note that the current 'Cosmetics Directives' are currently under review. The analytical methods Directives can be found at http://ec.europa.eu/consumers/archive/sectors/cosmetics/files/pdf/vol_2en_en.pdf.

[10] In the whole document, the mention 'CEN European standard' refers to both 'EN' and 'EN ISO standards', taking into account the Vienna agreement.

[11] Methods that demonstrated appropriate reproducibility as requested by legislation.

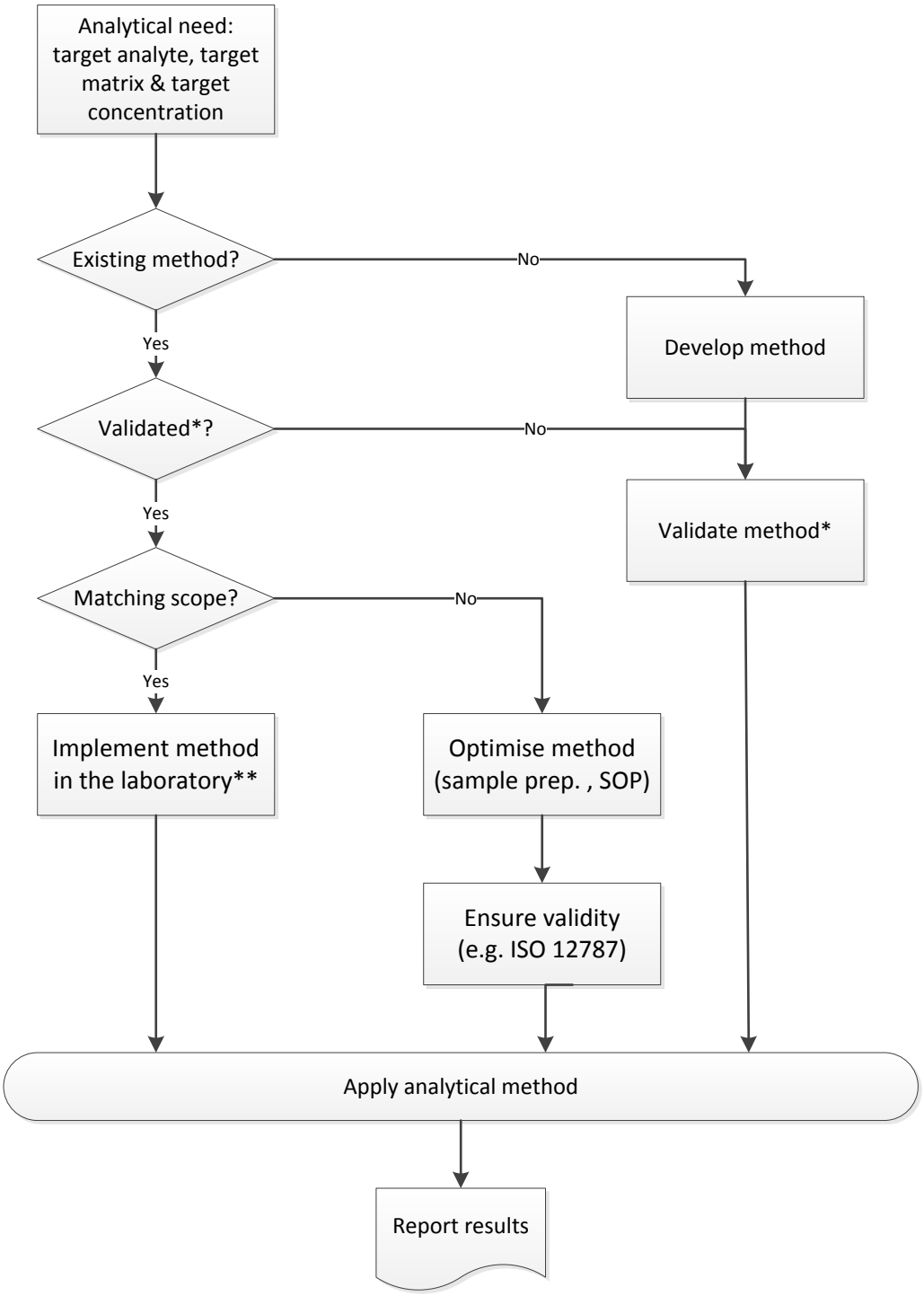
Step 3: Measurand outside of method scope

If a suitable method exists but with a non-fully matching scope (e.g. different cosmetic matrix and/or concentration), an extension of the scope could be made through an additional validation of each result (e.g. for chromatographic methods according to ISO 12787:2011-12 (E) Cosmetics – Analytical methods on validation criteria for analytical results using chromatographic techniques) [16].

Step 4: No validated method available

Finally, if no (validated) method exists, an appropriate method should be developed and validated.

Annex I and II detail the performance characteristics of validated methods that shall be established during the single-laboratory validation. If some parameters are excluded from the validation design, this decision shall be appropriately reported and justified in the validation report.



* according to internationally recognised validation criteria; see Annex I, Annex II and ISO 5725 [4]
** ISO 17025 should be applied and verification performed according to verification guidelines [15]

Figure 1: Flowchart for selecting appropriate methods for performing analytical control of cosmetics
analytical control is to be understood as analysis performed in the frame of official control either by competent authorities/official control laboratories or by industry or third parties laboratories e.g. in the frame of counter-expertise analysis.

CHAPTER II: Recommendations for standardization of analytical methods for cosmetics

I. Objective

The objective of this chapter is to define an adapted approach for carrying out the standardization of analytical methods for cosmetics.

II. Standardization

Standardization of analytical methods is a resource-intensive process and it is therefore recommended to initiate it only if clear needs have been identified and if the method proposed for standardization fulfils all the following requirements:

- necessary on the basis of a health risk priority (proposed by Competent Authorities),
- necessary for analysis of cosmetics on a frequency of use basis,
- necessary to fulfil legal requirements indispensable for the harmonization of measurements among different laboratories/countries (see Figure 2),
- robust and reliable[12],
- taking into account technological advances, instrumentation and cost efficiency.

When a method is identified as a candidate for standardization, the steps to be followed should be as displayed in Figure 2.

Figure 2[13] describes two types of CEN normative documents that can be developed as a result:

- The peer-review process is highly valuable in terms of reliability.
    - If the assessment of existing data from three to less than eight laboratories having successfully participated in an verification study[14] using the same method, on the same analyte(s) and in the same matrix as the current analytical need and performed less than five years before the application for standardization, confirms the fitness for purpose of the method, the related harmonised and validated

[12] Reliability in Cosmetic Products Regulation art 12 should be understood as a combination of the two parameters, precision and accuracy.
[13] The same approach may be followed for the standardization as an OCCL harmonised and validated method.
[14] Performed according to the principles laid down from the JRC Technical Guide: Protocol for verification studies of single-laboratory/in-house validated methods [15], or equivalent.

method is considered suitable for standardisation as a CEN Technical Specification (CEN/TS).

- if a ring trial with three to less than eight laboratories delivering valid results is organised, using the same method, on the same analyte(s) and in the same matrix as the current analytical need and provides fit for purpose precision data, the related harmonised and validated method is considered suitable for standardisation as a CEN Technical Specification (CEN/TS).

- if a ring trial[15] with at least eight laboratories delivering valid results is organised, using the same method, on the same analyte(s) and in the same matrix as the current analytical need and performed less than five years before the application for standardization, and provides fit for purpose precision data, the related harmonised and validated method is considered suitable for standardisation as European standard (EN).

In both cases those trials should be performed by a panel of European laboratories from different countries and include Competent Authorities' control laboratories as well as laboratories from other relevant stakeholders and designed as described in Figure 2.

A reference to the CEN standards (EN or EN ISO standard) may be published in the EU Official Journal. In the absence of EN or EN ISO standard, a CEN Technical Specification (CEN/TS) or an OCCL harmonised protocol would be the next applicable step of the cascade even if not referenced in the EU Official Journal.

The possibility to convert a CEN TS in an EN after the period of review of 3 years without a full ring trial can/should be actively considered when evidence of satisfactory performance of the method is provided.

The collaborative study (ring trial) of a method aims at establishing precision characteristics, namely within-laboratory standard deviation (repeatability) and between-laboratory standard deviation (reproducibility). It does not aim at establishing e.g. limits of detection (LOD) and quantification (LOQ), specificity or accuracy, which are usually assessed in the laboratory of the method developer. Key pre-requisites for a collaborative trial are that the trueness of the method (e.g. the recovery rate) and its robustness (e.g. using factorial design approaches) are established during single-laboratory validation.

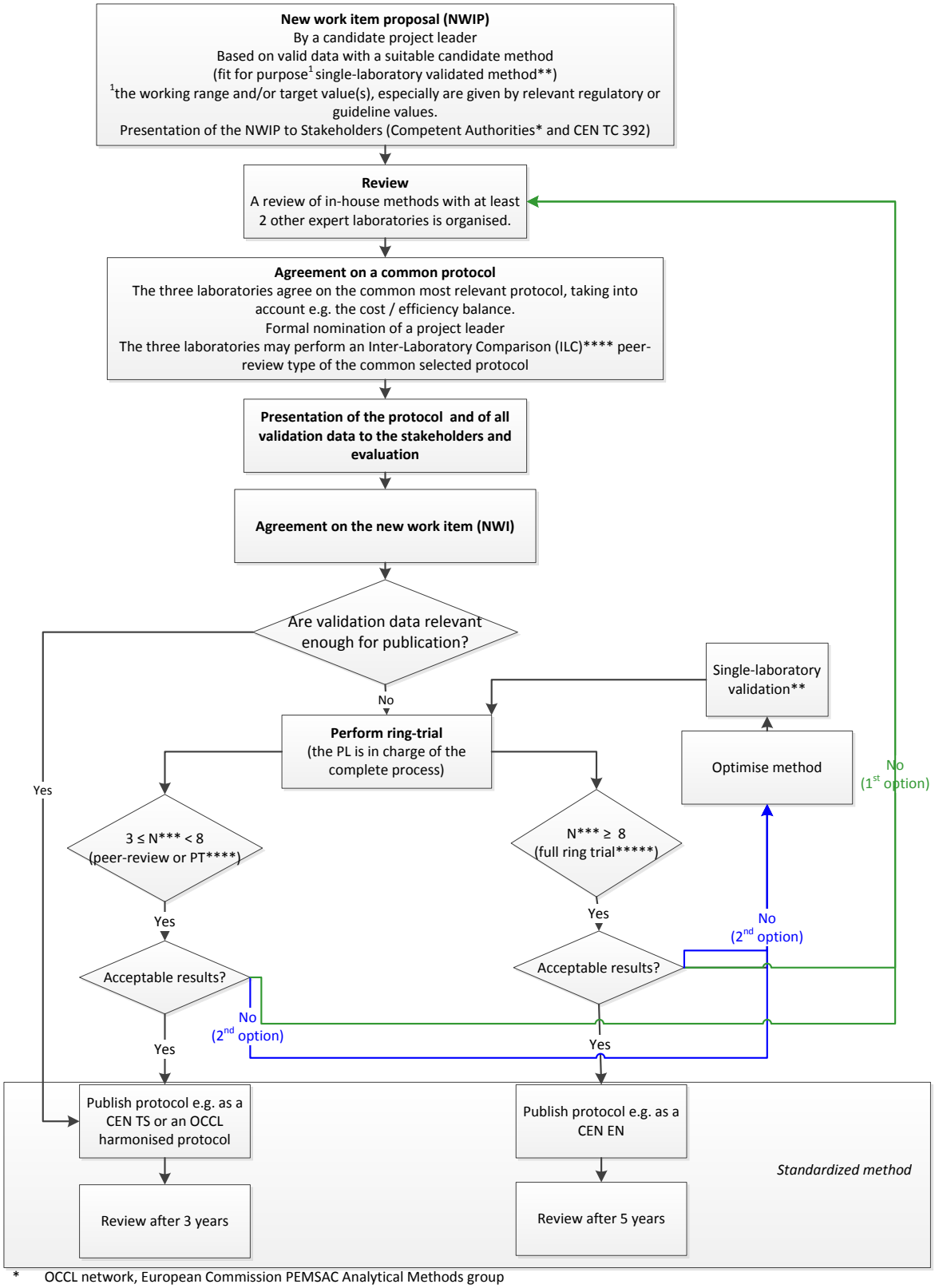
The classical design of a ring trial for the validation of quantitative methods is given in ISO 5725 and in the IUPAC harmonised protocol and summarized hereafter:

- At least five different materials (same analyte and different matrix/concentration combinations),
- (Blind samples are sent out in replicates[16]),

[15] Collaborative study/inter-comparison between laboratories for full validation of an analytical method as described e.g. in the IUPAC/AOAC – harmonized guidelines for "collaborative studies" [13].
[16] IUPAC/AOAC protocol requirement.

- At least eight laboratories deliver valid results,
- Outlier treatment (Cochran – within lab variation, Grubbs – between lab variation),
- Performance characteristics are calculated by Analysis of Variance of the retained results after rejection of outliers.

In addition, the standard operating procedure may provide an estimate of the accuracy/recovery (extracted from the ratio of the consensus value to the nominal value, determined in the collaborative trial) and of the LOD/LOQ (provided by the single-laboratory validation).



* OCCL network, European Commission PEMSAC Analytical Methods group
** according to Annex I, Annex II and ISO 5725
*** N: Number of participating laboratories delivering valid results
**** ILC: Inter-Laboratory Comparison; PT: Proficiency Test study; as described in Chapter II-§II and [13]
***** According to established guidelines (given either in the IUPAC harmonised protocol or in ISO 5725)

Figure 2: Steps for standardization (CEN Technical Specification, OCCL harmonised protocol, CEN European Standard)

Conclusion

This document, establishes guidelines for the selection and/or validation of analytical methods for cosmetics with the primary aim of ensuring a uniform application of the Cosmetics Products Regulation (EC) No 1223/2009 throughout European countries. The document proposes a pragmatic approach in order to help all stakeholders to comply with EU legislation while ensuring that the control of cosmetics in the frame of market surveillance could be carried out in practice. Furthermore, EU legislation requests that the analytical methods used to carry out the control measurements should be reliable and reproducible, in accordance with the relevant harmonised standards. This document therefore also defines an adapted approach for standardization of analytical methods for cosmetics.

These guidelines are endorsed by the main stakeholders in the field. The guidelines should be complemented by more detailed and technical ones when deemed necessary and upon request of the stakeholders.

Acknowledgements

The author wishes to greatly acknowledge Dr Christine Grasmick, Chair of the Committee of Experts on Cosmetic Products (P-SC-COS) of the OCCL Network (EDQM, Council of Europe) and Dr Gerd Mildau, Convenor of the CEN/TC 392/WG1 on analytical methods for cosmetics for their significant support to the drafting of this document. Ms Susanne Bahrke, Consumer Health Protection EDQM Scientific Administrator is also acknowledged for reviewing this document. The author wishes to thank Dr Pascal Gimeno, Member of the CEN/TC 392/WG1, Ms Giulia Ciarlo, Chair of the European Commission PEMSAC Analytical Methods group and all members of the European Commission PEMSAC Analytical Methods group, the European network of Official Cosmetics Control Laboratories OCCL and the CEN/TC 392/WG1, for the lively discussions and their constructive comments. The valuable input on the validation and standardisation topics by Dr Piotr Robouch, Member of the Eurachem Method Validation working group was greatly appreciated.

Documentation

[1] ISO/IEC 17025:2005, General requirements for the competence of testing and calibration laboratories, ISO Standards, Geneva, ICS 03.120 20, 2005, pp 1-28.

[2] Regulation (EC) N° 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products, Official Journal of the European Union L 342 (2009) 59 – 209.

[3] Commission communication in the framework of the implementation of Regulation (EC) no. 1223/2009 of the European Parliament and of the Council on cosmetic products, Official Journal of the European Union C 123 (2011), 3 – 4 referring to EN ISO 22716:2007, Cosmetics – Good Manufacturing Practices (GMP) – Guidelines on Good Manufacturing Practices (ISO 22716:2007), ISO Standards, Geneva, ICS 71.100.70, 2007, pp 1-21.

[4] ISO 5725, Accuracy (trueness and precision) of measurement methods and results – Parts 1-6, ISO Standards, Geneva, ICS 03.120 30, 1994.

[5] Eurachem – The Fitness for Purpose of Analytical Methods.

[6] IUPAC – Harmonised Guidelines for Single-Laboratory Validation of Methods of Analysis.

[7] Eurachem – Quantifying uncertainty in analytical measurement.

[8] EUROLAB Technical Report 1/2007 "Measurement uncertainty revisited: Alternative approaches to uncertainty evaluation". EUROLAB is the European Federation of National Associations of Measurement, Testing and Analytical Laboratories.

[9] Commission Decision of 12 August 2002 implementing Council Directive 96/23/EC concerning the performance of analytical methods and the interpretation of results (2002/657/EC), Official Journal of the European Communities L 221 (2002) 8 – 36.

[10] Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules, Official Journal of the European Union L 165 (2004) 1 – 141.

[11] ICH Harmonised Tripartite Guideline Validation of Analytical Procedures: Text and Methodology.

[12] Eurachem/EA Guide EA-4/10 G: 2002 on accreditation for microbiological laboratories.

[13] IUPAC/AOAC – harmonized guidelines for “collab studies”.

[14] VIM International Vocabulary of Metrology – Basic and General Concepts and Associated Terms, JCGM 200:2012.

[15] Technical Guide: Protocol for verification studies of single-laboratory/in-house validated methods;

http://irmm.jrc.ec.europa.eu/EURLs/EURL_feed_additives/authorisation/guidance_for_applicants/Pages/index.aspx

[16] ISO 12787:2011, Cosmetics – Analytical methods – Validation criteria for analytical results using chromatographic techniques.

Useful links

[1] European commission, Joint Research Centre web pages http://ec.europa.eu/dgs/jrc; http://irmm.jrc.ec.europa.eu

[2] European Commission, Consumers Safety, Cosmetics, web pages http://ec.europa.eu/growth/sectors/cosmetics/assessment/index_en.htm

[3] EDQM website: http://www.edqm.eu/en/consumer-health-protection-1415.html; for publications on specific topics: http://chp.edqm.eu/ or contact the EDQM at consumer.health@edqm.eu

[4] CEN/TC 392, Cosmetics - web page: http://standards.cen.eu/dyn/www/f?p=204:7:0::::FSP_LANG_ID,FSP_ORG_ID:25,679535&cs=15739A212FE716CA684A23D7104F94566#1

Annex I – Characterisation of methods of analysis

Extracted from Regulation (EC) No 882/2004

1. Methods of analysis should be characterised by the following criteria:

(a) accuracy;

(b) applicability (matrix and concentration range);

(c) limit of detection;

(d) limit of determination;

(e) precision;

(f) repeatability;

(g) reproducibility;

(h) recovery;

(i) selectivity;

(j) sensitivity;

(k) linearity;

(l) measurement uncertainty;

(m) other criteria that may be selected as required.

2. The precision values referred to in 1(e) shall either be obtained from a collaborative trial which has been conducted in accordance with an internationally recognised protocol on collaborative trials (e.g. ISO 5725:1994 or the IUPAC International Harmonised Protocol) or, where performance criteria for analytical methods have been established, be based on criteria compliance tests.

The repeatability and reproducibility values shall be expressed in an internationally recognised form (e.g. the 95 % confidence intervals as defined by ISO 5725:1994 or IUPAC). The results from the collaborative trial shall be published or freely available.

3. Methods of analysis which are applicable uniformly to various groups of commodities should be given preference over methods which apply only to individual commodities.

4. In situations where methods of analysis can only be validated within a single laboratory then they should be validated in accordance with e.g. IUPAC Harmonised Guidelines, or where performance criteria for analytical methods have been established, be based on criteria compliance tests.

5. Methods of analysis adopted under this Regulation should be edited in the standard layout for methods of analysis recommended by the ISO.

Annex II - Required performance parameters in single-laboratory validation

Performance parameters

The following information and performance parameters are generally required for the single-laboratory validation of an analytical method. However, depending on the intended use of an analytical method, some parameters may not been considered (e.g. trueness, recovery, LOD, LOQ). If some parameters are excluded from the validation design, this decision shall be appropriately reported and justified in the validation report.

INFORMATION ON THE TEST MATERIAL	
Identification	
Origin	
Matrix	
Form	
Analyte	
Concentration	
Test samples	
Storage	
Safety precautions	
Material Safety Data sheet (MSDS)	
Other:	

INFORMATION ON THE TEST METHOD	
Instrumentation	
Method	
Standards / RM / CRM	
Other:	

PARAMETERS TO BE INVESTIGATED
☐ Selectivity / interferences ☐ Linearity ☐ Matrix effect on calibration ☐ Working range ☐ Limit of detection ☐ Limit of quantification ☐ Repeatability ☐ Intermediate precision ☐ Recovery ☐ Accuracy/Trueness ☐ Robustness ☐ Uncertainty and traceability
☐ other:

This page is blank.

European Commission
EUR 27284 EN – Joint Research Centre – Institute for Reference Materials and Measurements

Title: **JRC Guidelines for 1 - Selecting and/or validating analytical methods for cosmetics 2 - Recommending standardization steps for analytical methods for cosmetics**

Author(s): Ursula Vincent

Luxembourg: Publications Office of the European Union

2015 – 21 pp. – 21.0 x 29.7 cm

EUR – Scientific and Technical Research series –ISSN 1831-9424 (online)

ISBN 978-92-79-48534-3 (PDF)

doi: 10.2787/412553

LA-NA-27284-EN-N

JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

Serving society
Stimulating innovation
Supporting legislation

doi:10.2787/412553

ISBN 978-92-79-48534-3

Publications Office