Raad voor Accreditatie (Dutch Accreditation Council RvA)

Interlaboratory Comparisons

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A RvA-Explanatory note describes the policy and/or the procedures of the RvA concerning a specific field of accreditation. In case the policy and/or procedures for a specific field of accreditation as described in a RvA Explanatory note, is documented by EA, ILAC or IAF, the RvA will bring its policy en procedures in line with the EA, ILAC or IAF-document.
A current version of the Explanatory is available through the website of the RvA. (www.rva.nl).

Contents

1 Introduction

This document explains the RvA policy regarding the use of proficiency testing activities in the accreditation process of laboratories and, where relevant, inspection bodies. In the context of this document, “laboratories” implies all laboratory types – i.e. testing, calibration and medical laboratories and inspection bodies that conduct testing.

The RvA policy is based on ILAC-P9:06/2014; ILAC Policy for Participation in Proficiency Testing Activities.

2 Terminology

Proficiency testing (PT) is the determination of the calibration or testing performance of a laboratory or the testing performance of an inspection body against pre-established criteria by means of interlaboratory comparison.

Interlaboratory comparison (ILC) is the organization, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories or inspection bodies in accordance with predetermined conditions.

3 RvA-policy

3.1 For the RvA it is essential to be able to assess the technical competence of its accredited laboratories. One of the possibilities by which laboratories can demonstrate technical competence is by satisfactory participation in PT activities where such activities are available and appropriate.

3.2 Technical competence can also be demonstrated by successful participation in ILC that have been organised for purposes other than PT in its strictest sense. For example:

- to evaluate the performance characteristics of a method;
- to characterise a reference material;
- to compare results of two or more laboratories on their own initiative;
- to support statements of the equivalence of measurement of NMIs.

3.3 The RvA supports the use of appropriate PT programmes which meet the essential requirements of ISO/IEC 17043, where applicable.

3.4 The RvA will review the performance in PT activities in the assessment and accreditation process. In the decision making process RvA may decide to reconsider its surveillance interval and the extent of its surveillance assessments based on this performance (also see RvA policy rule RvA-BR005).
The following considerations are relevant:

- actions by laboratories in response to poor performance in PT;
- PT requirements set by regulators, industry or professional sectors, regional cooperation bodies (e.g. EA), or other interested parties.

4 RvA explanation on the use of PT

4.1 The RvA distinguishes six acceptable options for the PT participation by laboratories.

4.1.1 When PT's are offered by independent organisers, it is the responsibility of the laboratory to verify the competency of the organiser. The organiser should work according to the principles of ISO/IEC 17043 or be accredited according this standard. RvA-accredited organisers can be found as Rxxx registrations with the search engine on www.rva.nl.

4.1.2 When PT's are organised by or offered by EA in the framework of the Multilateral Agreement (EA-MLA), RvA will facilitate this. The RvA will select and approach possible laboratories for participation. Test or measurement results may be collected by RvA and sent to the organiser or may directly be sent to the organiser by the laboratory.

4.1.3 Measurement audits are organised by RvA with the help of technical experts to verify the technical competence of a single laboratory. It will be organised as intermediate check and especially when a laboratory has not yet participated in a ILC.

4.1.4 Bilateral comparisons may be organised in addition to other ILCs. The very limited amount of participants does not allow a statistical analyses. They can only be accepted as fulfilment of this policy when other ILCs are not available.

4.1.5 Testing under reproducibility conditions (for example second line checks). This option can be used in case the options explained in 4.1.1 to 4.1.4 are not possible.

4.1.6 In case the five options described above are not possible, the laboratory should decide on alternative ways of demonstrating technical competence. Any decision should be justified. The RvA will assess the decisions taken and the justification and will record its conclusions in the assessment report.

4.2 The laboratory is responsible to participate in PTs according to the following considerations and minimum frequencies:

- One activity for each field (*sub field* level as mentioned in annex A for calibration and annex B for testing) before accreditation will be granted for this field. As required by ISO/IEC 17011 par. 7.15.3, RvA has defined the fields in calibration and testing together with the currently applied minimum frequency. The lists presented in annexes A and B are composed in cooperation with the interested parties.
- One activity for each field (*sub field* level) of a laboratory's scope of accreditation in an accreditation cycle of four years (period starting after the decision on an initial or reassessment).
- Medical laboratories are expected to take into account the guidelines established by the relevant scientific associations and where applicable use the PT programs provided by SKML.

Sufficient participation implies the participant is obtaining a satisfactory result in the PT.

An interpretation of the results often used is the one according to ISO/IEC 17043; Conformity assessment – General requirements for proficiency testing:

$|Z| \leq 2.0$ indicates that the results are satisfactory and that there is no action signal
$2 < |Z| < 3{,}0$ indicates that the results are questionable and that an action signal exists
$|Z| \geq 3{,}0$ indicates that the results are not satisfactory and that an action signal exists
$|En| \leq 1{,}0$ indicates that the results are satisfactory and that there is no action signal
$|En| > 1{,}0$ indicates that the results are not satisfactory and that an action signal exists.

Or another performance characteristic that satisfies a predetermined limit.

In case of exceeding a limit, the laboratory shall take appropriate corrective actions. During the RvA assessments the laboratory shall be able to demonstrate the appropriateness and effectiveness of these corrective actions.

- The laboratory should consider circumstances in which PT participation has been mandated for the purposes of accreditation, for example by a regulator or an industry or professional sector (for example in an accreditation program or scheme) and more stringent frequencies are imposed.
- If there are significant changes to laboratory's staff, facilities, methods or to the scope of accreditation the laboratory should consider increasing the frequency. At the same time the RvA recognizes the additional costs involved in regular participation in PTs in some cases to be substantial. Should these costs significantly influence the competitiveness of (a group of) laboratories, reduction in participation may be considered.
- The laboratory is responsible to establish, implement and maintain a plan for participation in PT according to the policy explained in this document. Such a plan should be justified and evaluated during the periodic management review.
- The laboratory should consider the compatibility of sample type and presentation provided in the PT plan, with those that are most commonly handled by the laboratory in its day to day operations.
- The laboratory should consider that PT can be used as a laboratory education and risk management tool.

4.3 During its assessment RvA will verify the following:

- The laboratory should be able to demonstrate to the assessment team that PT is implemented according to the policies explained in 4.1 and 4.2.
- Prior to each assessment the laboratory should provide the RvA with an overview of PT participation and the results since the previous RvA assessment.
- The RvA assessment team will assess the performance and where relevant the actions taken by the laboratory if the results in PT were not satisfactory.

5 EA interlaboratory comparisons

In the framework of the European Multilateral Agreement (EA-MLA) PTs may be provided which are sanctioned by the EA laboratory committee (EA-LC). RvA may make participation in these PTs mandatory for the accredited laboratories. The costs for participation are paid by the laboratory. The laboratory however may change its planned participation in other PTs in the field in question because of this EA-LC sanctioned PT.

In some cases another organisation (for example APLAC) offer laboratories to participate in their ILCs. In those cases the invitation is normally passed to RvA by the EA-LC. If RvA needs to make costs to enable laboratories to participate in such ILC (participation fee, transport and insurance, organisation and support) RvA may invoice these costs to the participating laboratories.

6 Modification compared to previous revision

Compared to version 3, dated 7 May 2014, of this document, the explanation of the interpretation of PT results has been improved.

Annex A: List with fields for calibration and the minimum frequency for PT participation

main code (Quantity)	sub field	main field	sub field	PT participation Frequency per 4 years
LF	0	DC/LF electricity		
LF	1		Direct voltage	1
LF	2		Direct current	1
LF	3		Alternating voltage	1
LF	4		Alternating current	1
LF	5		Power and energy	1
LF	6		Impedance (DC/LF)	1
RF	0	High frequency electricity		
RF	1		High frequency Voltage / CW Flatness	1
RF	2		Impedance	1
RF	3		High frequency power	1
RF	4		Noise	1
RF	5		Electrical /magnetic field quantities /EMC/EMI/TEM cell	1
MQ	0	Magnetic quantities		
MQ	1		Magnetic flux density	1
MQ	2		Magnetic material properties	1
TF	0	Time and frequency		
TF	1		Absolute time	1
TF	2		Relative time	1
TF	3		Timeinterval and amplitude	1
DM	0	Dimensional quantities		
DM	0		Length	1
DM	1		Length gauges	1
DM	2		Line scales, distances	1
DM	3		Length measuring instruments	1
DM	4		Diameter	1
DM	5		Form error	1
DM	6		Roughness	1
DM	7		Thread quantities	1
DM	8		Co-ordinate measuring machines	1
DM	8		Machine tool, work pieces	1
DM	9		Angle (meas.instruments)	1
DM	10		Angle gauges	1
DM	11		Index tables	1
DM	12		Clinometers	1
FQ	0	Force	Force	1
MW	1	Mass	Mass	1
PV	0	Pressure and		

main code (Quantity)	sub field	main field	sub field	PT participation Frequency per 4 years
		vacuum		
PV	1		Gas pressure	1
PV	2		Liquid pressure	1
PV	3		Vacuum quantities	1
TQ	0	Torque		1
AC	0	Acoustical quantities		1
AM	0	Accelerometry		1
US	0	Ultrasonics		1
DV	1	Density and viscosity	Density and viscosity	1
FG	1	Flow of gas	Flow of gas	1
FL	1	Flow of liquids	Flow of liquids	1
VG	1	Volume of flowing gases	Volume of flowing gases	1
VL	1	Volume of flowing liquids	Volume of flowing liquids	1
OQ	1	Optical quantities	Optical quantities	1
IR	1	Ionising radiation and radioactivity	Ionising radiation and radioactivity	1
TE	0	Temperature		
TE	1		Resistance thermometers	1
TE	2		Standard Platinum Resistance Thermometers (SPRTs)	1
TE	3		Thermocouples	1
TE	4		Self Indicating thermometers	1
TE	5		Radiation thermometry	1
TE	7		Radiation sources	1
TE	8		Thermophysical properties	1
TE	9		Simulators / indicators	1
TE	10		Contact thermometry fixed points for realising ITS-90	1
TE	11		Radiation thermometers items for realising ITS-90	1
TE	12		Temperature controlled chambers	1
TE	13		Other temperature enclosures	1
TE	14		Bridge linearity	1
TE	15		Cold junction compensation	1
RH	0	Humidity		
RH	1		Hydrometers	1
RH	2		Other instruments for humidity	1
RH	3		Generators for humidity	1
RH	4		Humidity of temperature controlled chambers	1

main code (Quantity)	sub field	main field	sub field	PT participation Frequency per 4 years
CH	0	Chemical analysis		1
CH	1		pH measuring equipment	
CH	2		Hardness (of water)	
CH	3		Olfactometry (odour)	
CH	4		Calorific value/ Wobbe index	
RM	0	Reference materials		1
RM	1		Amount of substance	
RM	2		Gas mixtures	
RM	3		Hardness	1

Annex B: List with fields for testing labs

Main field	Sub field	Parameters or technique in sub field
Construction and construction materials		
	Fire conduct	
	Fire Resistance	
	Chemical parameters, Inorganic	
		Chromatography
		Spectroscopy
		Titrimetry
	Fysiscal parameters	
		dimensions
		tensile strength
	Frost resinstance	
	Leaching analysis (not AP04)	
	AP04 (Dutch law)	
		Package E
		Package SB1
		Package SB2
		Package U1
		Package U2
Drinking water		
	Sampling; Chemical parameters	
	Sampling; Microbiological parameters	
	Chemical parameters, Inorganic	
		Coulometry
		Conductometry
		Flow analysis
		Electrochemistry
		Potentiometry
		Chromatography (ion)
		Gravimetry
		Nefeleomtry//turbimetry
		Radioactivity
		Spectroscopy
		Titrimetry
	Chemical parameters, Organic	
		Chromatography (GC)
		Chromatography (LC)

Main field	Sub field	Parameters or technique in sub field
		Coulometry
		GC/MS (MS)
		LC/MS(MS)
	Hydrobiology	
		Microscopy
	Microbiology, Qualitative parameters	
		Salmonella
	Microbiology, Quantitative parameters	Colony count at 25C
		Escherichia coli
		Coliforms
		Clostridium perfringens
		Enterococci
		Legionella
		Colony count at 22C
		Sulfite-reducing clostridia (spores)
		Aeromonas
		Pseudomonas aeruginosa
		Colony count at 37C
		Thermotolerant coliforms
		F-specific RNA bacteriophages
		Somatic coliphages
Energy/ Electrotechnics Fuels, petroleum products, solvents, waste and restmaterals		
	Chemical parameters, Anorganic	
		Coulometry
		Chromatography (ion)
		Flow analysis
		Gravimetry
		Spectroscopy
	Chemical parameters, Organic	
		Chromatography (GC)
		Chromatography (LC)
		EOX
	Fysical parameters	
		Calorimetry
		Vapour pressure
		Destillation

Main field	Sub field	Parameters or technique in sub field
		Density
		Gravimetry
		Colour
		Flaf point
		Viscosity
Apparatus		
	Boilers	
		Pressure
		Efficiency
		Energy
		Leakage
		Temperature
	Discharge	
		Aerodynamics
		Pressure
		Leakage
		Mechanical propoerties
		Temperature
	Wind turbines	
		Noise
		Mechanical propoerties
		Power
	EMC	
		Radiated Emission
		Conducted Emission
		Radiated Immunity
		Conducted Immunity
	ESD (elektrostatic discharge)	
	Safety	
		machine directive
		medical equipment
	Radio communication	
		Transmitter/receiver
		antennas
		cable/waveguide
Geology/Road construction		
	Asphalt, bitumes	
	concrete/sand/additives	
	Geology	
Agriculture		
	AP05(NL program)	
	Soil disease (Nematology)	

Main field	Sub field	Parameters or technique in sub field
		Microscopy
Animal Feeding stuff and raw materials for animal feeding stuff		
	Chemotherapeutics	
		Chromatography (LC)
	Elements	
		Spectrophotometry/Spectroscopy
		Titrimetry
	Enzymatic	
		Spectrophotometry
		Titrimetry
	Microbology, detection method	See foodstuffs
	Microbiology, enumeration	See foodstuffs
	Microscopy	
	Mycotoxine	
		Chromatography (LC)
	Fats	
		Chromatography (GC)
		Coulometry
		Spectrophotometry/Spectroscopy
		Titrimetry
	Virology	
	Vitamines	
		Chromatography (LC)
	Weender	
		Gravimeetry
		Titrimetry
Materials, Metal constructions, metals, joints and pressure vessels		
	Destructive testing	
		Corrosion
		Hardness
		Tensile strength
	Non Destructive Testing	
		Radiologic testing
		Penetrating testing
		Ultrasonic testing
Ball-bearings		
	Mechanical testing	
Toys		

Main field	Sub field	Parameters or technique in sub field
	Safety	
Environmental		
Soil (including sludge)		
	AP04 (Dutch law)	
		Package SG1
		Package SG2
	Asbestos	
		Microscopy
		Electron microscopy
	Chemical parameters, Inorganic	
		Electrochemistry
		Chromatography (ion)
		Fotometry
		Gravimetry
		Spectroscopy
	Chemical parameters, Organic	
		Chromatography (GC)
		Chromatography (LC)
		Coulometry (EOX)
		GC/MS(MS)
		LC/MS(MS)
	Leach study (not AP04)	
Water (all types excl. Drinking water)		
	Sampling; Chemical parameters	
	Sampling; Microbiological parameters	
	Chemical parameters, Inorganic	
		Coulometry
		Conductometry
		Flow analysis
		Electrochemistry
		Potentiometry
		Chromatography
		Gravimetry
		Nefelometry/Turbidimetry
		Radioactivity

Main field	Sub field	Parameters or technique in sub field
		Spectroscopy, Spectrofotometry
		Titrimetry
	Chemical parameters, Inorganic	
		Chromatography (GC)
		Chromatography (LC)
		Coulometry
		GC/MS(MS)
		LC/MS(MS)
	Microbiology, Qualitative parameters	See drinking water
	Microbiology, Quantitative parameters	See drinking water
Air		
	Stack-gasses, gas-carrying ducts;	
	Emission measurements	
		Volumetric flowrate
		Gaseous components
		Particulate matter, aerosols
	Sampling	
		Gaseous components
		Particulate matter, aerosols
	Ambiant air; Immission measurements	
		Gaseous components
		Radioactivity
		Particulate matter, aerosols
Transport		
Constructions		
	Mechanical research	
Ball-bearings		
	Mechanical research	
Engines		
	Emission	
	Noise	
Safety equipment		
	Mechanical testing	
Foodstuff (humane)		
	Sampling; Chemical parameters	
	Sampling; Microbiological parameters	

Main field	Sub field	Parameters or technique in sub field
	Chemical parameters, Inorganic	
		Flow analysis
		Electrochemistry
		Potentiometry
		Chromatography (ion)
		Gravimetry
		Nefelometry/Turbidimetry
		Radioactivity
		Soxhlet extraction
		Spectroscopy
		Titrimetry
	Chemical parameters, Organic	
		Chromatography (GC)
		Chromatography (LC)
		GC/MS(MS)
		LC/MS(MS)
		Titrimetry
	Microbiology, detection method	Escherichia coli
		Campylobacter
		Bacillus cereus
		Butyric acid bacteria (spores)
		Coliforms
		Enterobacteriaceae
		Listeria monocytogenes
		Gas forming salt tolerant microorganisms
		coagulase-positive staphylococci
		Bacteriophages
	Microbiology, enumeration method	
		Aerobic mesophilic sporeforming bacteria
		Anaerobic mesophilic sporeforming bacteria
		Bacillus cereus
		Clostridium perfringens
		Coliforms
		Enterobacteriaceae
		Escherichia coli
		Faecal enterococci
		Yeasts
		Moulds
		Aerobic plate count at 30C

Main field	Sub field	Parameters or technique in sub field
		Anaerobic plate count at 30C
		Thermoresistant microorganisms
		Listeria monocytogenes
		Non lactic acid bacteria
		Lactic acid bacteria
		Lactobacilli
		Thermoresistant streptococci
		Pseudomonas
		coagulase-positive staphylococci
		Sulphite-reducing clostridia
		Vibrio parahaemolyticus
		Faecal (thermotolerant) coliforms
		Aerobic plate count at 55C
		yeasts and moulds (total)
	PCR (GMO)	Bacillus cereus spores
	Virology	