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Elements for a Law on Metrology

Éléments pour une Loi de Métrologie



ORGANISATION INTERNATIONALE
DE MÉTROLOGIE LÉGALE

INTERNATIONAL ORGANIZATION
OF LEGAL METROLOGY

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Foreword

The International Organization of Legal Metrology (OIML) is a worldwide, intergovernmental organization whose primary aim is to harmonize the regulations and metrological controls applied by the national metrological services, or related organizations, of its Member States.

The two main categories of OIML publications are:

- **International Recommendations (OIML R)**, which are model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity; the OIML Member States shall implement these Recommendations to the greatest possible extent;
- **International Documents (OIML D)**, which are informative in nature and intended to improve the work of the metrological services.

OIML Draft Recommendations and Documents are developed by technical committees or subcommittees which are formed by the Member States. Certain international and regional institutions also participate on a consultation basis.

Cooperative agreements are established between OIML and

certain institutions, such as ISO and IEC, with the objective of avoiding contradictory requirements; consequently, manufacturers and users of measuring instruments, test laboratories, etc. may apply simultaneously OIML publications and those of other institutions.

International Recommendations and International Documents are published in French (F) and English (E) and are subject to periodic revision.

This publication - OIML D 1, Edition 2004 (E) - was developed by TC 3 *Metrological control*. It was approved for final publication by the International Committee of Legal Metrology in 2004 and supersedes the previous version dated 1975.

OIML Publications may be downloaded from the OIML web site in the form of PDF files. Additional information on OIML Publications may be obtained from the Organization's headquarters:

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Elements for a Law on Metrology

Part 1 Introduction - Scope

This Document, elaborated in liaison with the Metre Convention and the International Laboratory Accreditation Cooperation, gives elements to be considered when drawing up national laws related to metrology, the need for which is reinforced by the increasing participation of States in trans-national, regional and international trade-related agreements in which such laws provide the basis for dealing with the appropriate national measurement-based requirements.

The laws for which this International Document provides advice may either be one general law covering all legal aspects of metrology or separate laws, each related to a specific aspect of metrology, such as a law on legal units, a law on traceability, a law on measuring equipment (weights and measures act), etc., or provisions related to metrology in more general laws such as law on consumer protection or conformity assessment.

The bodies responsible for drawing up such laws are invited to select appropriate elements from this Document, to examine their relevancy and if necessary to adapt them to their needs.

This Document is presented in five parts:

- Part 1 (Introduction - Scope);
- Part 2 (Rationale) providing elements which justify the need for setting up legal provisions related to metrology and to metrological infrastructures;
- Part 3 (Proposed legal provisions) providing suggestions of Articles (i.e., specific language), which may be incorporated into laws;
- Part 4 (Guidelines for setting up the structures) providing various considerations about the organization to be set up for the implementation of the legal provisions; and
- Part 5 (Examples and explanations) providing comments and explanations which are not intended to be inserted in the legal provisions but which clarify the meaning and the consequences of some proposed legal provisions.

The following proposals have to be considered, selected and adapted by each country according to specific needs, then incorporated into laws, government acts, ministerial acts, etc., according to the constitution and regulatory practice of the country.

While the intention is to address the regulated sector, many of these provisions also relate, and are applicable to, best internationally accepted metrology practice in the voluntary sector.

Part 2 Rationale

What is metrology?

Metrology is the field of knowledge concerned with measurement. Metrology includes all theoretical and practical aspects of measurement, whichever the measurement uncertainty and field of application.

Its application underpins quality in manufactured goods and processes. It plays a key role in the adoption of scientific and technological advances, the design and efficient manufacture of products that comply with the needs of the marketplace, and the detection and avoidance of non-conformities. It provides fundamental support for health and safety testing, environmental monitoring, food processing and fair enforcement of laws. It also provides the basis for fair-trading in a domestic economy and international trading in the global market place.

International mutual recognition of the measurement capability of an economy is critical to the removal of technical barriers to trade and, therefore, to participation in multilateral trade agreements such as those of the World Trade Organization. States should be encouraged to take part in the internationally agreed Mutual Recognition Agreements or Arrangements (MRAs) under the International Organizations which provide the appropriate confidence between national measurement systems.

What is legal metrology?

Legal metrology comprises all activities for which legal requirements are prescribed on measurement, units of measurement, measuring instruments and methods of measurement, these activities being performed by or on behalf of governmental authorities, in order to ensure an appropriate level of credibility of measurement results in the national regulatory environment. Legal metrology is not a specific discipline of metrology, it makes use of scientific metrology to obtain appropriate references and traceability, and may apply to any quantity addressed by metrology.

Legal metrology applies not only to trading parties, but also to the protection of individuals and society as

a whole (e.g. law enforcement, health and safety measurements). Public authorities must pay special attention to measurement results especially when there are conflicting interests in measurement results, thus necessitating the intervention of an impartial referee. Legal metrology is in particular necessary when forces on the market are not organized and/or competent enough or are unbalanced. Legal metrology generally includes provisions related to units of measurement, to measurement results (e.g. pre-packages) and to measuring instruments. These provisions cover the legal obligations related to the measurement results and the measuring instruments, as well as the legal control which is performed by or on behalf of the government.

Buying and selling of goods and services include the weighing or measuring of the quantity and/or quality of products, as well as pre-packaged products with a mass, number or volume declaration of quantity, and the measurement of service (e.g. time, distance). Governmental regulatory responsibilities also include health, safety and environmental law. While these functions are disparate in nature, a common feature is that compliance with the law depends upon measurement results. Therefore, the process of measurement is of direct concern to the government. Providing the laws and regulations, controlling measurement through market supervision and developing and maintaining the infrastructure that can support the accuracy of these measurements (e.g. through traceability) is essential in fulfilling the role of government.

The scope of the legal metrology regulations (e.g. types of measurements and measuring instruments subject to legal requirements) will depend on the categories of users that the government considers necessary to protect, and on the ability of these users to protect themselves against abuse.

As the final purpose of legal metrology is to provide confidence in measurement results by legal provisions, needs and requirements on measurement results should be considered prior to addressing needs and requirements on measuring instruments.

Legal metrology includes four main activities:

- Setting up legal requirements;
- Control/conformity assessment of regulated products and regulated activities;
- Supervision of regulated products and of regulated activities; and
- Providing the necessary infrastructure for the traceability of regulated measurements and measuring instruments.

Why is a metrological infrastructure necessary?

No quantity can be consistently measured without metrology and without a metrological infrastructure.

The importance of measurement results is ever increasing due to rapid technological development and the emergence of information technology. Consumers and industry must make decisions every day based on measurement results which affect their economic and personal well being, as well as having to judge the actions and efficiency of public authorities, enterprises and non-governmental organizations.

Since the manufacturers, importers and sellers of most products are responsible for the associated measurement processes, buyers (individuals as well as companies), who are generally not appropriately informed about these processes, are at a potential disadvantage regarding the measurement results and their interpretation. Fair and accurate measurements help to ensure fair competition.

What is the role of the government?

The role of the government in metrology is to provide society with the necessary means to establish confidence in measurement results.

This requires government to undertake a number of necessary activities to promote metrology, to develop appropriate infrastructures, to support research in metrology and to protect both individuals and companies against possible abuse related to measurements. It must be organized in a comprehensive and coherent policy, for which a law on metrology is advisable.

The present elements on metrology are not limited to the traditional issues of legal metrology. The importance of metrology for social and economic development calls for a comprehensive and coherent policy on metrology for which laws must take account of all the issues concerning consumers, enterprises, education, health, safety and the security of the population.

In setting up the national measurement system, governments should ensure that adequate transparency exists such that all parties are able to make informed decisions.

This Document proposes a hierarchical metrology structure with a Central Metrology Authority (CMA) to coordinate metrology policy and activities in the country. The CMA would normally be part of an existing government department and should also actively cooperate with the national bodies responsible for accreditation and standardization activities, as well as the relevant international metrological Organizations (i.e. the OIML and the Metre Convention). The structure of the metrology system and of the legal metrology system shall be adapted to the specificities of the country (e.g. size, economy, scientific and technological infrastructure, etc.).

Need for compatibility between national and international metrological requirements

Each nation has its own historical perspective on the development of metrological requirements.

The Technical Barriers to Trade (TBT) Agreement (Article 2.4), implemented within the World Trade Organization (WTO), makes an obligation for countries to base their national technical regulations on international documentary standards (norms) so as to harmonize the national requirements. It also requires signatories to take account of, and participate in, international systems of conformity assessment and mutual recognition agreements (Article 6).

The international community has adopted a system of units, measurement standards and requirements for measuring instruments through treaty organizations (i.e. the Metre Convention and the OIML). In addition, regional metrology organizations and Regional Legal Metrology Organizations are harmonizing requirements throughout their member economies. The intent of these organizations is to facilitate trade and the exchange of measurement results and measuring instruments. Documents and Recommendations published by these organizations are a primary resource for structuring a national metrological infrastructure.

The international organizations have also developed - or are currently developing - systems of mutual recognition or acceptance of the equivalence of measurements standards, of national measurement capabilities, of competences of calibration laboratories and of legal metrology evaluations.

Following due deliberations and depending upon its rulemaking procedures, a country may decide that a Document published by one of these international organizations contains applicable requirements for use in the country's metrology structure. Adoption of the Document's provisions may occur in one of several ways including:

- Reference to a specific edition;
- Inclusion of the verbatim text in the regulations;
- Inclusion of identical requirements, but not identical text; or
- Inclusion of compatible but not identical requirements.

Part 3 Proposed legal provisions

CHAPTER I

DEFINITIONS

For other definitions, see OIML V 1 *International Vocabulary of Terms in Legal Metrology* (VIML) and OIML V 2 *International Vocabulary of Basic and General Terms in Metrology* (VIM).

I.1 Traceability of calibrations and measurements is the property of the result of these calibrations and measurements whereby it can be related to the definition of units through an unbroken chain of comparisons, all having stated uncertainties.

For the application of legal metrology control, traceability may be obtained either through evaluation of uncertainties or through compliance with stated maximum permissible errors.

I.2 In this Document, the term “measuring instrument” covers measuring instruments in the sense of the VIM (see 4.1), as well as measuring systems (VIM, 4.5), material measure (VIM, 4.2) and any part of a measuring instrument or measuring system which can be the object of specific requirements and of a specific evaluation of conformity.

I.3 In this Document, the term “measurement standards” covers the following when used to establish the traceability of standards, measuring instruments and measurements:

- Realization of the SI units;
- Artefacts reproducing the multiples and subdivisions of the SI units and traceable to SI;
- Instruments measuring quantities and traceable to SI; and
- Certified reference materials.

I.4 The national accreditation system is a voluntary system which establishes the competence and impartiality of:

- Calibration laboratories to perform traceable calibrations and measurements;
- Testing laboratories;
- Inspection bodies; and

- Certification bodies which perform product certification, quality systems certification or certification of personnel.

CHAPTER II

NATIONAL METROLOGY INFRASTRUCTURE

II.1 The national metrology infrastructure

The national metrology infrastructure should comprise:

- A legal corpus, including the laws and regulations that have provisions related to metrology;
- An authority in the Government, in charge of the National metrology policy, and of coordinating the action of other Departments related to metrological issues;
- One or several institutes in charge of tasks assigned at national level for the metrology policy;
- System of national measurement standards and dissemination of legal units;
- A (voluntary) system for accrediting calibration laboratories and, if required, testing laboratories, inspection bodies and certification bodies;
- Structures for disseminating knowledge and competencies in metrology (e.g. training, education, consultants, etc.); and
- Services to industry and to the economy in the field of metrology (e.g. calibration, maintenance, training, consultancy, type testing, verification, etc.).

II.2 National metrology policy

II.2.1 The [Name of the Authority], in liaison with all Government Departments and Agencies, is charged with the elaboration and coordination of the implementation of the national metrology policy.

This policy shall determine the action of the government on issues related to metrology and shall commit all government departments (ministries) and agencies, each in its own sphere.

Preparation by any government department of regulations that establish required values of measurable quantities should take account of the ability of the national metrology infrastructure to provide reliable measurements of these quantities.

II.2.2 This policy shall provide a support for the development of the national metrological infrastructure taking into account the needs related to:

- Scientific and technological development;
- Support of the national economy, development of enterprises;
- Protection of consumers, citizens and the environment; and
- International recognition of the national metrological infrastructure.

II.3 National measurement standards

A system of national measurement standards is set up to maintain and disseminate legal units prescribed in Chapter III in order to meet the country's needs. National measurement standards are part of the national metrological infrastructure according to II.1. In the case that they are themselves primary standards that independently realize the legal units, they should be regularly compared with other national primary standards. In the case that the country does not maintain primary standards in all fields, those national standards shall be traceable to the realization of the definition of units through primary standards maintained by another country. The national measurement standards shall in all cases be the most accurate measurement standards of the country.

The system of national measurement standards shall include, as necessary, a system for providing certified reference materials.

II.4 Traceability

For the application of any laws and regulations prescribing requirements on measurements, on pre-packages and on measuring instruments, traceability to SI shall be required and may be obtained:

- Either through the system of national measurement standards and certified reference materials defined in II.3;
- Or through traceability to recognized national measurement standards or certified reference materials of other countries when the uncertainty level of the system of national measurement standards is not sufficient or when this system does not cover the considered quantity.

II.5 National institutes

II.5.1 One or more institutes will be appointed by government to carry out the following missions:

- To establish, keep, maintain, and continuously improve the national measurement standards (see II.3) and disseminate the legal units (see Chapter III) in accordance with the country's needs, and to ensure participation in the corresponding international activities;
- To provide the necessary advice and support to the government, industry, commerce and the public on metrological issues;
- To provide a sound metrological basis to the national accreditation scheme;
- To provide technical advice and support to the government, industry, commerce and the public on legal metrology issues;
- To carry out technical work and coordination in legal metrology for which it has been appointed by [Name of the Authority], in particular type testing, and to ensure technical coordination of and technical support to initial and subsequent verification, inspection of measuring instruments and market surveillance; and
- To participate in international work in legal metrology under the authority of [Name of the Authority].

II.5.2 These institutes are encouraged to enter into international agreements establishing the equivalence of national measurement standards of participating countries. In this case, establishing or revising the national law on metrology should be an occasion to consider the possibilities of legal recognition of traceability to other signatories of the Mutual Recognition Arrangement issued under the International Committee of Weights and Measures (CIPM MRA).

The institutes and authorities responsible for legal metrology missions are encouraged to enter into international agreements establishing the equivalence of the legal metrology systems and controls in the participating countries. They are also encouraged to participate in international legal metrology conformity assessment systems.

II.5.3 The institutes shall be impartial and their funding shall respect the following conditions:

- Missions of general interest are financed by public funding; and
- Products or services which are in the marketplace do not cause unfair competition.

CHAPTER III

LEGAL UNITS OF MEASUREMENT

III.1 The legal units of measurements are the following:

- Units of the “International System of Units” (SI), adopted by the General Conference of Weights and Measures and recommended by the OIML for quantities covered by this System;
- Units used for quantities that are not covered by the SI, as specified by [Name of the Authority] (as far as possible based on international standards); and
- Customary units specified by [Name of the Authority].

Customary units may include specific units for particular applications, required:

- By the necessities of international trade; or
- For specific uses such as air or maritime navigation, health care, or military applications; or
- For safety reasons.

When customary units are authorized in application of this Article, the opportunity of keeping them or of using only the two first types of units shall be periodically reviewed by [Name of the Authority].

III.2 The definition of the multiples and subdivisions of the SI units and their notation shall comply with the recommendations of the Metre Convention and with the International Standards (norms).

Rules for expressing the results of measurements shall comply with the recommendations of the Metre Convention and of International Standardization bodies.

III.3 The use of units other than legal units is forbidden in particular in trade, documentation and advertisements for products and services, publications, or training, with the following exceptions:

- Documentation of and references to products produced and services carried out prior to the obligation of the units concerned;
- Mentioning non legal units in a historical perspective in publications and training; and
- Documents and publications which are intended for users in countries having different systems of units.

III.4 The use of units other than legal units will be authorized in applications for which international Conventions, Agreements or Treaties prescribe those specific units.

CHAPTER IV

TRANSPARENCY OF METROLOGICAL INFORMATION

IV.1 Those responsible for publishing or transmitting measurement results to the public may be required to provide justifications as to the relevance and reliability of these measurement results.

IV.2 Individuals and other interested parties may have access to any measurement result issued on the initiative of the government or transmitted to the government, and related to health, public safety, environment and economics, as long as the communication of this information does not cause an undue prejudice to an individual or to a company or other organization.

The government will provide the public with an independent and impartial source of advice about the validity, credibility and reliability of metrological information. The national metrological infrastructure, defined in II.1, shall provide the expertise needed for this advice, and shall be appropriately funded by the government to accomplish this.

CHAPTER V

LEGAL METROLOGY

V.1 Introduction

Regulations on measurements, on prepackages and on measuring instruments, as described in this Chapter, may be made by [Name of the Authority] in order to:

- Protect the interests of individuals and enterprises;
- Protect national interests;
- Protect public health and safety, including in relation to the environment and medical services; and
- Meet the requirements of international trade.

These regulations shall, when applicable, be compatible with the International Recommendations of the OIML and make use of their requirements.

The conformity assessment procedures required by these regulations shall, when applicable, be compatible with the conformity assessment systems set up by the OIML, and make use of them.

V.2 Regulations on measurements

V.2.1 Regulations may be made by [Name of the Authority] to define quantities to be referred to in the methods of sale, to prescribe that certain measurements are to be the basis of transactions or law enforcement activities, and to define the list of measurements subject to legal metrological requirements for the purposes listed in V.1.

V.2.2 These regulations shall define the metrological requirements (including the required measurement uncertainty) and the legal control and supervision provisions applicable to these measurements in order to ensure confidence in the measurement results.

V.2.3 The results of measurements covered by the regulations mentioned in V.2.1 shall be expressed in legal units as defined in Chapter III and shall be traceable as required in II.4.

V.2.4 The regulations mentioned in V.2.1 may specify when necessary a measuring method, and may require the use of instruments subject to legal control in application of Section V.4. When necessary they shall specify the criteria for the choice of instruments such as accuracy class, measurement range, scale division, etc.

V.2.5 When necessary and for specific applications, the regulations mentioned in V.2.1 may:

- Define requirements applicable to the individuals or bodies who perform the measurements;
- Require records of the measurement operations to be available to the legal metrology officials;
- Require the issuing of certificates for the result of these measurements;
- Require records of the traceability of measurement results to be available to the legal metrology officials; and
- Define controls to be applied by legal metrology officials or by specialized bodies regarding the activity of the individuals or bodies who perform the measurements.

V.3 Regulations on prepackages

V.3.1 Regulations may be made by [Name of the Authority] to set up metrological requirements and legal control provisions applicable to the quantity content of prepackages offered or exposed for sale or sold. In accordance with the OIML Convention and with the WTO/TBT Agreement, these regulations shall be based on the International Recommendations of the OIML as far as possible.

V.3.2 These regulations shall prescribe that the size (nominal content) of the prepackages be affixed on the prepackages and expressed in the system of legal units mentioned in Chapter III. They may prescribe the authorized sizes of the nominal content of the prepackages, and/or they may require that unit pricing information be provided at the point of sale in place of authorized prepackage sizes.

V.3.3 These regulations shall specify the tolerable deficiencies of individual prepackages from their nominal value, and requirements for the conformity assessment of prepackages including statistical method when necessary.

These regulations shall specify the requirements to which the net contents in prepackages are subjected to determine acceptance or rejection, including sampling plans, test procedures and statistical methods and other appropriate guidance for legal metrology officials and prepackers.

The regulatory requirements shall take into account the equipment used for realizing and controlling the prepackages, such as measuring container bottles, checkweighers, etc.

V.3.4 These regulations may define the marks which indicate the conformity (compliance) of the prepackages to the regulatory requirements.

V.3.5 These regulations may require manufacturers and importers of prepackages to be registered by the [Name of the Authority].

They may require importers to notify the [Name of the Authority] of importation(s) to facilitate inspections.

V.3.6 These regulations may prescribe that records of the control operations performed by the manufacturer or importer shall be available to the legal metrology officials.

They may prescribe a quality system be applied by the manufacturer or importer of the prepackages when appropriate.

V.3.7 These regulations may define the procedures and criteria for the legal control exerted by legal metrology officials on prepackages and on the sellers, manufacturers and importers of prepackages.

V.3.8 All measurement results involving measuring instruments and measurement standards used for the controls prescribed in application of Articles V.3.6 and V.3.7 shall be traceable as prescribed in II.4.

V.3.9 These regulations may allow [Name of the Authority] to recognize the conformity to the national provisions of prepackages which bear marks of conformity affixed under the legal metrology regulations of other countries or under conformity marking systems set up by international bodies.

V.4 Regulations on measuring instruments

V.4.1 Regulations may be made by [Name of the Authority] to define the list of measuring instrument categories subject to legal control for the purposes listed in V.1.

V.4.2 The instruments subject to these regulations shall provide measurement results in the legal units defined in Chapter III, and the measurement results shall be traceable as prescribed in II.4.

V.4.3 These regulations shall specify the required metrological performance and technical requirements applicable to instruments in these categories.

In accordance with the OIML Convention and, when applicable, the WTO/TBT Agreement, these regulations shall be based on the International Recommendations of the OIML as far as possible.

V.4.4 These regulations may set up legal control and supervision of these instruments. The purpose of this legal control is to ensure that instruments are fit for their intended use, meet and maintain the necessary metrological performance requirements, and provide adequate protection against misuse, incorrect interpretations of results and fraud. The regulations shall include the appropriate control and supervision procedures:

- To assess the initial conformity of instruments to legal requirements, at the stage of design (e.g. type approval) and at the stage of manufacturing (e.g. initial verification);
- To ensure that instruments in service maintain their required metrological properties under expected conditions of use and with age (e.g. reverification, in service inspection and field surveillance), or are withdrawn from use; and
- To ensure that instruments are correctly installed and used and operated under the defined correct conditions (e.g. environmental).

V.4.5 The regulations mentioned in V.4.1 shall specify the marks and signs (inscriptions) which attest to the status of the conformity of the instruments with legal requirements (e.g. type approval mark, verification mark, etc.).

Measuring equipment that no longer conforms to the legal requirements shall be given a rejection mark and must be made to conform, repaired, withdrawn from the market, or removed from use.

Option: When measuring equipment fails the legal control, the verification mark shall be removed and the equipment must be made to conform, repaired, withdrawn from the market, or removed from use.

In the event of infringements, equipment may be seized pending a decision of the legal authorities, or its further use may be prevented by appropriate means.

V.4.6 To prevent unauthorized adjustments or interventions, the regulations may restrict access to certain parts or functions of the instruments (including software). This access may be required to be physically protected by sealing marks (or protection of access to the software) defined by the regulations. Alternatively or in addition, the regulations may require that the instruments adequately detect and record any access to these parts or functions.

V.4.7 These regulations shall allow [Name of the Authority] to recognize conformity to the national provisions of instruments that have been recognized to conform with equivalent regulations in other countries.

They shall allow [Name of the Authority] to enter into mutual acceptance or recognition arrangements and agreements with other countries with the goal of recognizing national or OIML Certificates or test reports or affixed conformity markings.

These regulations may allow the acceptance and utilization in legal metrology controls, of test or verification results issued in other countries.

V.4.8 The regulations may impose registration requirements and establish requirements for service persons and service agencies that install, adjust and maintain measuring instruments (provided that the regulations do not conflict with other regulatory agency requirements).

V.4.9 When instruments are offered for sale, sold, or placed on the market for use subject to legal metrology requirements, the seller must inform the buyer about the legal requirements/status, and offer instruments adapted to the intended use.

V.4.10 No person shall use, have in their possession for use or put into service for applications as stated in V.1, any instrument subject to legal metrological control unless this instrument bears the required control marks mentioned in V.4.5 and the sealing marks or audit requirements mentioned in V.4.6.

The owner of or the person/organization responsible for a measuring instrument subject to legal metrology regulations that is in service is required to maintain the conformity of that instrument to legal requirements (including accuracy and including the execution of required legal controls). Owner's use of the instrument must conform with the manufacturer's operating instructions and maintenance requirements.

CHAPTER VI

ENFORCEMENT

VI.1 Offences

It shall be an offence to:

VI.1.1 General

- Sell, offer, or expose for sale a quantity less than the quantity represented, as prescribed in regulations to account for statistical variation;
- Take more than the represented quantity when, as the buyer, he/she furnishes the weight or measure by means of which the quantity is determined;
- Represent the quantity in any manner calculated or intending to mislead or in any way deceive another person;

- Misrepresent the price of any commodity or service sold, offered, exposed, or advertised for sale by quantity (weight, measure, or count/number), or represent the price in any manner calculated or tending to mislead or in any way deceive a person;
- Misrepresent measurements of quality of products used to determine the price or grade of the product;
- Fail to register when registration is required (V.3.5, V.4.8);
- Not comply with obligations of records (V.2.5, V.3.6), or not make them available to legal metrology officials;
- Not comply with corrective actions requested/instructed by legal metrology officials;
- Hinder or obstruct any legal metrology official in the performance of their duties;
- Affix fake or undue conformity marking or verification marks.

VI.1.2 Related to measurements provided in advertisements or other public communications (IV.1)

- Refuse or fail to provide justifications of the measurement results provided in advertisements (or other public communications);
- Provide false or misleading measurement results in advertisements (or other public communications).

VI.1.3 Related to the use of legal units (Chapter III)

- Use other units and symbols than those defined in application of III.1 and III.2, for the applications defined in III.3.

VI.1.4 Related to regulations on measurements (V.2)

- Not perform the legally required measurements and document them when required;
- Not fulfill the metrological (including traceability) requirements prescribed in application of V.2.3;
- Perform measurements with instruments other than those legally prescribed.

VI.1.5 Related to regulations on prepackages (Section V.3)

- Sell or offer for sale any prepackage which does not satisfy the requirements of the regulations referred to in V.3.

VI.1.6 Related to measuring instruments for which legal control is required (Section V.4)

- Offer for sale (put on the market), sell or install instruments which do not comply with the legal requirements for the intended use;
- Use instruments (for other than personal use) which have not been submitted to the legal control;
- Use instruments without conforming to their prescribed conditions of use;
- Repair or install regulated instruments without required authorizations;
- Affix false conformity markings or affix conformity markings illegally on measuring instruments;
- Bias measuring instruments to yield an inaccurate result;
- Remove any tag, seal, or mark from any weight or measure or measuring instrument without being duly authorized by the proper authority.

VI.2 Liability of persons and corporate bodies and infringements

In the following, “person” refers to both the singular and plural, as the case demands, and includes individuals, partnerships, corporations, companies, societies and associations.

Persons that use or keep measuring equipment covered by national metrology legislation are responsible for having the required metrological controls performed on the measuring equipment which they use or keep.

Persons importing, manufacturing, repairing, selling or hiring measuring equipment determined by decree and intended for uses covered by the national legislation on metrology, are liable for having the required metrological controls performed on the instruments or installations which are the subject of their activities.

VI.3 Conformity assessment bodies for legal metrology

VI.3.1 The [Name of the Authority] may appoint bodies to perform tasks pertaining to conformity assessment, verification, or inspection in application of the legal metrology regulations. These bodies shall be competent and impartial. They shall perform their tasks in a non discriminatory manner.

Appropriate accreditations are an acceptable way to show competence and impartiality.

VI.3.2 The bodies appointed in application of VI.3.1 shall comply with the relevant parts of Articles 5 and 6

of the WTO/TBT Agreement, with the exception of the obligation to notify proposed conformity assessment procedures.

VI.4 Responsibilities and powers

VI.4.1 The legal metrology officials in charge of enforcing the provisions of this law are [Enumeration of the categories of agents].

They are empowered to:

- Request the justifications required in application of IV.1;
- Exert the legal control on prepackages mentioned in V.3.7;
- Request justifications of the respect of obligations made by this law to manufacturers, importers, installers, repairers and users of measuring instruments subject to legal control;
- Perform verifications and inspections on measuring instruments subject to legal control;
- Affix rejection marks and/or remove conformity marking in application of V.4.5;
- Perform surveillance on the bodies appointed in application of VI.3.

Their findings concerning offences enumerated in VI.1 may be transmitted to the prosecution authorities.

VI.4.2 The legal metrology officials mentioned in VI.4.1, upon presentation of their credentials, and in the discharge of and in order to discharge their duties, have access (within national constitutional requirements) to all industrial establishments or commercial premises or vehicles, where measuring equipment subject to legal control is installed, kept or used, or where there is reason to believe it is installed, kept or used, or where prepackages are filled, labelled, kept or offered for sale or where there is reason to believe that they are filled, labelled, kept or offered for sale.

VI.4.3 The legal metrology officials mentioned in VI.4.1 shall be empowered according to the national judicial procedures to issue stop-use, hold, and removal orders with respect to any measuring instruments subject to legal control, stop sale, hold, and removal orders with respect to any packaged commodities or bulk commodities kept, offered, or exposed for sale.

They shall be empowered according to the national judicial procedures to seize, for use as evidence,

without formal warrant, any measuring instrument, package, or commodity found to be used, retained, offered, or exposed for sale or sold in violation of the legal metrology requirements.

VI.4.4 Whenever there shall exist a weight or measure, measuring instrument or prepackage in or around any place in which or from which buying or selling is commonly carried out, there shall be a rebuttable presumption that such a weight or measure, measuring instrument or prepackage is regularly used for the business purposes of that place. Whenever there shall exist a measuring instrument subject to legal metrological control used for health, safety or application of environmental regulation in or about any place in which or from which measurements are commonly carried out, there shall be a rebuttable presumption that such a measuring instrument is regularly used for its intended purpose.

CHAPTER VII

FINANCIAL PROVISIONS

VII.1 The metrological work carried out by the legal metrology authorities may give rise to the receipt of official fees for services rendered. A financial regulation may fix the procedures to be followed, the operations for which payments have to be made and the amount of these payments.

VII.2 Fees collected for services rendered may be used for facilities and personnel employed in carrying out established duties.

VII.3 The conformity assessment and verification tasks carried out by the bodies mentioned in VI.3 shall be performed on demand of the individual or organization responsible for the conformity.

These bodies may be required to inform the authorities of the fee structure. These fee structures may be submitted for approval by the Authority.

The applicant shall bear the costs or prescribed fees of these tasks.

Part 4 Guidelines for setting up the structures

CHAPTER I

INTERNATIONAL AGREEMENTS AND ARRANGEMENTS

Authorities should ensure that national and regional laws and regulations relating to metrology take account of and are in accordance with relevant international provisions relating to metrology.

They should also ensure that the national and regional laws and regulations do not prevent their bodies and authorities from entering into international agreements/arrangements.

CHAPTER II

REGIONAL LEGISLATION

In some Regions, due to treaties or to agreements, regional legislation may have precedence over national laws and regulations or may be recommended to national authorities. This is the case for example in the European Union, where European Regulations and European Directives are accorded higher status than national legislation. This could also become the case in other Regions.

The regional legislation may be:

- Of total application, which means that the national legislation must be strictly identical to the regional legislation;
- Of optional application, which means that the national legislation may be of different scope or have different requirement levels but must be compatible with the regional legislation;
- Of voluntary application, allowing each Member State to consider their application.

When regional legislation is binding for Member States, its statute may be:

- Of direct application, which means that the provisions of this legislation are applicable in the countries without transcription in the national laws;
- Of indirect application, which means that national legislation is required to transcribe the regional legislation.

It is necessary that national authorities take account of the existing regional legislation when preparing a national law on metrology.

It is also recommended that Regional bodies take account of the present Document when preparing regional legislation. In particular, Regional bodies should take in consideration the obligations of their Members towards the OIML and the Metre Convention.

CHAPTER III

ORGANIZATION OF THE AUTHORITIES

III.1 Governmental administration and external bodies

It is recommended that, as a minimum, governmental administrations manage the national metrology policy, ensure the establishment and maintenance of an appropriate metrology infrastructure, and define the regulations and their enforcement. Technical tasks may be carried out by specialized institutes or bodies outside the administrations. These institutes and bodies may be governmental, semi-governmental or private. They should operate under the authority of and report to the national government.

In practice, the role of the public administration in the implementation of metrology policy depends on the existing infrastructure and competencies in the country. In countries where institutes outside the public administration exist and have sufficient competencies, the tasks of the public administration may be reduced to the essential actions of legislation enforcement and monitoring.

In those countries where the technical competencies lie in the public administration, it will have to run technical activities. In this case, and subject to the need to maintain competence within the public administration for making and enforcing technical regulations, the metrology policy may develop the infrastructure outside the public administration to take over technical tasks when possible. For example, non-governmental accredited calibration laboratories could be developed to take over appropriate calibration work instead of keeping most calibration tasks in the public administration.

When tasks are delegated to semi-public or private bodies, there should be an appropriate contract with the government to ensure that public interest is protected, that there is accountability and trans-

parency and that conflicts of interest are avoided. When necessary this contract should ask these bodies to apply the requirements uniformly in the country.

Two ways of delegating tasks to external bodies are possible:

- Either to designate a single body on the basis of a call for tenders;
- Or to appoint bodies in competition, any body fulfilling specified requirements being eligible to be appointed.

The choice between these two ways must be carefully studied, considering the tasks that are being delegated and the respective advantages and disadvantages of these two solutions (technical consistency, uniform coverage of the geographical area of the country, practicability of supervision of these bodies, risks of corruption, undesirable effects of commercial competition on the quality in running the tasks, positive effects of competition on costs and efficiency, etc.).

III.2 Centralized and decentralized missions

The level of centralization or decentralization is an essential issue of the political organization of the country. In the law on metrology, it will be defined in accordance with the fundamental texts (Constitution), with the political and administrative organization and with the general policy of the country. These higher principles will have to guide the delegation of powers and missions in legal metrology between the central authorities and the local authorities (municipalities, counties, regions within a country, States in a Federation, etc.).

III.3 Central Metrology Authority (CMA)

All the issues of the national metrology policy at the central level (e.g. scientific, industrial and legal) should be managed or coordinated by one single central authority of the country, hereafter called the Central Metrology Authority (CMA). It would be inconsistent and inadvisable to have different central bodies in charge of different aspects of the metrology policy without coordination. The missions of the CMA should be:

- Studying the needs of the country for metrology and the orientations and priorities of the national metrology policy, for example with a national consultative committee made up of experts from various sectors;
- Elaborating and formulating the national metrology policy that has to be endorsed by the government;

- Coordination of the actions of the various ministries related to metrological issues, in order to ensure consistency (see part 3, II.1);
- Issuing of legal metrology regulations;
- Coordination with the national accreditation system;
- Organizing or ensuring international representation of the national metrology bodies and system;
- Facilitating international recognition of the national metrology bodies and system;
- Co-ordination of all legal metrology institutions, including the Local Metrology Authorities (LMAs);
- Supervision of the national bodies to which technical tasks are delegated; and
- Providing appropriate information to the public about the national metrology system.

The CMA is responsible for ensuring consistency of regulations and their application to implement the law on metrology. The CMA should ensure that the following functions are performed on behalf of individuals:

- Assurance that measuring instruments in trade, health, safety, law enforcement and environmental regulation are suitable for their intended use, properly installed, and accurate, and are so maintained by their owner or user;
- Prevention of unfair or deceptive dealing by weight or measure in any commodity or service advertised, packaged, sold, purchased, or exchanged;
- Promotion of uniformity, to the extent practicable and desirable, among all jurisdictions;
- Encouragement of desirable economic growth while protecting consumers through the adoption by rule of legal metrology requirements as necessary to ensure fair competition and equity among buyers and sellers;
- Protection of individuals by establishing and enforcing metrological requirements for measuring instruments used in health, safety law enforcement and environmental regulation;
- Establishment of traceability of measurement results through internationally recognized and accepted processes;
- Establishment of standards of weights or measures and reasonable standards of fill for any packaged commodity; possible establishment of requirements for unit pricing information;
- Exemptions from the provisions of the law on metrology or any regulations subsequently made when appropriate to the maintenance of good commercial practices, etc.

The CMA may enter into agreements with local jurisdictions to designate officials and prescribe powers and duties - any legal metrology official appointed for a local jurisdiction shall have the duties and powers enumerated in this Act, with the exception of those duties reserved for the CMA and for the national metrology or legal metrology institute(s) by law or regulation. No requirement laid down by local agencies may be less stringent than or conflict with the requirements of the CMA.

The head of the CMA should have the authority to enter into agreements to provide for assistance in the development of requirements for measuring instruments for use by other agencies with regulatory responsibilities, for example in health, safety law enforcement and the environment.

The head of the CMA should have the authority to recognize the legal acceptability of measurement results and measuring instruments established in other countries for importation or use in its own country so as to help reduce technical barriers to trade. In return, the head of the CMA should ensure that national arrangements provide adequate confidence in the results from the national measurement system. The best way of demonstrating that this is the case is through participation in the various international frameworks for acceptance/recognition of equivalence created by the Metre Convention, ILAC and the OIML.

III.4 International relations

The issues in relation to metrology which imply interfaces with overseas authorities and overseas economies should be coordinated by the CMA. This is the case for intergovernmental treaties (e.g. the Metre Convention, OIML) and for the recognition or non-recognition of the legal acceptability of measurement results and measuring instruments established in other countries. The CMA may delegate responsibility for specific interactions in relation to metrology with overseas authorities and overseas economies to national bodies, such as the national institutions as appropriate.

III.5 Local Metrology Authorities (LMAs)

Implementation at local level will be the responsibility of LMAs, which can be:

- Local offices of the ministries;
- Services of states in a federal organization, organizations or services depending on regional (provincial) or local elected authorities.

Smaller countries may not need local metrology authorities and the implementation may then be taken care of by the national authorities.

Testing, assessing the conformity of, marking for conformity the measuring instruments and pre-packages, may be carried out by specialized bodies designated or licensed by the local metrology authorities. Such designated or licensed bodies may be public or private.

The missions of the LMAs should be to:

- Implement the Law on Metrology in the field;
- Identify contraventions of the law on metrology and prosecute (refer to prosecuting authorities);
- Direct and implement the legal control of the instruments;
- Support the development of the metrology infrastructure;
- Conduct investigations to ensure compliance with the law on metrology and regulations promulgated by the CMA. This may include:
 - Inspecting and testing, or supervising the inspection and testing by designated or licensed bodies, of measuring instruments and pre-packages kept, offered, or exposed for sale; and
 - Inspecting and testing, or supervising the inspection and testing by designated or licensed bodies, to ascertain if they are correct, of measuring instruments in service.
- Accept for use, and mark, such measuring instruments that are found to be correct, and reject and order to be corrected, replaced, or removed those measuring instruments that are found to be incorrect. Measuring instruments that have been rejected must not be used unless they have been corrected and have passed the re-verification when required, and may be seized if this has not been done within any time that might be specified, or if used or disposed of in a manner not specifically authorized. The head legal metrology official or designated agents shall remove from service and may seize the weights and measures found to be incorrect that are not capable of being rendered correct.

III.6 Coordination of the LMAs

The coordination of the LMAs is an essential responsibility of the CMA in order to assure uniform application of the law. When the LMAs are not directly under the authority of the CMA, the law should include provisions to direct this coordination. Examples of such provisions could be the following:

- Certifications issued by the CMA are accepted by the LMA;
- Instruments, measurement procedures and measurement results accepted by an LMA are accepted by the other LMAs;
- No deviating requirements or interpretations of requirements should exist between LMAs; the CMA may ask an LMA to revise its interpretation of the regulatory requirements when this interpretation appears to deviate from common interpretation;
- The LMAs are represented in intergovernmental work and accept the agreements signed in the intergovernmental organizations.

CHAPTER IV

NATIONAL METROLOGY INSTITUTES (NMIs)

The tasks listed in Part 3 II.5.1 can be divided over different bodies:

- A National Metrology Institute (NMI), consisting of one or more standards laboratories, which can also be part of for instance a university or other scientific institute; in general, due to the expanding scope of metrology, many countries traditionally distribute responsibility for different quantities/units among different institutes coordinated either by a principal institute or by an agency. This organization may be considered by small or developing countries, in order to make use of the existing competencies and capabilities;
- Generally one National Legal Metrology Institute (NLMI) in charge of studying technical specifications for legal metrology, issuing type approvals and providing technical coordination and support to other legal metrology bodies; this may also be distributed among several institutes specializing in different fields under an appropriate coordination.

Up until several years ago, NMIs were nearly always entirely within the public sector. However, more recent policies have attempted to give NMIs a degree of management freedom that is appropriate for the efficient and effective running of a research-based organization with services to the public. This has often required the introduction of more flexible accounting or management processes that are closer to private sector management models than to the rules that apply to administrative units in government. In some cases, therefore governments have sought alternative models but have in all cases arranged matters so that

the majority of funding of the institutes comes from public sources. In addition, and as metrology encompasses activities outside the traditional physics and engineering base - moving into the fields of metrology in chemistry, medicine, food etc. - it has been necessary to bring together a number of other organizations with a different ownership or legal status into a “distributed” or “virtual” NMI. In other cases where the required expertise is wholly within an industrial or commercial organization, governments have set up special contracts with industrial providers of metrology services for the country. In these cases, governments normally provide an official or legal designation of the organization concerned as a provider of the specific national service. The designated status only applies to the role of the organization within the country concerned and does not apply outside of that country. In such cases, it is important to ensure that the companies concerned do not develop unfair commercial or market positions as a result of their special contractual arrangements and official designation as part of a “distributed” NMI.

The NMI may have various possible structures:

- A public institute owning and running its own laboratories;
- A private institute owning and running its own laboratories, under the authority of the government, taking into account unfair competition and national security;
- A public agency coordinating public or private institutes.

Experience shows that in the field of metrology, the essential government functions relating to economic and social policy, support for industry and the making of legislation, are dependent on metrological and technical competence. The necessary competence may be strongly enhanced by the integration of technical, regulatory and legislative operations.

It is highly recommended to develop the synergies between scientific and legal metrology activities, in particular the study of technical requirements for new regulations, type testing and type approval issuing:

- Either by combining scientific and legal metrology in the same institute;
- Or, at least, by establishing close cooperations between the institutes in charge of these two fields of metrology.

The reasons for this are:

- New fields of legal metrology and new technologies in legal metrology are moving technically closer to

the accuracies at the national standards level, and require new calibration, test and verification methods and new measurement standards to be developed by scientific metrology;

- High levels of competencies in metrology are more and more important in legal metrology; and
- Including both activities in the same institute may help to achieve the critical minimum size of the institute, permitting better management of human resources and facilitating a coherent policy in metrology.

In all cases, special attention must be paid to the sustainability of the NMI and of the NLMI, and appropriate financial resources must be provided for their long term stability.

The missions and tasks of NMIs and NLMIs include tasks of general interest spread over the long term and services rendered to the administration and to clients on a contractual basis. The financial resources of these institutes must reflect these two kinds of missions.

Part 5 Examples and explanations

CHAPTER I

DEFINITIONS

No particular examples need to be mentioned.

CHAPTER II

NATIONAL METROLOGY INFRASTRUCTURE

II.1 The national metrology infrastructure

No particular examples need to be mentioned.

II.2 National metrology policy

The issues addressed in the national metrology policy should include:

- National application of internationally agreed definitions of units of measurement;
- Development, maintenance and dissemination of those national realizations of the units and quantities of the SI measurement standards at a level sufficient to support national needs;
- Support for the development of appropriate and internationally recognized metrological infrastructure ensuring the traceability of measurements;
- Direction and funding of metrology research activities;
- Development of metrology education and training for metrologists and industry;
- Development and adoption of metrological regulations;
- Enforcement of metrological regulations;
- Assessment of conformity to metrological legal requirements; and
- Information dissemination to the public about metrological issues.

Setting up a National Metrology Council composed of qualified personnel to advise the government on metrology issues should be considered.

II.3 National measurement standards

A country should set up national measurement standards according to its needs. When relevant, these national measurement standards will be primary realizations of the SI units (or a copy of the international prototype of the kilogram), and in other cases, the national measurement standards may just be secondary measurement standards traceable to primary measurement standards of another country.

For quantities whose traceability can be easily obtained by the users and by calibration laboratories directly to national standards of another country, and when the traceability provided by this direct reference is acceptable to the national accreditation scheme, a national measurement standard may not be necessary.

For some quantities, establishing and maintaining a primary measurement standard may be considered a too heavy financial cost for some countries, so that an agreement may be discussed within a group of neighbor countries to share the costs of setting up and maintaining such a primary measurement standard.

II.4 Traceability

No particular examples need to be mentioned.

II.5 National institutes

II.5.1 These missions require the following tasks:

a) *General metrology tasks*

- 1 To establish the national system of units based, where possible, on the SI;
- 2 To realize (where appropriate) and maintain the national measurement standards and disseminate legal units;
- 3 To employ appropriately qualified metrological experts to undertake its responsibilities, to provide these staff with sufficient and appropriate on-going training and to ensure the implementation of efficient succession-planning processes;
- 4 To facilitate the establishment of laboratories that satisfy metrological requirements such as environmental control and that these laboratories are equipped with appropriately calibrated equipment;
- 5 To direct research work for the improvement of the national measurement standards to meet changing needs;

- 6 To provide for transfer of technologies in metrology from research teams to industry;
- 7 To carry out regular reviews of the needs of society relating to the improvement of measurement standards and dissemination of legal units;
- 8 To be the national reference for the national accreditation system of calibration laboratories, regarding competencies and measurement standards;
- 9 To advise the government on technical issues in metrology;
- 10 To ensure appropriate and effective participation in international metrological fora and activities (in particular the Metre Convention) and in regional work in metrology, under the authority of [Name of the Authority];
- 11 To provide calibration against national measurement standards for the traceability of the calibration laboratories accredited by the appropriate national accreditation body, which should itself conform with the requirements of the ILAC, and of legal metrology laboratories;
- 12 To provide consultancy to relevant national bodies, industry and the public on metrological issues and on the importance of measurements;
- 13 To provide and/or to arrange for training for trainers in metrology; and
- 14 Other missions consistent with the intent of the Law.

b) Legal metrology tasks

- 1 To carry out studies and make proposals for the technical regulatory requirements on the various categories of measuring instruments;
- 2 To carry out regular reviews of the needs of society relating to legal metrology;
- 3 To employ appropriately qualified metrological experts to undertake its responsibilities, to provide these staff with sufficient and appropriate on-going training and to ensure the implementation of efficient succession-planning processes;
- 4 To issue national and OIML type approval certificates;
- 5 To ensure appropriate and effective participation in international legal metrology fora and activities (in particular the OIML) and in regional work in legal metrology, under the authority of [Name of the Authority];

- 6 To define the recommended equipment and technical procedures to be applied by the LMAs;
- 7 To organize technical training for the staff of the CMA and the LMAs, and training for industry on legal metrology issues;
- 8 To provide for the training of legal metrology officials, and establish minimum training and performance requirements which shall then be met by all legal metrology officials;
- 9 To develop and disseminate public education programs to support implementation of assigned responsibilities.

II.5.2 No particular examples need to be mentioned.

II.5.3 The NMI normally obtains its operating resources from some or all of the following sources:

- Government monies to wholly fund its national interest missions, in particular tasks 1-10 identified above;
- Contracts with the government for specific tasks;
- Contracts with the private sector for commercial services; and
- Grants from various organizations for specific tasks, such as from international aid organizations to assist the establishment of the NMI.

The NLMIs normally obtain their operating resources from some or all of the following sources:

- Government grants to wholly fund their national interest missions, in particular tasks 1-10 identified above;
- Contracts with the government for specific tasks (for example studies);
- Contracts with the private sector for commercial services (e.g. type approval, verification fees, training, etc.);
- Grants from various organizations for specific tasks, such as from international aid organizations to assist the establishment of the NLMI; and
- Industry participation in schemes such as a quantity mark scheme.

In particular when the NMI or NLMI runs activities (e.g. calibration, training, consultancy for industry, type approvals, etc.) which are in competition with other bodies, the public financing granted to the NMI must not induce unfair competition.

CHAPTER III

LEGAL UNITS OF MEASUREMENT

III.1 A number of quantities are not covered by the SI (colorimetry, biology, medicine, etc.). They are expressed in units which are not SI units.

In the interests of free trade and the avoidance of issues that might be perceived by other countries or the WTO as technical barriers to trade, national requirements for traceability should be written carefully. Ideally traceability should always be specified as conforming to the SI system, through realizations of the appropriate units and quantities at the NMI or at other countries' NMIs, rather than specifically to the NMI.

III.2 It is recommended to include these definitions in documents adopted at the most appropriate level to facilitate their updating and to avoid unnecessary details in the acts submitted to parliament or to ministers.

In air and maritime navigation, distances in nautical miles, speeds in knots, altitudes in feet, are used and must be accepted.

CHAPTER IV

TRANSPARENCY OF METROLOGICAL INFORMATION

No particular examples need to be mentioned.

CHAPTER V

LEGAL METROLOGY

V.1 Introduction

No particular examples need to be mentioned.

V.2 Regulations on measurements

V.2.1 Examples of such regulated measurements may be the obligation to:

- Sell certain products by weight and definition of the required uncertainty or accuracy class of the instruments used;
- Make temperature conversions for certain transactions on oil products;
- Measure the actual calorific power of natural gas for certain transactions;
- Measure the surface area of houses, apartments and offices offered for sale;
- Measure and make public performances of industrial products (e.g. fuel consumption of cars, electrical consumption of domestic appliances, noise level of domestic appliances, etc.);
- Measure and label data on the composition of food products;
- Measure human blood pressure by legally controlled instruments; and
- Measure the composition of car exhaust gases by legally controlled instruments.

V.3 Regulations on prepackages

No particular examples need to be mentioned.

V.4 Regulations on measuring instruments

V.4.1 This includes the regulation of services such as when measuring instruments are used for a fee. For example, truckers can weigh their trucks on commercial scales for a fee so legal metrology must ensure that the scales can be regulated because the results of weighing obtained are used for a variety of commercial and legal purposes. Timing devices in self-service car washes and laundromats are also service related commercial transactions.

This also includes regulatory provisions on the use of instruments when necessary. For example:

- It is generally stated that for nonautomatic weighing instruments used for direct sales to the public, the instrument must be installed in such a way that the display shall be visible by the customer and shall not obstructed; and
- Measuring instruments used for applications in which they are submitted to legal control, must be adapted to their intended use, in particular concerning measuring range and environmental conditions.

