Editorial

Key meetings held at the BIML

In the January 2001 issue of the OIML Bulletin, Chris Pulham concluded his Editorial with a prediction that 2001 will be "another fruitful year of *Change*".

The very beginning of this year has already proved that, in parallel with a necessary degree of continuity, changes are in fact occurring rapidly as shown by two important meetings that took place at the BIML on 19–21 February.

The recently reconstituted Presidential Council met under the chairmanship of Gerard Faber, CIML President. *Continuity* results from the participation of five Council Members who have been active CIML Members for a number of years; *changes* result from the arrival of four new Council Members and from the representation of all those regions that have an active legal metrology cooperation in place.

A report on this meeting may be found in this Bulletin. Amongst the most important decisions, one may note:

- the development of an OIML Mutual Acceptance Arrangement on the recognition of test results associated with OIML type evaluations; this work is under the responsibility of TC 3/SC 5 and certain diverging views had been expressed in connection with the way in which confidence in test results is built up; the thorough study carried out by the Presidential Council should give this work a new impetus;
- the development of an OIML mark (IQ-mark) for packages which meet the requirements of R 87 concerning the quantity contained therein;
- the priority to be allocated to the development of a number of "horizontal" documents of interest for all fields of legal metrology; and
- the preparations for a seminar on the long-term evolutions of legal metrology and market surveillance, to be held if possible at the beginning of 2002.

The second event was a joint Meter Convention/ILAC/OIML meeting. This was not the very first meeting of this kind but the preceding ones were mainly aimed at mutual information. This year for the first time, common actions were identified and ad-hoc groups established, in particular with a view to:

- developing a model *Law on metrology* covering the main aspects of interest for any country, such as metrological infrastructures, maintenance of measurement standards, traceability matters, etc. Another purpose of the text will be to demonstrate the "unicity" of metrology and to give policy makers good reason to pay attention to its development;
- enhancing the role that the OIML and ILAC initially, and later on the BIPM, may play in assisting developing countries in establishing sound metrology, calibration, testing and accreditation infrastructures and in cooperating with donor agencies for the funding of such actions.

Cooperation with other international or regional bodies was also the topic of important discussions, especially with regard to activities within ISO, IMEKO, UNIDO, etc.

It was also decided that the three organizations should use all the communication means at their disposal, especially their web sites, to publicize the progress in their cooperation. In this connection a joint press release was drawn up, which our readers will find on pages 64–65 of this Bulletin. ■

BIML

VOLUME

Mobile calibration rig for volumetric testing

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Introduction

In January 1999 the Norwegian Metrology and Accreditation Service (Justervesenet) took delivery of a mobile calibration rig for volumetric testing, consisting of a truck with several standard capacity measures (volume standards), a reference meter, instrumentation (temperature, pressure) and supplementary equipment such as valves, a pump, etc. The rig is also equipped with a computer and instrumentation which automatically record and calculate the measurement results, and which generate the calibration certificate and the historical data for each meter. This rig is a great improvement in efficiency, accuracy and working conditions for the volumetric control of flowmeters.

Background

The acquisition of the rig was initially envisaged in the light of a report drawn up in April 1996 which concluded that an improvement in efficiency potentially as high as 30 % could be achieved compared to the traditional method based on separate volume standards. Positive changes were also anticipated concerning safety, accuracy, the environment, and operator working conditions.

The contract was signed in June 1998 and the rig was completed in December of that year, built by the Norwegian company *MoPro*. The instrumentation and software were installed in May 1999, delivered by *Intelligent Control*.

Fig. 1 Mobile calibration rig for volumetric testing

Application

The maximum capacity of the rig is 3 000 – 3 500 l/min and it is mainly used for verifying flowmeters with dimensions from 75 mm to 150 mm. The rig is manufactured in aluminium and can be used for any liquid that is not aggressive to aluminium, though it is basically used by Justervesenet for petroleum products. However, it is not used on high viscosity products, since these necessitate an extensive cleaning procedure. Most of the meters tested are positive displacement meters, but all kinds of flowmeters can be tested using this rig.

In Norway the verification interval for flowmeters is one year. Some customers subcontract calibration work and internal controls out to Justervesenet to complement their internal quality program; primarily concerned are filling racks for tanker trucks, loading racks for boats, tanker trucks and airports.

The truck serves about 1 000 flowmeters in the southern part of Norway.

Design and construction

The main challenges for the rig are to handle large capacities (typically 3 000 l/min), minimize the time taken per meter and still achieve an acceptable level of accuracy. This means that attention had to be focused on the pipe design, couplings and the global arrangement for returning the liquid with the objective of minimizing pressure loss. If it is possible to circulate the liquid within the rig, then one standard can be emptied whilst another is being filled. If not, the slop tank is used and it is of note that the standards can also be used as slop tanks. Another critical parameter is the total height of the rig, and a compromise had to be reached to ensure that filling racks with a low maximum height could be accessed.

Figure 2 shows the control room at the rear of the truck. From this room the operator can control the rig and access the following functions:

Fig. 2 Control room and pipe fittings

- leveling of the truck by means of hydraulically supported legs;
- pump (700 l/min) for return of the liquid back to the rack or from the standards to the slop tank;
- hydraulic hose reel (return of the liquid);
- control panel for the pneumatic assisted valves;
- inlet manifold with most of the common couplings;
- couplings for the gas recovery system;
- terminal to operate the computer and the instrumentation. The terminal indicates the temperature and volume; the historical data can be read from the data base for the meter and the values entered from the measuring object. This terminal is also used to operate the flow computer;
- tools; and
- equipment in case of oil spills.

Standard capacity measures

The standard capacity measures (volume standards) are constructed in accordance with the requirements in OIML R 120 *Standard capacity measures for testing measuring systems for liquids other than water*. Justervesenet possesses four volume standards: 2 × 3000 l (which can be used as 1 × 6000 l), one 1000 l and one 200 l. There is also a 3500 l slop tank. The measures are built from 6 mm thick aluminium and to avoid deformation a number of strengthening rings are incorporated around the measures. The scales of the capacity measures have a range of ± 0.6 % of the nominal volume and the sensitivity is 0.02 % for a 5 mm rise.

The measures are gravimetrically calibrated and are therefore traceable to the national standard for mass. The overall uncertainty of the rig itself is ± 0.5 l (k = 2) for the 3000 l standard. The uncertainty of the total measurement is also dependent on the repeatability and scale division of the measuring object and the surrounding system such as pumps, valves, hoses, etc.

Instrumentation - general

For communication between the computer and the sensors a field bus is used, which is a digital communication system. This system is an open system which means that any supplier may be used - in the present case, components from 6 suppliers are used. To handle the calculation Microsoft Excel® is used, and Microsoft Access® is used to manage the history data base. Microsoft Visual Basic® is used for the interface and control of the process.

The instrumentation system can automatically read the temperature, the level or volume in the volume standard and also the results from the reference meter. The operator has to manually read the indication of the measuring object and enter the value into the terminal. Based on this information the instrumentation will automatically perform the corrections in line with the thermal expansion of the standard, calculate the result, generate the calibration certificate and record the historical trend. These documents are printed out and handed over to the customer on site.

Fig. 3 Volume standards

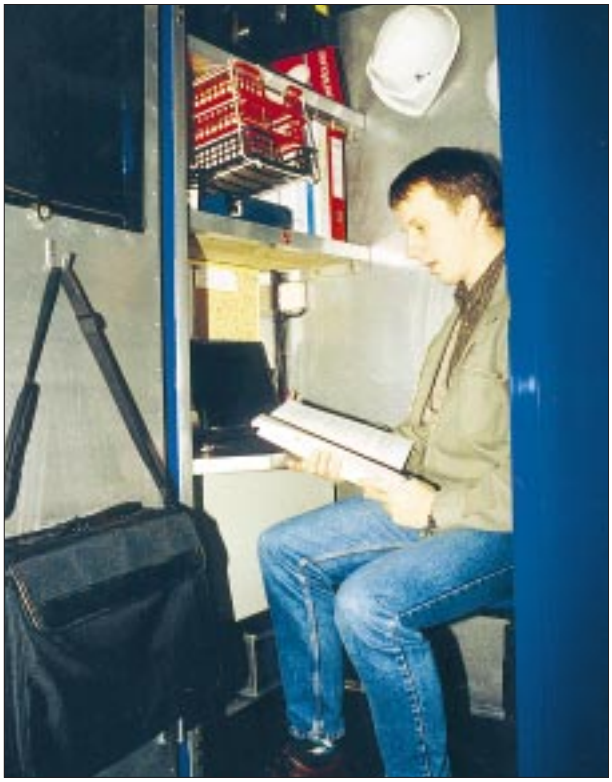

Fig. 4 Office for computer, printer, etc.

Figure 4 shows a small office towards the back of the truck where the computer, printer and other electrical equipment that is not Ex-proof are stored. The room is not defined as an Ex-zone as long as the door is locked. Manuals, data sheets, documentation, historical data on CD-ROM, etc. are also stored in this room.

Instrumentation - reference meter

As a supplement to the volume standards, a reference standard flowmeter is installed in the rig (100 mm Smith meter, stainless steel, Q_{max} = 4000 l/min). The flow can be directed in two ways, either in a loop from the filling rack, through the meter and back to the filling rack, or from the meter to a volume standard. In this way the reference meter can be calibrated on site with the actual liquid. The flow computer has a 5-point flow characteristic for each liquid and the operator can decide the actual placing (in the capacity range) for each point. This means that a special curve can be plotted for each case, illustrating not only the k-factor but also the gap between the points. The reference meter allows for much larger measured quantities and is a good alternative for checking meters used for loading ships, for example, where there are no possibilities of presetting the measured quantity.

Instrumentation - level metering

The level is measured by means of differential pressure transducers. Differential pressure transducers were chosen since they are very robust, compact, accurate and inexpensive; the drawback, however, is that the density influences the result, since the density varies according to the type of liquid, temperature and from batch to batch. When the operator begins the measuring operation he chooses a liquid from a menu, the computer checks the actual density from a database and calculates the temperature-induced density variations.

The transducer is placed just below the scale of the capacity measure, in order to reduce the effect of these density variations. The transducer is a ceramic differential pressure transducer with a range of 0–50 mbar and repeatability < 0.01 %.

The density for each liquid (15 °C) is stored in a database. Density changes due to the temperature are calculated in accordance with "Petroleum Measurement Tables - 54C". Corrections for density variations are made using a procedure to compare the calculated volume with the visual reading of the volume standard.

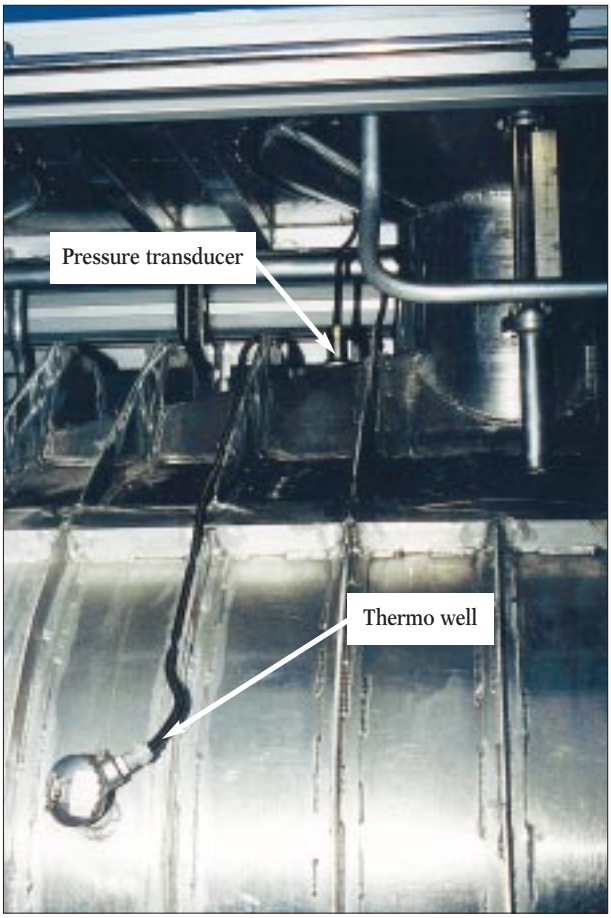

Fig. 5 Placing of sensors

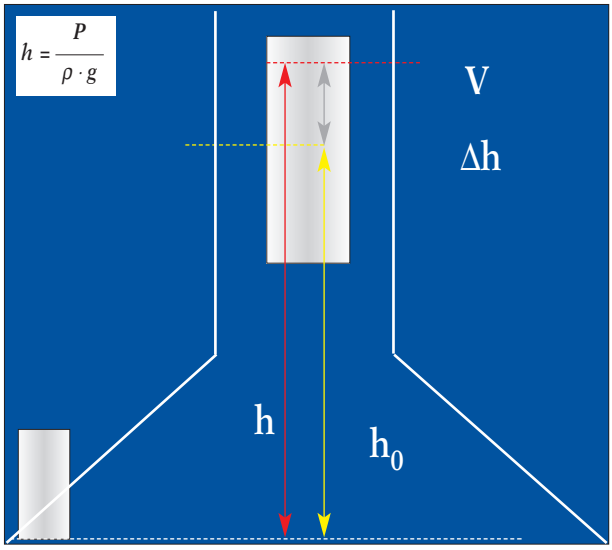

Fig. 6 Principle for automatic reading

If there is a difference the operator enters the read volume into the terminal. The computer then automatically corrects the value of the density so that the calculated volume agrees with the read volume. The system does have some limitations and is still not good enough, but staff are working on a number of modifications that will hopefully serve to improve it.

Environment and safety

Many requirements must be met for a rig such as this one to operate in an Ex-area.

All the electrical components in the Ex-zone (zone 0: liquid, zone 1: gas) are Ex-proof and the total installation is approved by NEMKO.

It must not be possible to start the engine when the couplings are mounted, to prevent the truck from driving away.

The chassis has to be grounded to avoid potential differences between the filling rack and the truck.

All the electrical parts on the chassis that are not Ex-proof have to be disconnected from the battery during gasoline filling.

To avoid flashover inside the standard from the static-charged liquid, the temperature sensor and the optical overfill sensor are connected to grounding wires.

There are two kinds of overfill protection: firstly an optical sensor that detects if the level becomes too high. This sensor can activate a shut-off valve in the filling rack. There is also an overflow pipe that feeds the liquid to the slop tank. If any liquid is spilt, equipment is on hand to handle such a situation in the truck and the operator is also required to be aware of the emergency routines on the actual site.

The rig has also a Gas Recovery System (stage 1) to lead the vapor back to the filling rack.

Test period

During the test period the rig was serviced several times. Typical problems encountered - and fixed - were leakage in the liquid and pneumatic valve systems, and some software bugs. The test period was also used to make some small modifications and to add some other functions. Testing was carried out during ordinary verification. The rig has worked very well and depending on the filling rack, the average time required to check each flowmeter is one to one and a half hours.

Conclusion

As a conclusion, the rig presents a number of advantages compared to the former method using separate standards. It is very functional and the practical solutions seem to be successful. The accuracy of the measurement is increased due to better sensitivity and leveling possibilities and efficiency appears to have increased by approximately 30 %, which is consistent with pre-launch expectations. Operator working conditions are very good, the rig meets the requirements concerning environmental and safety regulations and the total cost of the rig was in line with the budget. Running expenses are even lower than expected and due to the gain in efficiency, customers get a better service for a lower cost.

All in all the rig has given Justervesenet very positive publicity and plans are already being made for the next truck. ■

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ROAD SAFETY

Breath analyzers: Implementation of traceability in Portugal

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Summary

Alcohol breath analysis is used in most countries to enforce driving under the influence of alcohol (DUI) legislation. The accuracy of the "breath test" is critical to ensure the successful prosecution of DUI cases in court - this accuracy in turn directly depends on that of the calibration source used to verify the breath analyzers, and ethanol in nitrogen gas mixtures are prepared and certified for this purpose. These reference materials should be traceable to SI units in order to establish test reliability: this ensures that the results obtained during calibration/verification as well as those from breath analysis are accepted as evidence.

The objective of this paper is to outline the impact of the certification of ethanol in nitrogen gas mixtures on the verification and calibration of breath analyzers. The composition of the reference gas mixtures thus prepared can be verified by analytical reference methods such as non-dispersive infrared spectroscopy using a proper calibration method. The analysis is carried out by comparing the mixture to be certified with a set of primary reference materials (PRMs) of known composition and uncertainty.

Introduction

The abuse of alcohol is receiving more and more attention. Within the European Union it is estimated that 20 % of all fatal road traffic accidents are alcohol-related. Breath analysis was introduced in Portugal over fifteen years ago, but the authorities have only recently been granted permission to replace blood tests by breath tests. A law enforcement officer has the right to subject a driver to a breath test in the case of careless driving, an accident, or suspicion of DUI. Before the case is heard in a court of law, the suspect can request a blood test. In the case of DUI evidence, the driver has to pay all the costs involved, which has served to significantly reduce the number of blood tests requested.

Compared to blood analysis, breath tests have several advantages: they are efficient, the results are available rapidly, and the costs are low. The accuracy and reliability of breath-alcohol testing devices can be subject to debate and speculation, especially in those cases where the suspected driver's employment is at stake. Based on the experience of other EU countries, a regulation was put into force that stipulates the operational procedures as well as the requirements of the National Legal System. At first, a screening device is used as an on-the-spot analyzer by the police; if the result is positive, the driver is obliged to undergo a test with an evidential breath analyzer (EBA); thus, two types of analyzers are in use.

A portable device containing an electrochemical cell that responds to ethanol can provide initial evidence of recent drinking and blood alcohol. For these screening devices a quality assurance and quality control plan shall be designed and implemented in a such a manner that it will verify that test results differ by not more than 10 %; such screening devices should be certified by the Road Traffic Department.

The EBA adopted must be submitted to metrological control. Measuring instruments used for evidential purposes must pass pattern approval and each instrument must be submitted to initial and subsequent annual verification. Currently, the metrological requirements for analyzer performance are based on OIML specifications [1].

All evidential models approved by IPQ use the principles of IR absorption and Lambert-Beer law for quantitative analysis. The instruments measure the absorption of IR radiation at 9.4–9.5 μm, which is associated with O–H bond stretch and bending vibrations, in order to avoid interference from acetone and hydrocarbons, which can occur in poorly treated insulin dependent diabetes or during ketoacidosis. Based on the scientific work of Jones [2], the EBA must be operated at 34 °C, and the instrument uses thermostats to measure the breath temperature and to harmonize inter- and intra-individual variations. The measurements could be affected by the volume of breath discarded before sampling; to avoid this, the instruments incorporate a flow meter to monitor the breathing.

In order to carry out reliable and reproducible calibrations and metrological operations, standard operations procedures have to be approved by legal authorities. For this purpose, two types of calibration devices have

been accepted: wet simulators and compressed gaseous ethanol standards in nitrogen or air. The calibrations must be traceable to the appropriate SI units.

The approved wet simulator is based on the principle reported by Dubowski [3], which employs a mixture of liquid ethanol and water maintained at a constant and outlet temperature of 34 °C. The gas phase concentration is predicted from the aqueous concentration based on Henry's Law, when ambient air is bubbled at constant flow. Critical points in the use of the wet simulator are the outlet gas concentration caused by depletion, liquid temperature maintenance, absence of monitoring concentration and lack of traceability evidence on outlet gas.

Compressed gas standards are mixtures of ethanol vapor in nitrogen or air in a pressurized cylinder. Working standards can be certified and made directly traceable to primary gravimetrically prepared standards. The stability and the homogeneity of the mixtures should be tested prior to use.

Dry standards do not have a long history and some controversy is described in the literature. The criticism is that dry gas could not resemble human breath due to the lack of moisture content. Recent work by Dubowski [3] and results from Silverman [4] with different commercial breath analyzers concluded that there is a satisfactory degree of equivalence between both types of calibration devices for those instruments. This has led to the result that the system based on ethanol-compressed gas was approved as the device for initial and subsequent verification.

The purpose of this work is to demonstrate the reliability of breath analysis in Portugal. The following parts can be identified in the system:

1) development of a suitable method to certify working standards;
2) establishment of a procedure to validate the reliability of instruments in situ;
3) definition of a realistic uncertainty budget; and
4) comparison of the results obtained during several subsequent verifications.

Certification of working standards

The validation of the composition attributed to the calibration gas mixtures can be achieved by comparison with appropriate reference gas mixtures. For this purpose, PRMs from the Nederlands Meetinstituut (NMi) have been used. These PRMs are prepared by gravimetric methods and directly linked to international standards of mass, pressure, temperature and amount of substance, which ensures traceability to international standards.

The composition of the ethanol in nitrogen working standards is verified by non-dispersive infrared spectroscopy (NDIR) in order to confirm the value of the preparations. The analysis is carried out by comparing the mixture to be certified with a set of PRMs of known composition and uncertainty.

The basic procedure can be summarized as follows:

1) Specify the analytical range of interest;
2) Specify the analytical method and measuring system to be used;
3) Design the calibration experiment;
4) Perform the calibration experiment;
5) Calculate the analysis function $x = G(y)$;
6) Determine the composition of the gas under verification (mole fraction and uncertainty); and
7) State the result of the entire analysis.

Three mixtures of ethanol in nitrogen are prepared, of nominal 217, 381, and 516 µmol/mol. A series of five primary reference materials is used for the calibration using NDIR spectroscopy. The composition of the PRMs is given in Table 1.

The NDIR spectrometer is connected to an automatic sampler, controlled by a computer program [5]. The sampler ensures the same analysis conditions for all cylinders, including pressure and mass flow control. The calibration is carried out in three runs. The NDIR-monitor is flushed 300 s before a measurement, a measurement consisting of 90 readings. The pressure is read 30 times and the mass flow is controlled during the measurement. The zero gas is nitrogen. The computer controls the measurement of the calibration mixtures and the sample cylinders.

The results have been fitted using a quadratic function of type [6]:

$$x = G(Y) = b_0 + b_1 y + b_2 y^2 \qquad (1)$$

Table 1 PRMs used for calibration

Cylinder	Composition µmol/mol	U µmol/mol
Standard 1	114.1	0.9
Standard 2	223.7	1.6
Standard 3	391.3	2.8
Standard 4	512.2	3.5
Standard 5	810.0	5.0

Table 2 Results from verification (in µmol/mol)

Cylinder	Nominal	Result
Sc 5800447	217	212.3
Sc 5800445	381	382.2
Sc 5800344	516	514.2

Table 3 Uncertainty evaluation of the verification (in µmol/mol)

	Uncertainty from the analysis function					
Cylinder	Run #1	Run #2	Run #3	s_r	u_c	U
Sc 5800447	0.50	0.50	0.50	0.20	0.89	1.8
Sc 5800445	0.88	0.89	0.87	0.31	1.56	3.1
Sc 5800344	0.98	0.99	1.010	0.29	1.75	3.5

Table 4 Composition of gas mixtures, expressed in blood alcohol units and range of tolerance

Cylinder	x_{EtOH} (ppm, mol/mol)	U (ppm, mol/mol)	c_{EtOH} (mg/L)	U (mg/L)	Certified value $X \pm u(x)$	Range of tolerance
Sc 5800447	212.3	1.8	0.383	0.003	[0.379; 0.386]	[0.352; 0.413]
Sc 5800445	382.2	3.1	0.689	0.006	[0.683; 0.694]	[0.634; 0.744]
Sc 5800344	514.2	3.5	0.927	0.006	[0.920; 0.933]	[0.853; 1.001]

The results of the fit of run #1 are shown in Fig. 1 (see next page). The results of the second and third runs are very similar and the results from the verification of the three mixtures prepared are given in Table 2.

The evaluation of the main sources of uncertainty from the verification process leads to an unequivocal confidence interval for the composition of the mixtures. The main sources of uncertainty are those associated with the repeatability of the response, and the quality of the fit. The results of the uncertainty evaluation are shown in Table 3.

The compositions and the expanded uncertainties of the three mixtures are tabulated in Table 4. In order to relate the composition of the gas mixtures to the commonly used unit for expressing alcohol levels in blood (mg/L), the formula used in [2] for this conversion is:

$$c_{EtOH} = 1\,000 \; \frac{x_{EtOH} M_{EtOH}}{M_{N2}} \rho_{N2} \qquad (2)$$

where:

x_{EtOH} = the mole fraction;
c_{EtOH} = the blood alcohol concentration;
M_{EtOH} = the molar mass of ethanol;
M_{N2} = the molar mass of nitrogen gas; and
ρ_{N2} = its density at 1 bar and 34 °C.

The maximum permissible errors accepted by Portuguese legislation, for instance for periodical verification, for each of the three gas mixtures are 0.032 mg/L in absolute error for the concentration in cylinder Sc 5800447 and 8 % in relative error for the concentrations in cylinders Sc 5800445 and Sc 5800344. As can readily be seen, the confidence interval provided by the expanded uncertainty is much smaller than the range of tolerance of the breath analyzers, as it should be!

Reliability of the instruments on site

The quality control of the instruments on site must be guaranteed in order to avoid the risk of inaccurate results. The metrological features are more or less rigorous and include accuracy, linearity, hysteresis and short-term drift. Under reference conditions five concentrations are used within the range 0–800 ppm. In this case, reference gas mixtures with an uncertainty better than 1 % should be used. In the subsequent verification, the working standards with alcohol concentrations of 0, 220, 440, 660, and 800 ppm (µmol/mol) are applied for verifying linearity. For accuracy, 220 ppm and 660 ppm mixtures are used. At least 10 measurements of each gas mixture are used for repeatability. The memory effect and short-term drift are checked with the same concentration gases.

Uncertainty evaluation

Although the uncertainty concept as used in the "Guide to the expression of uncertainty in measurement" (GUM) [7] is not mentioned in OIML R 126 [1], it was

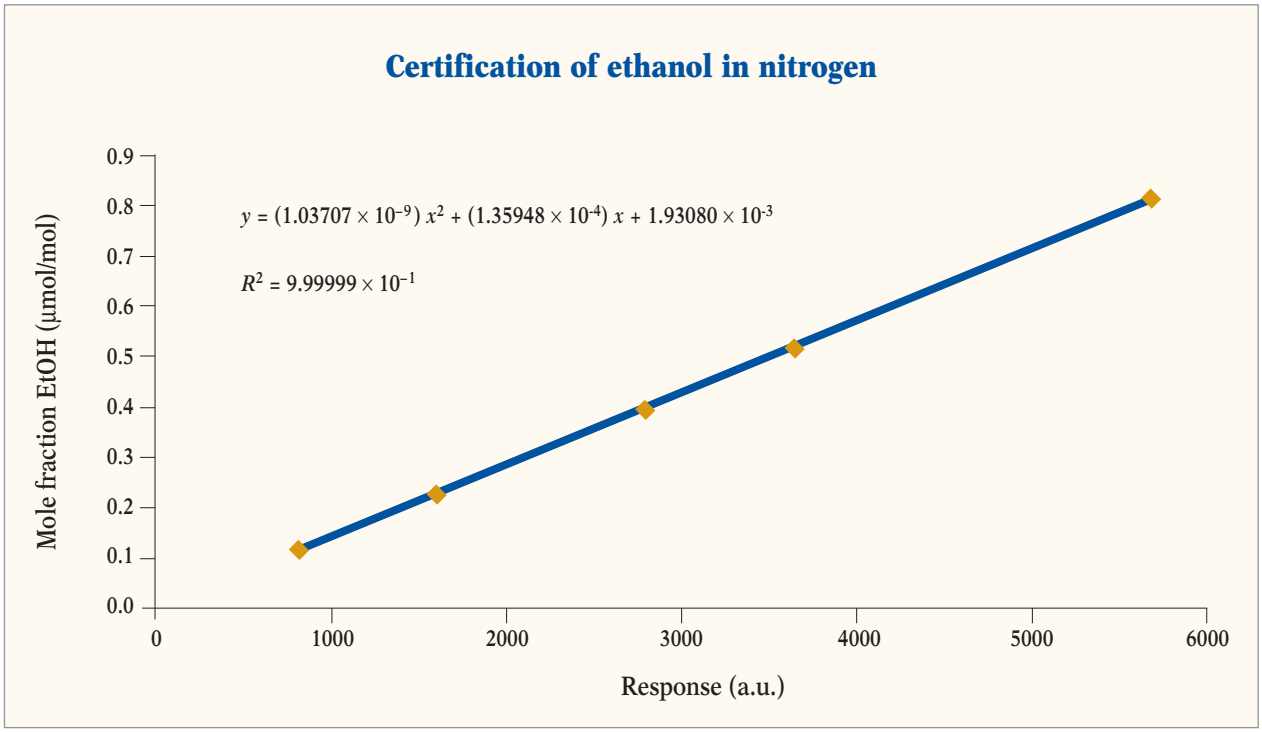

Fig. 1 Fitting results of run #1

decided to apply it just as an evaluation so that the instrument should not be rejected based on the uncertainty results. The measurement uncertainty resulting from the legal procedure was evaluated in accordance with the methodology described in the GUM, the Eurachem Guide [8] and the methodology described by ISO/TC158 [6] working groups. The expanded uncertainty U was obtained when a coverage factor k = 2 was applied. A typical excerpt of the uncertainty evaluation is shown in Table 5.

Hysteresis is assessed separately. Linearity of the device is checked by means of linear regression. The contribution from the working standard is ascertained from the uncertainty marked on the certificate.

The contributions from instrument's scale resolution and zero-setting are based on the manufacturer's specifications and a rectangular distribution is assumed. They are entered as "instrument" in Table 5. In Table 6 the measurement uncertainty at different concentrations is presented for a typical breath analyzer; these results can be regarded as representative of more than 400 instruments.

Comparison of the results obtained over several subsequent verifications

Using the same standard operational procedure during four years, all the devices were tested and the results were stored and compared in order to verify that no long-term drift can be observed. Table 7 shows the results.

Table 5 Uncertainty evaluation of an on-site tester

Variable X_i	Estimate x_i	Uncertainty	Distribution	Standard uncertainty $u(x_i)$	Sensitivity coefficient c_i	Contribution to standard uncertainty $u_i(y)$
Test	0.376	8.7×10^{-5}	Normal	8.7×10^{-5}	1	8.7×10^{-5}
CRM	0	0.004	Normal	0.0023	1	0.0023
Instrument	0	0.004	Rectangular	0.0025	1	0.0025
Result	0.376					0.007

Table 6 Results from verifying an on-site breath analyzer

Scale point (mg/L)	Maximum permissible error	Uncertainty	Scale point + observed error + *U*	Compliance lower limit	Compliance higher limit
0.200	± 0.032 (mg/L)	0.006 (mg/L)	0.224 (mg/L)	0.168 (mg/L)	0.232 (mg/L)
0.400	± 0.032 (mg/L)	0.007 (mg/L)	0.402 (mg/L)	0.368 (mg/L)	0.432 (mg/L)
0.678	± 8 %	0.022 (%)	0.687 (mg/L)	0.624 (mg/L)	0.733 (mg/L)
0.978	± 8 %	0.030 (%)	1.065 (mg/L)	0.900 (mg/L)	1.057 (mg/L)
1.457	± 8 %	0.050 (%)	1.457 (mg/L)	1.340 (mg/L)	1.573 (mg/L)

Table 7 Values of uncertainty during four years for the same instrument and in the same points

Scale point	1996	1997	1998	1999
0.200 mg/L	0.009 (mg/L)	0.008 (mg/L)	0.007 (mg/L)	0.010 (mg/L)
0.417 mg/L	0.007 (mg/L)	0.008 (mg/L)	0.011 (mg/L)	0.010 (mg/L)
0.700 mg/L	0.021 (%)	0.023 (%)	0.024 (%)	0.026 (%)
0.950 mg/L	0.034 (%)	0.040 (%)	0.038 (%)	0.043 (%)
1.500 mg/L	0.045 (%)	0.045 (%)	0.042 (%)	0.044 (%)

Conclusions

The methodology presented allows for transparency and validation of the methods used in legal verification. These concepts allow laboratory quality assurance and quality control to be improved without spending extra time, and is a set of tools that ensures the reliability of the measurements and provides the jurisdiction with clear evidence of reliability.

This traceability is provided through an unbroken chain of calibrations linking measurements made in one laboratory with measurements made in other places at different times. The link to other countries is established through IPQ's working standards, which are made traceable to international PRMs.

Another important consideration is the appreciation of the results for setting up compliance limits using the GUM uncertainty concept. ■

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BARRIERS TO TRADE

Towards a global measurement system: Contributions of international organizations

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1 Introduction

Practically all goods and services are subject to barriers to trade, be they industrial goods, agricultural products or the latest forms of electronic commerce via the Internet. But the desire to reduce these barriers, which may impede or prevent fair competition and the exchange of goods, is not new. Not only are there very diverse interests at the root of this desire, but also reducing barriers is an ongoing objective that is expressed by almost all sectors of the world economy. Reliable and comparable measurements play an important role in many cases for the requirements to be met by the products and services (which may be different in the individual states), as do the various approval and test methods laid down by the responsible authorities. But the latter may themselves turn into barriers to trade, defeating the object of the exercise.

For this reason, the international metrology organizations and the organizations concerned with conformity assessment are increasingly tackling the problem of how best to eliminate technical barriers to trade.

After intensive discussions, all the international metrology organizations (as well as some regional ones) developed strategy papers. The Metre Convention, for example, published the *Blevin Report* [1], and the OIML the *Birkeland Study* [2]. As a consequence, action plans are being developed and the implementation thereof has already started.

In June 1998 the BIPM, IMEKO, OIML and PTB held a joint conference on *The Role of Metrology in Economic and Social Development* [3]. The problems facing the world economy were discussed from the most diverse angles by 230 delegates from about 80 countries and 17 international and regional organizations.

The conclusion drawn by the working groups from the lectures and discussions covering the entire scope of the problem was essentially that the seminar had undeniably been a real success thanks to the high quality of the speakers' presentations and lectures and the sheer number of different subjects raised. The groups underlined that there was certainly much food for thought for follow-up meetings, and that the delegates had left the information-saturated week of activity conscious of the fact that metrology was keeping up with the times and evolving throughout the world.

In his closing address Mr. Athané (Director, BIML) had emphasized that OIML activity must be adapted to match the work of the BIPM, IMEKO, ILAC, ISO, etc. and to fulfill the needs of international organizations such as the WTO (notably its TBT activity), regional bodies, Member States, and especially those of developing countries.

The seminar was the first to offer the three large metrology organizations an opportunity to discuss matters of such importance as those addressed on this occasion, to exchange views and to discover each other's activities more fully.

Based on the outputs of this seminar, the OIML launched activities and proposed new directions aimed at enhancing the role of metrology in economic and social development. The conclusions from this work were drawn during the CIML Meeting held in Seoul in 1998, while the OIML meetings in Tunis in 1999 and in London last year served to discuss measures by which further progress could be achieved.

2 General situation as regards the removal of technical barriers to trade

There are in fact a large number of barriers to trade, which obstruct free trading and the exchange of goods and services in the world (cf. Fig. 1). Metrologists, for their part, may only influence the technical side of the non-tariff barriers to trade.

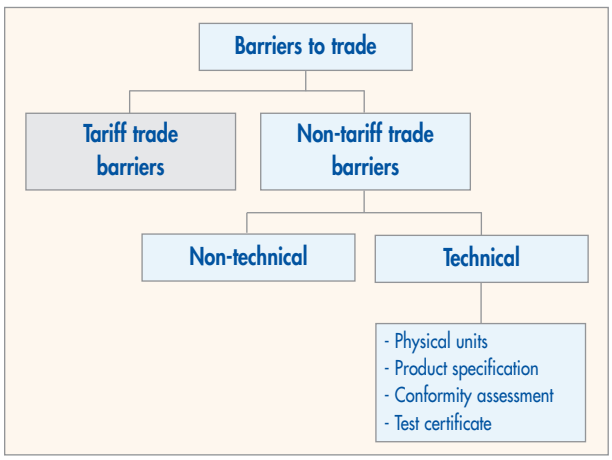

Fig. 1 Barriers to trade

2.1 World Trade Organization (WTO)

The WTO was established in 1995, continuing the work of the GATT which was founded as early as 1948. As the new umbrella organization for the world-wide harmonization of international trade, the WTO has made the liberalization of the world economy and the reduction of protectionism its goals. The foundation document signed on January 1, 1995 assigned far-reaching powers to the WTO, which supervises compliance with regulations and national trade policy, and also settles trade-related disputes. The WTO is the most significant political organization after the UNO and 134 states have since joined.

For the purpose of transparency, WTO members were required to fulfill notification obligations and establish national inquiry points. Another aim of the WTO is to improve market access.

Under the umbrella of the WTO, an agreement on Technical Barriers to Trade - the so-called TBT Agreement [4] - was signed by 46 countries five years ago. This Agreement is supposed to advise metrologists in harmonization matters (cf. Fig. 2).

With a view to developing an improved understanding of the role of international standards under the TBT Agreement, a TBT information session was organized in November 1998. This session aimed at keeping international standardizing bodies informed of ongoing discussions about international standards within the TBT Committee and at increasing the awareness of WTO members of the activities of these bodies. Presentations were made by ten international organizations, including OIML, ISO, IEC, ITU, WHO, FAO/Codex, etc. Questions were put to these organizations, mainly on the openness of their programs, transparency of procedures for comments and decision-making, application of adopted standards, when and how the specific problems of developing countries were taken into consideration, and the coordination of activities among these international standardizing organizations. As regards the OIML, the TBT Committee was informed that the directives for the development of international Recommendations were in line with paragraphs L, M and N of the WTO/TBT *Code of Good Practice for the Preparation, Adoption and Application of Standards*. In the same way, the cooperation agreement between the OIML and ISO/IEC aimed at eliminating any risk of divergences and reducing the duplication of work, as well as the existence of a special OIML activity for developing countries were appreciated. This issue was also discussed in an ISO DEVCO/CASCO* meeting held in Milan, Italy, in September 2000 on the theme "Facilitating recognition of conformity assessment activities in the 21st century".

Technical Barriers to Trade (TBT) Agreement, 1995 (46 Signatories)

- All WTO members have to sign – 134 signatories
- Requires national technical regulations to be:
  - transparent
  - justifiable
  - non-discriminatory based on international standards (if possible)
- Encourages members to sign mutual recognition agreements on conformity assessment
- Encourages the development of international conformity assessment systems

Fig. 2 The World Trade Organization (WTO) TBT Agreement

2.2 Organization for Economic Cooperation and Development (OECD)

The OECD has also taken up this topic and in March 2000 organized a large-scale meeting at which technical barriers to trade, international standardization and conformity assessment were dealt with. As a next step, a study will be initiated on the usefulness of the international harmonization of joint aims laid down in regulatory technical directives, and this for the very promising product area of telecommunication terminals.

2.3 United Nations Economic Commission for Europe (UN/ECE)

Last but not least, the UN/ECE deliberates on an international model for the harmonization of technical regulations based on references to relevant standards. This model was discussed in Geneva in June 2000. Further meetings of the UN/ECE concerning this topic and a workshop were held in November 2000 on *The Role of International Standards and Technical regulations in International Trade*.

In 2000 a number of initiatives were launched by these organizations to demonstrate the significance of the field of measurement, standards and quality in connection with the removal of technical barriers to trade. Examples of such meetings are the Special OECD Meeting on *Technical Barriers to Trade: International Standards and Conformity Assessment* held in Paris in March 2000 and a WTO Workshop on *Technical Assistance and Special and Differential Treatment in the Context of the TBT Agreement* held in Geneva in July 2000.

As a provisional result it can be stated that the decision makers in political and technical fields must be made aware of the problems, that the international

* DEVCO: ISO Committee for Developing Country Matters
CASCO: ISO Committee for Conformity Assessment Matters

organizations must better coordinate their programs, and that the necessary infrastructures must be improved or - in developing countries - be established first.

2.4 International standardization

Proof of compliance with international standards is also increasingly gaining in importance in connection with the removal of technical barriers to trade. What is concerned here are tools with the aid of which the facilitation of world trade can be speeded up through a harmonization of technical regulations. An example of highly successful international standardization work is the ISO 9000 series of standards in the field of quality management. The ISO 9000 standards have become an international reference for quality requirements in business-to-business dealings and form the basis of more than 350.000 certified quality management systems within private and public sector organizations in at least 150 countries.

It was, therefore, important as a result of the broad experience gained over the past years through the application of guidelines drawn up by international organizations and standardization bodies, that these guidelines have been transformed into international standards and adopted throughout the world. This process took place in steps, on the basis of the rules commonly applied in standardization.

The revision of ISO/IEC Guide 25, which describes the requirements for laboratory competence, was also of significance in this context. The conclusions drawn from the experience gained and the results of extensive discussions were taken into account when ISO/IEC 17025:1999 *General requirements for the competence of testing and calibration laboratories* was drawn up, a standard jointly issued by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). CEN and CENELEC, the European standardization organizations, have taken over the exact wording of this fundamental standard in the European Standard EN ISO/IEC 17025:2000 [7]. Any laboratory in the world which meets the requirements of this standard can therefore be regarded as competent to produce results which are well founded from a technical viewpoint.

3 Activities of international organizations for metrology and accreditation

3.1 Metre Convention

Following the *Blevin Report*, a major step on the path towards the removal of technical barriers to free trade was taken in Paris on October 14, 1999, during the 21st CGPM, the General Conference of the Metre Convention, when representatives of 38 national metrology institutes (NMIs) and two international organizations signed a Mutual Recognition Arrangement (MRA).

This MRA was prepared by the Director of the BIPM and specifies two different ways in which permanent compliance with the competence criteria can be proved and confidence preserved. Depending on the national and regional conditions, self-declaration as well as formal accreditation by internationally recognized accreditation bodies are stated as equivalent means.

In the case of self-declaration, compliance with the agreed criteria is made transparent above all by well-defined cooperation among the NMIs. If necessary, all information required is disclosed to remove possible doubts. "Peer reviews" by renowned experts from other NMIs are another tool by which transparency can be ensured.

In the case of accreditation, proof is usually established indirectly, by the obligation of the national accreditation systems to apply equivalent working methods. The accreditation systems themselves are then subject to international control through regular evaluations. Here, too, clear rules of procedure have been defined as regards the lines along which mutual recognition can be achieved.

Essential points of the MRA, the full title of which is *Mutual recognition of national measurement standards and of calibration and measurement certificates issued by national metrology institutes* [9], are regulations concerning world-wide key comparisons. The key comparisons are to show the degree of equivalence of national standards and measurement capabilities. The MRA stipulates that the results of the key comparisons are to be published by the BIPM, which will also maintain a key comparison database accessible via the Internet. Besides the results of key comparisons, the database will contain information on the calibration and measurement capabilities notified by the NMIs through their regional metrology organizations (RMOs) and reviewed by a Joint Committee of the RMOs and the BIPM.

Operation of an efficient QM system is indispensable to ensure that equivalent working methods are constantly applied and that confidence is preserved in the intervals between regular comparison measurements. This QM system must fully satisfy the requirements of ISO/IEC 17025. Moreover, it serves as a tool which will also make highly accurate, complex measurements possible in the future. It is in addition a means well-suited to reveal both strong and weak points and to implement internal measures for the remedy thereof.

3.2 OIML

According to the *Birkeland Study* and the discussions at the Braunschweig Seminar it is the main task of the OIML to harmonize legal metrology requirements and practices. An important contribution to the removal of technical barriers to trade is the development of the OIML Certificate System which will help to better respond to the needs of manufacturers and to develop procedures for acceptance or equivalence agreements in the years to come. Mutual cooperation, mutual confidence and mutual recognition are three steps to achieve international harmonization in legal metrology. A *Mutual Acceptance Arrangement on OIML Type Evaluations* (MAA) [10] is under discussion and expected to be adopted in 2001/2002.

3.3 International Laboratory Accreditation Cooperation (ILAC)

ILAC, too, has strongly supported the development of a world-wide infrastructure which will allow uniform criteria to be applied in assessing the equivalence of test and calibration results and the competence of laboratories. The bases for this are regional agreements already concluded between regional accreditation systems. The aim is to interlink these regional accreditation systems and to support the development of new regional structures wherever necessary.

The main tasks to which ILAC devoted itself in this context were the following:

- definition and publication of criteria and methods to be applied in the evaluation of accreditation bodies;
- development of a method for the evaluation of regional accreditation systems;
- training of independent experts as ILAC evaluators; and
- continuation of cooperation with the BIPM in the definition and establishment of fundamental principles ensuring comparability of national standards.

At the last ILAC General Conference in Washington (USA) in November 2000, an MRA [11] was signed by 37 accreditation bodies from 28 countries. The German Calibration Service (DKD) was among the first signatories. The core of the Arrangement is the mutual recognition of the equivalence of national accreditation systems. Application of this Arrangement is linked to the recommendation to recognize calibration certificates and test reports issued by the accredited laboratories which are among the signatories to this MRA.

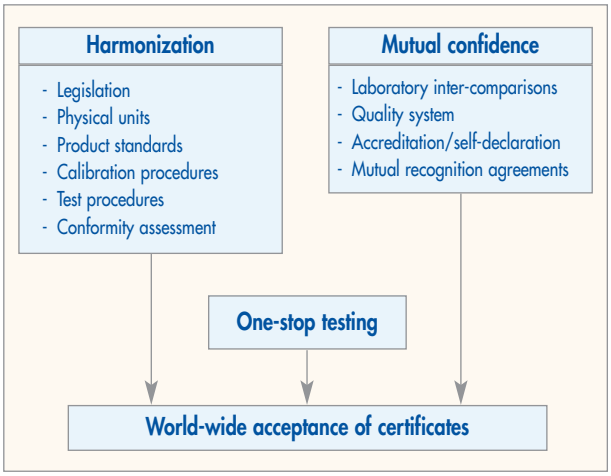

Fig. 3 Removal of metrological barriers to trade

Another important decision was that aimed at closer cooperation with the International Accreditation Forum (IAF). In future, general conferences and meetings will be prepared by a joint committee and the topics to be treated will be coordinated. It has moreover been agreed to give the user a uniform interpretation of the relation between ISO 9001 and ISO/IEC 17025 (cf. section 2.4).

4 Removal of metrological barriers to trade

How can metrologists support the removal of metrological barriers to trade? First of all they may try to exert influence on those bodies which have to do with legislation, the fixing of physical units, product standards, calibration and test procedures, as well as conformity assessment with the effect that all these issues will be harmonized world-wide and will be implemented in practice.

It is important for the recognition of calibration and test results to establish mutual confidence by means of laboratory intercomparisons, by installation of a quality system, by application for accreditation and by accession to mutual recognition agreements. The intended objective of all these measures is to reach one-stop testing and world-wide acceptance of certificates [5].

Three key points arising in Fig. 3 will be discussed briefly.

4.1 Harmonization in legislation

A good example (although negative as regards the time schedule aspect!) is the harmonization of requirements for measuring instruments intended for use for legal

MID

Principles

- Limitation to essential requirements
- Technical specifications in harmonised standards
- Application of standards on voluntary basis
- Modular conformity assessment procedures
- 11 categories of measuring instruments
- Applicable in member states with legal metrological control

Goals

- Free circulation of products with CE mark
- High protection level and high quality of products
- More responsibility with the manufacturer

Schedule

- 1991–1998 Development of drafts
- 2000–2001 European Council and Parliament
- 2002–2004 Implementation

Fig. 4 General principles of the Measuring Instruments Directive (MID)

purposes - laid down in a draft of the Measuring Instruments Directive (MID) of the European Union (EU). This New Approach Directive provides the basis for trade within the EU, since type testing and conformity assessment carried out in one particular country and the certificates issued in this context will be recognized by all EU member countries. The first New Approach Directive for measuring instruments has been successfully applied to nonautomatic weighing instruments since 1994. Unfortunately, the MID has been under discussion for 10 years, and a further four years are necessary for further discussion by the European Council and for its implementation. The general requirements of the MID are listed in Fig. 4.

4.2 Physical units - Implementation of the metric system

Even 125 years after the signing and introduction of the metric system a few countries still use old-fashioned, i.e. non-metric, units in their daily lives. In the meantime **all** the countries have officially introduced the SI metric system, some of them on the basis of transition periods.

The problems which may arise whenever harmonization is carried out half-heartedly became obvious by the failure of the Mars Climate Orbiter mission in September 1999 [6]. Instead of being launched into stable orbit, the satellite burnt out in the atmosphere of Mars. One reason for the failure was that the control centers in Denver and Pasadena had used different units of measurement, i.e. one team had used meters and kilograms, the other had used feet and pounds. Apparently, the efforts of the American metrologists and the US Government to introduce the SI metric system represent a tough "battle" against old habits!

4.3 Quality system of metrology laboratories

Independent of whether metrology laboratories or national metrology institutes (NMIs) choose the path of self-declaration or accreditation,

- regular participation in comparison measurements,
- the determination of the uncertainty of measurement in compliance with the *Guide to the Expression of Uncertainty in Measurement* (GUM) [8], and
- the operation of an appropriate quality management system meeting the requirements of EN ISO/IEC 17025:2000 *General requirements for the competence of testing and calibration laboratories* [7]

are indispensable to ensure reliable metrological services. Only a combination of these elements builds up confidence in the work of the NMIs and fulfils the expectations of the customers at home and abroad.

The basic rules which are to be valid in Europe for the application of QM principles were discussed at a EUROMET workshop. Practical application of the results will be accompanied by a EUROMET project, responsibility for which lies with The Netherlands. The aim of this project is to develop methods for the introduction and maintenance of measures which build up confidence in the measurement and calibration capabilities and in the QM system of NMIs, and to organize an intensive exchange of experience. A "Quality System Forum" has been created specially for this exchange of information and know-how, and it has been agreed that before the end of 2001 all EUROMET NMIs in this circle will have presented their respective QM system and reported on the experience gained with the introduction of ISO/IEC 17025.

5 Steps towards a global measurement system

The development of a global measurement system will be the challenge *per se* for the decades to come. Some prerequisites and elements are illustrated by Fig. 5.

An essential point will be to include these elements in the system, cf. also chapter 4.

Fig. 5 Towards a global measurement system

Mutual confidence is to be established by:

- metrological traceability, vertically from the NMI to the customer, and horizontally between NMIs and calibration/testing laboratories at the different levels;
- estimation of measurement uncertainties following the GUM [8], including modeling of the measurement task and calculation of the uncertainty budget; and
- inter-laboratory comparisons following, for example, the Metre Convention's MRA (so-called key comparisons).

In order not to question the equivalence of self-declaration and accreditation, in the case of self-declaration specific minimum criteria should be regarded as having been agreed for the respective field of work:

- proof of several years of work in the respective field including participation in technical committees;
- declaration of compliance with ISO 17025;
- successful participation in international comparison measurements; and
- active cooperation in the exchange of information and know-how on the international level.

6 Summary

In the years ahead, the metrology community should:

- pursue the strategic policies and action plans of international organizations (Metre Convention/BIPM, OIML, WTO, ILAC, IAF, ISO, IEC, ISO/CASCO, etc.) and continue to make use of the numerous opportunities for cooperation and information sharing with these organizations;
- intensify cooperation among regional organizations such as EA, EUROMET, WELMEC, etc.; and
- continue close cooperation between the BIPM, OIML and ILAC.

In this connection it must be kept in mind that:

- citizens rely on correct measurements and true results, for example in trade, environmental protection, safety issues, medicine, etc.;
- scientists foster the continuous improvement of knowledge, traceable calibrations and statements of measurement uncertainties; and
- trade and industry demand "one-stop testing" and world-wide acceptance of certificates. ■

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PREPACKAGED PRODUCTS

Cooperation between three Nordic countries on market surveillance of e-marked prepackaged goods

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Preface

This report has been produced jointly by the monitoring authorities of three Nordic countries: Sweden, Denmark and Finland. The authorities involved were the Swedish Board for Accreditation and Conformity Assessment (SWEDAC), the Danish Agency for Trade and Industry (EFS) and the Safety Technology Authority (TUKES) in Finland.

In order to maintain the credibility and the status of the e-mark, supervision in one form or another is necessary. From a Nordic point of view, it is important to ensure that the e-marking system leads to a common level of application all over the EU. Supervision is a safeguard for consumer protection but also for trade and industry, particularly as companies in the Nordic countries pay for the assessment that is necessary in order to obtain permission to use the e-mark. In some other countries in Europe this procedure is funded by the state.

This project and its results should be seen as a screening of the market in order to acquire an indication of the functioning of the market of prepackages. Furthermore, the report will hopefully contribute to the e-marking discussion, both on Nordic and European levels.

The report will be presented to WELMEC, to the OIML and to the European Commission, and will also be distributed to the industry concerned, involved competent departments, retailers' associations and consumers' organizations, etc.

1 Abstract

In 1999, the responsible legal metrology authorities in Sweden (SWEDAC), Denmark (EFS) and Finland (TUKES) started a joint market surveillance project on e-marked products. The objectives of the project were to develop an efficient method of monitoring products, to evaluate the benefits of cooperation and to investigate the current market situation of e-marked products, both in respect of accordance with the Directives concerning e-marking (75/106/EEC and 76/211/EEC) and the use of the e-mark.

The surveillance carried out included 23 e-marked prepackaged brands of products of seven different product categories. The net content of the packages was examined in order to determine the compliance with the Directives concerning e-marking. The results of the tests showed that all products, except one, clearly fulfil the requirements of net content.

Accredited laboratories carried out the tests, using the screening test method. Sample sizes were determined in a discretionary manner and then statistically evaluated (Student t-test). The screening test method used proved to be reliable and cost-efficient. The method could be useful in market surveillance to detect non-complying brands from among a large number for further examination.

The use of the e-mark on product labels was also investigated to evaluate the general knowledge of how to use the e-mark. 224 e-marked products of several product categories were examined. In 124 of these cases, the e-mark was found to be used incorrectly. The surveillance indicates that there may be confusion or lack of knowledge as to how to use the e-mark. Furthermore, it was found that the requirements concerning marking for identification of the packer were not fulfilled.

It is important that responsible bodies inform industry and packers about the rules concerning the e-mark in order to prevent incorrect use or even misuse. An equivalent level of surveillance in the EU countries would consolidate the status of the e-mark and, thereby, indirectly improve consumer protection and fair trade.

Cooperation of Nordic countries in market surveillance is a beneficial and cost-efficient way to gather information on the current market situation in this field. The markets in the Nordic countries are generally alike, therefore results obtained in one country can be used by another. Thus, cooperation and the exchange of information will also reduce the risk of doing the same work twice.

2 Introduction

2.1 Prepackages in the EU

The definition of a prepackage is, according to Community legislation, a product that has been *"placed in a package of whatever nature without the purchaser being present and the quantity of product contained in the package has a predetermined value and cannot be altered without the package either being opened or undergoing a perceptible modification.*

The e-symbol on prepackages is intended to be a proof that the goods have been packed in accordance with the requirements in the European Council Directives 76/211/EEC and 75/106/EEC. These Directives were issued in order to facilitate the free movement of prepackaged goods within the EEC for goods of 5 g to 10 kg (or 5 ml to 10 l). Now within the EU the e-mark is a "passport"; when goods cross borders, they are exempted from regular national testing in respect of weight and volume.

The use of the e-mark is optional. In the e-marking assessment process a competent department has to be involved; the competent department is responsible for approving the packer to use the e-mark and for the periodical control. If the goods are imported from a third country, the importer is responsible for ensuring that the products fulfil the requirements.

2.2 Requirements of the Directives

In the Directives, there are three main requirements for the quantity of the prepackage. Firstly, the actual content must not, on average, be less than the nominal quantity. This means that under-filling, within certain limits, is accepted as long as other prepackages of the same production are over-filled to an equivalent extent.

Table 1 Nominal quantity, Q_n, and tolerable negative error

Q_n in grams or millilitres	Tolerable negative error	
	% of Q_n	g or ml
From 5 to 50	9	
From 50 to 100		4.5
From 100 to 200	4.5	
From 200 to 300		9
From 300 to 500	3	
From 500 to 1 000		15
From 1 000 to 10 000	1.5	

Secondly, the proportion of prepackages having a negative error (i.e. under-filling) greater than the tolerable negative error laid down in the Directives, shall be "sufficiently small". The notion "sufficiently small" is in practice set to 2.5 % of the production batch. That means that a maximum of 2.5 % of the prepackages are allowed to have a negative deviation from the nominal volume/weight greater than the tolerable negative error, shown in Table 1.

Thirdly, no individual prepackage having a negative deviation greater than twice the tolerable negative error according to Table 1 may bear the e-mark.

The packer shall measure the amount of product filled in every package during the packaging process, or check the contents of the packages by statistical methods. The equipment used for measuring or checking shall be legal and suitable. The checking procedures must be recognized by a competent department, and the packer is also obliged to keep records of results and adjustments at the disposal of the competent department.

Directive 76/211/EEC also prescribes that every prepackage shall have a mark or inscription enabling the competent department (or supervising authority) to identify the packer.

2.3 The need for supervision

Market surveillance is a tool to defend and sustain confidence in the e-mark. Misuse is a threat to competition on equal terms, consumer protection and free circulation of goods. As goods are traded across borders, cooperation between legal metrology authorities is important.

Tests performed by SWEDAC in 1997 indicated that e-marked products do not fulfil the requirements in the Directives. It was also found that non-approved e-mark products circulated on the market. Manufacturers having invested in production control must ensure that the system works out in practice. It is therefore important that authorities take actions when illegal use of the e-mark is detected.

2.4 Nordic market surveillance

The Nordic project on market surveillance is an attempt to investigate the functioning of the e-marking system. It includes quantity checks (screening tests) and checks on the labeling. The results should be seen as a screening of the market in order to obtain an indication of the functioning and also to provide a basis for discussion - both on Nordic and European levels.

3 Background

3.1 The Nordic market

Trade within the EU is constantly increasing and the turnover of the trade of prepackaged products in the Nordic area alone is estimated at about 50 billion €. Considering that amount, even small amounts of under-filling or over-filling may have large economic consequences on an aggregated level.

The range of prepackaged products on the different markets of the Nordic countries is fairly similar. This geographical area is therefore suitable for undertaking joint market surveillance actions.

3.2 The Nordic cooperation project

SWEDAC, the initiator of the project, invited the other Nordic countries to participate. The Danish Agency for Trade and Industry (EFS) in Denmark and the Safety Technology Authority (TUKES) in Finland responded positively to the request. In 1999, the responsible authorities in Sweden, Finland and Denmark agreed upon cooperation concerning a market surveillance project on e-marked prepackages.

Pre-packages had previously been submitted to tests in national market surveillance actions, but this was the first time such a project was jointly performed. Moreover, the test method was slightly different from a regular screening test. The tests contained fewer products in the samples than used in previous tests.

The method comprised the test method as well as the method for administrative cooperation. In the future this method, or parts of it, may be used as a model for similar joint market surveillance activities.

3.3 Objectives

The main objective was to perform tests of e-marked prepackages. As new methods were going to be used, the project also aimed to evaluate the test method.

The other important objective of the project was to evaluate the efficiency gains of the cooperation. Especially, it was of interest to evaluate if cooperation led to increased exchange of information and even more information with less effort. When cooperating, results and experience can be more efficiently exchanged. Furthermore, it ensures that work is not duplicated.

4 Experimental aspects

4.1 Laboratories

The responsible authorities in the participating countries planned the project. Sub-contractors, all of whom had the status of competent departments and accredited laboratories in Denmark, Finland and Sweden respectively, performed the fieldwork.

4.2 Test method

The surveillance was carried out by a screening test method. The test is complimentary to a reference test in a laboratory. However, no package is allowed to deviate negatively by more than the tolerable negative error, i.e. the tolerated level of proportion 2.5 % is not applicable here.

Tare weight was determined in a laboratory by examining the two heaviest and the two lightest packages of each brand. The packages were broken up and the average tare was determined by weighing the cleaned wrappings. The average density of the products was measured in an accredited mass laboratory.

In order to obtain statistically reliable results the sufficient sample size was determined by using existing test records of the verification made by the notified body or competent department that originally issued the e-marking permission to the brand of interest. The optimized sample size was calculated as described in formula (1) (see 4.3).

Test records of the verification were obtained by contacting the competent department concerned. If the records could not be found the sample size was determined in another way. Reliability of all results was examined by a t-test after the measurements.

4.3 Sample size method

In order to avoid high expenses it was agreed to perform a pre-investigation based on sample checks carried out by the competent department. By using the standard deviation, the necessary amount of pre-packages can be calculated, and thereby, sample sizes can be reduced.

Investigation plans were drawn up similarly in Sweden and Finland: both countries tested 10 different products and Denmark tested 3 products. For all 23 products the same statistical method was used. The model of calculation of sample size and evaluation is shown below.

Table 2 Products and origin of packers

Tested by	Product	Origin of products/packers
Denmark	Foods and sweets	Denmark
Finland	Cheese and lotion	Finland, Germany, United Kingdom, Denmark
Sweden	Toothpaste and shampoo	France, Germany, Netherlands, United Kingdom, Belgium

1) Data used form a normal distribution

2) Use of Student's t-distribution on 99.5 % reliability level

3) Use of formula $$n = \left[t_{0.995v} \cdot \frac{s}{(\bar{x} - x_n)} \right]^2 \quad (1)$$

where:

n = sample size
$t_{0.995v}$ = t-value with 99.5 % reliability ($v = n - 1$) (Student's t-distribution)
$\bar{x}$ = mean value
x_n = nominal value
s = standard deviation

4.4 Products/packers

The origin of the e-marked products varied greatly, except for Denmark that exclusively tested Danish products.

Prepackages containing cosmetics/sanitary products such as lotion and shampoo, are to a large extent imported into the Nordic market, though all products tested were packed or produced inside the Union. The products Finland and Sweden tested originated from France, Germany and the United Kingdom (amongst others - see Table 2).

4.5 Criteria for acceptance and rejection

Since the screening test is very limited and the size of the batch is not known, the results cannot be used as a basis for deciding to reject a batch. However, when suspicious results are observed, the possibility to perform a complete reference test will be considered. It is then the present status of the prepackages at the packers' site that is checked. Alternatively, in case the historical data of the specific batch is more relevant, the competent department will be contacted.

5 Results

5.1 National report – Finland by Sari Hemminki, TUKES

National legislation

Legal metrology is based on the *Act on Weights and Measures* (219/65) and the *Decree on Weights and Measures* (370/92). Supported by the law, the Ministry of Trade and Affairs has issued *Regulations for Prepackages* (179/2000) and *Regulations for Measuring Container Bottles* (180/2000). EU Directives 75/106/EEC, 75/107/EEC, 76/211/EEC and 80/232/EEC are implemented by these regulations.

TUKES coordinates, supervises and controls the field of legal metrology in Finland. If regulations are violated, TUKES has the responsibility to take legal actions. TUKES is also responsible for the performance of market surveillance, among others the market surveillance of prepackaged products. Inspecta Oy (formerly Technical Inspection Centre) is responsible for granting the initial permission to use the e-mark and for periodical control of the prepackers; this permission is given by issuing a certificate upon evaluation and approval of the packing system. Evaluation of the packing system must be done within six months after the application is received.

Selected products

It was decided to perform the surveillance on two product categories: Finland chose to perform the test on prepackaged cheese and moisturizing lotion sold by weight or volume. Five e-marked brands of each category were randomly selected from a supermarket.

Background data

Competent departments that originally issued the permission to use the e-mark on the product were

contacted. Five of the products were packed in Germany, three in Finland and two in Denmark.

Previously recorded data could be found only for two examined brands. There were several reasons for this:

- The brand was not produced while the periodical controls on the packing line were made, so the statistical data could not be used.
- The packing system had not yet been evaluated.
- The responsible body could not be contacted since the packer of the product could not be found.

Experiment

The surveillance was carried out during January–February 2000. Measurements were performed in the field by a laboratory balance that was calibrated and adjusted before the tests by F_1 class weights. Inspecta Oy carried out the measurements.

In two cases, the sample size was determined from previously recorded data. For the other brands the necessary sample size was set at 22.

Tare weight was determined in a laboratory by examining the two heaviest and the two lightest packages of each brand. The packages were broken up and the average tare was determined by weighing the cleaned wrappings. The average density of the lotions was measured in an accredited mass laboratory.

The second part of the test was to investigate the labeling of e-marked products. This was done by checking the labeling of all e-marked products in three product categories found in one supermarket. The size and shape of the e-mark was checked in general and the identification of the packer or retailer in detail.

Results

The results of market surveillance are shown in Table 3.

Discussion

According to the results presented in Table 3 it can be deduced that no individual package had a net content under TU2. One brand of cheese had a net content under TU1. However, the same brand was also found to be significantly over-packed, so this does not yet indicate that the whole brand should be rejected. Relatively generous over-filling was also found for some other cheese products; this is understood to be due to the packing process and a fairly large standard deviation.

The net content of the lotions was in general found to be close to the nominal content. The standard deviation was quite small. The average net content of lotion B was slightly under the nominal content. Before

Table 3 Results, Finland

Product	Brand	Sample size	Nominal net content	Limit for TU1	Limit for TU2	Average net content	Standard deviation	No. of packages under	
								TU1	TU2
Cheese	A	22	350 g	339.5 g	329.0 g	366.01 g	13.38 g	1	0
	B	22	700 g	685 g	670 g	716.12 g	13.27 g	0	0
	C	22	500 g	485 g	470 g	518.38 g	17.70 g	0	0
	D	22	150 g	143.3 g	136.5 g	154.12 g	4.74 g	0	0
	E	22	200 g	191 g	182 g	200.92 g	0.82 g	0	0
Lotion	A	22	250 ml	241 ml	232 ml	250.91 ml	1.92 ml	0	0
	B	22	200 ml	191 ml	182 ml	199.93 ml	1.05 ml	0	0
	C	22	250 ml	241 ml	232 ml	251.46 ml	1.60 ml	0	0
	D	22	250 ml	241 ml	232 ml	250.28 ml	1.61 ml	0	0
	E	22	400 ml	388 ml	376 ml	400.83 ml	1.96 ml	0	0
	F	8	200 ml	191 ml	182 ml	203.93 ml	0.86 ml	0	0

Note: A summary of the results from investigation of the labeling of e-marked products is shown in Table 4.

Table 4 Results: Investigation into labeling

	No. of tested products	Incorrect e-mark	Defective identification of the packer/retailer	Percentage of defective labeling*
Flour, rice, pasta etc.	117	13	24	29.9 %
Canned food	54	8	13	38.9 %
Hygienic products	273	20	136	54.6 %
Total	**444**	**41**	**173**	**46.2 %**

* Percentage of packages with incorrect e-mark and/or insufficient data on the packer or retailer

making any further conclusions the reliability of the results must be evaluated.

The reliability of the results was calculated using formula (1) in 4.3 from test results presented in Table 3. The comparison of used and statistically calculated sample sizes can be found in Table 5.

According to the results the screening test was sufficiently reliable for cheese products. The results from lotions B and D cannot be reliably evaluated without further use of statistics presented in the e-marking Directive. In other words, the difference of the average net content of lotions B and D and the nominal net content is not statistically significant. Therefore the test results of these lotions are not reliable enough for the authorities to draw fundamental conclusions as to how the requirements of average net content are met without further investigations.

Labeling of e-marked products often seems to be insufficient. The e-mark was clearly incorrect in about 10 % of all items tested. According to the results the main problem seems to be in identifying the packer or retailer of the product. In nearly half of the products the identification was insufficient. In some cases there was no information concerning the packer or retailer at all. In some other products simply the country of origin was mentioned. In some other cases the retailer was not clearly identified from a group of contact addresses.

Conclusions

The screening test method used requires smaller samples sizes and is thus not as costly as the validation method described in the e-marking Directive. The results indicate that this method could be used in market surveillance to detect problematic brands from a larger group of prepackaged products. Using this method could be helpful when screening out the products that need to be examined more carefully. It should be noted that the results obtained by this method only apply to the samples investigated, not the whole batch.

No significant under-filling was found for the tested products. However, the results on some lotion brands indicate that further investigations might be needed to ensure that they fulfil all of the requirements presented in the e-marking Directive.

Cooperation proved to be beneficial since the markets in the Nordic countries are generally alike. By cooperative evaluation it is possible to gather information on the current market situation more cost-effectively. The structures of supervision in the Nordic countries are quite similar to each other, which renders cooperation even more beneficial.

Using previously recorded data to calculate the suitable sample size seemed problematic. Due to the varying procedures in labeling and in granting permission to use the e-mark, there were problems in finding the correct competent department to obtain the

Table 5 Used and statistically calculated sample sizes

Product	Brand	Used sample size	Recalculated sample size
Cheese	A	22	6
	B	22	6
	C	22	8
	D	22	11
	E	22	7
Lotion	A	22	36
	B	22	1 804
	C	22	10
	D	22	275
	E	22	46
	F	8	1

Table 6 Results, Sweden

Product	Brand	Sample size	Nominal net content	Limit for TU 1	Limit for TU 2	Average net content	Standard deviation	No. of packages under TU1	No. of packages under TU2
Toothpaste	A	30	75 ml	70.5 ml	66 ml	76.82 ml	0.43 ml	0	0
	B	10	75 ml	70.5 ml	66 ml	75.84 ml	0.15 ml	0	0
	C	30	75 ml	70.5 ml	66 ml	75.57 ml	0.19 ml	0	0
	D	23	75 ml	70.5 ml	66 ml	75.56 ml	1.10 ml	0	0
	E	30	75 ml	70.5 ml	66 ml	75.46 ml	0.34 ml	0	0
Shampoo	A	30	200 ml	191 ml	182 ml	200.56 ml	1.45 ml	0	0
	B	30	250 ml	241 ml	232 ml	252.69 ml	1.14 ml	0	0
	C	30	200 ml	191 ml	182 ml	204.51 ml	1.01 ml	0	0
	D	30	250 ml	241 ml	232 ml	254.72 ml	0.55 ml	0	0
	E	30	250 ml	241 ml	232 ml	250.85 ml	1.52 ml	0	0

necessary information. The necessary sample size was in most cases determined by relying on previous experience so that the tests would not be too time-consuming to carry out.

Labeling of e-marked products is crucial to be able to identify the packer or other responsible organizations. Lack of awareness and/or negligence of labeling rules of e-marked products also make it difficult to identify the packer. Although the e-marking Directive does not specifically require detailed information on the packer when the retailer is clearly identified, the experience from this investigation indicated that it is not obvious that the packer is known to the retailer either.

5.2 National report – Sweden by Hillevi Stein, SWEDAC

National legislation

SWEDAC is the central authority responsible for the regulation and supervision in the field of legal metrology in Sweden, where legal metrology is regulated by the *Act (1992:1514) concerning Quantity Units, Measurements and Measuring Devices* and the *Ordinance (1993:1066*) with the same name.

SWEDAC has issued administrative regulations in the field of legal metrology, *inter alia* concerning non-automatic weighing instruments, oil and petrol meters and prepackages. The EEC Directives 75/106/EEC, 75/107/EEC and 76/211/EEC are implemented in STAFS 1993:18. In application of the legislation, the main principle is to promote correction rather than to take legal actions against the packer. However, in the event of obvious violation of regulations, SWEDAC has the power to issue a prohibition to put the prepackage on the market; the prohibition is usually combined with an administrative fine.

According to the EEC Directives, member states shall appoint a competent department responsible for performing official assessments required for e-marking. In Sweden, The Swedish National Testing and Research Institute (SP) has the status of a competent body. Companies that want to be approved to use the e-mark apply to SP for an assessment. SP makes an assessment of the capability of the packing system. If the system is found to fulfil the requirements, a certificate is issued.

Selected products

The number of categories of products submitted to tests was set at two. Sweden selected two chemical/sanitary products: shampoo and toothpaste. In each category of products, five e-marked brands were selected for testing.

The sample size was set at 30 except in two cases. For one of the products the sample size was calculated based on the standard deviation from the latest record from the competent department, (toothpaste B, 10). In another case, the sample size was set to the number of packages available in the shop (toothpaste D, 23).

Background data

The products were packed in the following countries: France (4), Belgium (2), United Kingdom (2), The Netherlands (1) and Germany (1).

Table 7 Used and statistically recalculated sample sizes

Product	Brand	Used sample size	Recalculated sample size
Toothpaste	A	30	1
	B	10	10
	C	30	1
	D	23	7
	E	30	2
Shampoo	A	30	8
	B	30	2
	C	30	1
	D	30	1
	E	30	24

Results

As shown in Table 6, no individual product had an actual net content under the double tolerable negative error, TU2, neither under TU1. All brands had on average a net content exceeding the nominal net content.

The net content of the toothpaste was found in general to be close to the nominal content. The standard deviation was quite small. For shampoo the standard deviation was slightly higher.

Discussion

When the results were ready, the sample sizes were evaluated by using formula (1) in 4.3. The calculation showed that the sample sizes in all cases were sufficiently large, and even excessively so. The comparison of used and statistically calculated sample sizes can be found in Table 7.

Conclusions

The test results show that all packers included in the Swedish tests seem to have a well functioning packing system. No under-filling was found and the standard deviation was small. The screening test and the sample sizes also proved to be reliable according to the checking calculations.

The general experience of the Swedish tests is that the products chosen were difficult to investigate. As the name of the packer was missing on the prepackages, it was not possible to identify the packer. Furthermore, the prepackages were of big brands with a widespread organization and different production plants. Tracing the country and the packer of the goods was therefore the most crucial work. The main observation from the Swedish tests is that requirements concerning marking for identification of the packer according to the Directive were not fulfilled.

5.3 National report – Denmark by Keld Palner Jacobsen, Danish Agency for Trade and Industry

National legislation

In Denmark the basic legislation is collected in Law no. 142 of January 31, 1985 - elaborated by "The State Metrology Council".

Again, the above-mentioned legislation is elaborated based on:

- Law no. 173 of April 28, 1982, "Metrology";
- Law no. 646 of December 8, 1982, "Notification of The State Metrology Council"; and
- Danish Directive of January 31, 1985 (MDIR 35.00.1-01).

The above-mentioned legislation is elaborated based on the following EEC Directives:

- EEC-Directive of December 19, 1974 (75/106/EEC);
- EEC-Directive of November 23, 1979 (79/1005/EEC);
- EEC-Directive of January 20, 1976 (76/211/EEC); and
- EEC-Directive of September 28, 1978 (78/891/EEC).

Test method

The Danish market surveillance was divided into two types of investigations, as follows:

1) "Normal" sampling and investigation of sampled products by the notified body (FORCE Institute).
2) Investigation of the labeling on a broad range of products to be able to evaluate the general knowledge of how to use the e "labeling rules".

Table 8 Used and statistically calculated sample sizes

Product	Brand	Used sample size	Recalculated sample size
Paté	A	20	18
Cakes	B	10	3
Sweets	C	12	2

Table 9 Results, Denmark

Product	Brand	Sample size	Nominal net content	Limit for TU1	Limit for TU2	Average net content	Standard deviation	No. of packages under TU1	No. of packages under TU2
Paté	A	20	170 g	162.35 g	154.7g	170.92 g	1.37g	0	0
Cakes	B	10	200 g	191 g	182 g	204.13 g	2.01 g	0	0
Sweets	C	12	16 g	14.56 g	13.2 g	16.69 g	0.27 g	0	0

Results

The FORCE Institute performed samplings of three different products. The test method used in all three cases was "individual tare weight", meaning that the products were examined at the laboratory of the FORCE Institute (accredited laboratory).

The investigations were planned based on evaluations of earlier results from the same products.

This means that a calculation of the necessary amount of samples was done based on the newest actual data. Whether the calculated sample sizes were sufficient to draw any conclusions was, of course, reviewed after finalizing the investigations.

Investigation into labeling

The FORCE Institute also carried out an investigation into labeling; this took place in a big supermarket after the owner of the store in question had been thoroughly informed and briefed.

The aim of this part of the investigation was to gain an idea of the status of the knowledge and awareness of the rules according to the labeling of e-marked products. 224 different products were examined and the overall results are shown by country in Table 10.

Remark: In about 10 of the 224 cases it was not possible to clarify the origin of the product (i.e. the actual country in which the production took place). In those cases the "best guess" has been used to define the origin.

Discussion

The Danish results show that the tested prepackages fulfil the requirements in the e-marking Directives. Therefore, it seems that the production control implemented at the plant site and the efforts of the competent department are sufficient to secure adequate accuracy of the content of the products. The investigation into how the rules of labeling according to e-marking are handled shows - as an overall picture - that there is a need for special activities in this area. This means that in Denmark the following initiatives will be taken:

1) The "e" will (in its correct graphic design and actual size) be placed on the Internet. Those producers and importers that have permission to e-mark will be given access to the e-mark. An approved packer/producer will need a password from the notified body to access the "e" on the Internet.
2) The information in Denmark concerning the labeling rules will be reviewed and changed.

Table 10 Results of investigation into labeling

Origin country of producer/packer	Correct e-mark	Incorrect e-mark
Belgium	4	3
Czech Republic		1
Denmark	32	29
France	5	14
Germany	12	19
Greece		1
Ireland		2
Italy	6	7
Monaco		2
New Zealand		1
Norway	1	1
Portugal	1	
Scotland		1
Spain	6	6
Sweden	3	2
Switzerland	5	5
The Netherlands	6	5
United Kingdom	16	19
USA	3	6
Total	**100**	**124**

Table 11 All test results

Product	Brand	Sample size	Nominal net content	Average net content	Standard deviation	No. of packages under		Expected percentage of packages under	
						TU1	TU2	TU1	TU2
Toothpaste	A	30	75 ml	76.82 ml	0.43 ml	0	0	0	0
	B	10	75 ml	75.84 ml	0.15 ml	0	0	0	0
	C	30	75 ml	75.57 ml	0.19 ml	0	0	0	0
	D	23	75 ml	75.56 ml	1.10 ml	0	0	0	0
	E	30	75 ml	75.46 ml	0.34 ml	0	0	0	0
Shampoo	A	30	200 ml	200.56 ml	1.45 ml	0	0	0	0
	B	30	250 ml	252.69 ml	1.14 ml	0	0	0	0
	C	30	200 ml	204.51 ml	1.01 ml	0	0	0	0
	D	30	250 ml	254.72 ml	0.55 ml	0	0	0	0
Cheese	A	22	350 g	366.01 g	13.38 g	1	0	2.60	0.33
	B	22	700 g	716.12 g	13.27 g	0	0	1.07	0.03
	C	22	500 g	518.38 g	17.70 g	0	0	3.22	0.37
	D	22	150 g	154.12 g	4.74 g	0	0	1.20	0.01
	E	22	200 g	200.92 g	0.82 g	0	0	0	0
Lotion	A	22	250 ml	250.91 ml	1.92 ml	0	0	0	0
	B	22	200 ml	199.93 ml	1.05 ml	0	0	0	0
	C	22	250 ml	251.46 ml	1.60 ml	0	0	0	0
	D	22	250 ml	250.28 ml	1.61 ml	0	0	0	0
	E	22	400 ml	400.83 ml	1.96 ml	0	0	0	0
	F	8	200 ml	203.93 ml	0.86 ml	0	0	0	0
Paté	A	20	170 g	170.92 g	1.37 g	0	0	0	0
Cakes	B	10	200 g	204.13 g	2.01 g	0	0	0	0
Sweets	C	12	16 g	16.69 g	0.27 g	0	0	0	0

3) Based on the investigation, the national authorities in the different countries will be contacted to clarify the situation. The status of the work within this item will of course be presented to WELMEC WG6 and WG5, among others.

Conclusion

The market surveillance performed by the notified body in Denmark shows that the three products examined all very clearly fulfil the demands concerning product content based on the reference test as formulated in the EEC Directive.

On the other hand the surveillance of the labeling shows that there seems to be a lack of awareness as to how to use the "e" and of the overall e-marking rules concerning labeling.

6 Combined results

Combined test results are shown in Table 11. The reliability of the results was reviewed by calculating the statistically optimized sample size after the experiments. A comparison of the used and recalculated sample sizes can be found in Table 12.

The expected percentage of packages under TU1 and TU2 is also shown in Table 11. The statistical calculation is based on sample size, standard deviation and average net content (Students test 68.3). The results are also assumed to have a normal distribution. This gives an indication as to which products should be subjected to a follow-up in a reference test.

An evaluation of the sample size used (i.e. a recalculation of the sample size based on the standard deviation from the tests) is shown in Table 12.

For four products of the category "Lotion", the sample size used was not sufficient according to the calculation. The high degree of overfilling of the prepackages had a great impact on the variable *n* when using the formula in 4.3.

Results from the two investigations of labeling of e-marked products are presented in Tables 13 and 14.

Discussion

The results shown in Table 11 indicate that the net content of most examined prepackaged products fulfilled

Table 12 Comparison of used and evaluated sample size

Product	Brand	Sample size used	Recalculated sample size
Toothpaste	A	30	1
	B	10	10
	C	30	1
	D	23	7
	E	30	2
Shampoo	A	30	8
	B	30	2
	C	30	1
	D	30	1
	E	30	
Cheese	A	22	6
	B	22	6
	C	22	8
	D	22	11
	E	22	7
Lotion	A	22	36
	B	22	1 804
	C	22	10
	D	22	275
	E	22	46
	F	8	1
Paté	A	20	18
Cakes	B	10	3
Sweets	C	12	2

the requirements in the e-marking Directives. The sample sizes of some lotion products, though, were not sufficient in order to draw any reliable conclusions. This applies also to lotion B. For that product, the results, indicating a slight under-filling with average net content under nominal content, are not statistically reliable. The difference between nominal and average net content is not significant. A reference test with a higher level of confidence would be needed to obtain reliable test results.

The situation concerning labeling and the extent of the use of the e-mark is not satisfactory: there seems to be confusion or lack of knowledge about the e-mark. It is important that responsible bodies inform industry and packers about the e-mark in order to counter incorrect use or even misuse of the e-mark. An equivalent level of surveillance in EU countries would consolidate the status of the e-mark and thereby indirectly improve consumer protection and fair trade.

7 Evaluation of results

7.1 Cooperation between Nordic countries

One of the objectives of the project was to evaluate the administrative cooperation. The main conclusions are presented below:

1) The overall judgement of the cooperation is that it has worked out extraordinarily well. Despite the geographical distance between the participants' offices, the work has been efficient.

2) At a very early stage, the participants agreed upon the importance of adhering to the time schedules. The final schedule was only about 1–2 weeks late, which is quite satisfactory.

3) The work was planned very carefully according to duties and time schedules. This made it possible to make changes during the work. The Danish initiative of investigating labeling was adopted as a part of the project by the other participants and also inspired Finland to do likewise.

4) It was possible to work closely together thanks to careful planning and clear goals. All the participants contributed equally and supported each other during the work.

Table 13 Investigation into labeling (Finland)

	No. of tested products	Incorrect e-mark	Defective identification of the packer/retailer	Percentage of defective labeling*
Flour, rice, pasta, etc.	117	13	24	29.9 %
Canned food	54	8	13	38.9 %
Hygienic products	273	20	136	54.6 %
Total	**444**	**41**	**173**	**46.2 %**

* Percentage of packages with incorrect e-mark and/or insufficient data on the packer or retailer

Table 14 Investigation into labeling (Denmark)

Producer/packer Country – origin	Correct e	Incorrect e
Belgium	4	3
Czech Republic		1
Denmark	32	29
France	5	14
Germany	12	19
Greece		1
Ireland		2
Italy	6	7
Monaco		2
New Zealand		1
Norway	1	1
Portugal	1	
Scotland		1
Spain	6	6
Sweden	3	2
Switzerland	5	5
The Netherlands	6	5
United Kingdom	16	19
USA	3	6
Total	**100**	**124**

7.2 Evaluation of the data

Altogether, the number of prepackages included in the tests was approximately 540. All tested products, except for one, clearly fulfil the requirements of net content laid down in the Directives. Most of the products in the test had a small standard deviation and were on average slightly over-filled. The overall evaluation for the products tested is that the production control is carefully planned. In this context the competent department plays an important role.

7.3 Evaluation of labeling

The Danish investigation into the labeling of e-marked products reflected a serious situation. As many as 124 out of 224 had incorrect marking. Many packers are unaware of how to label, i.e. to comply with the rules of the design of the e-symbol and the identification of the packer. The reasons for this can be summarized as:

- lack of knowledge of the rules; and
- insufficient information and guidance from authorities and competent departments.

8 Conclusions

Results

The test results show that all the products examined, except one, clearly fulfil the requirements of net content laid down in the Directive. Most of the packers included in the test seem to possess packing systems of a sufficiently high quality. No significant under-filling was found and the standard deviation of results was fairly small, except for some cheese products. Brands having a relatively large standard deviation were found to be slightly over-packed. The average net content of some lotions was found to be quite close to the nominal level. For these products the reliability of the test results was not sufficient enough to draw fundamental conclusions without further investigations.

The results from the investigation into the labeling of e-marked products showed that the situation is not satisfactory: there seems to be confusion or lack of knowledge about the e-mark. Also when it comes to marking the name and geographical code, etc. of the packer, the requirements were not fulfilled. Tracing the packing site and country was complicated. There were also difficulties in making contact with the relevant competent department.

It is important that responsible bodies inform industry and packers about the rules concerning the e-mark in order to prevent incorrect use or even misuse. An equivalent level of surveillance in EU countries would consolidate the status of the e-mark and, thereby, indirectly improve consumer protection and fair trade.

Method

The screening test method and the sample sizes were found to be reliable according to the calculations for all products, except for 4 products. Due to small sample sizes the costs of this method were reasonable. The results indicate that this method could be used in market surveillance to detect problematic brands from a larger group of prepackaged products. The method could be helpful when screening out the products that need to be examined more carefully.

The necessary sample size was originally conceived to be determined by using the standard deviation from the existing test records of the verification carried out by the competent department, though such information was difficult to obtain. In some cases the calculation was done based on the standard deviation from the record, in others it was done based on the standard deviation from the screening test.

Cooperation

Since the markets and structures of supervising authorities in the Nordic countries are generally alike, the results obtained were mutually useful and the co-operation as such proved to be beneficial. This examination showed that cooperation is a cost-efficient way of gathering information on the market situation; it also guarantees that work not is done twice. Co-operative market surveillance is a valuable way to exchange information and experience between European countries; this is also a way to contribute to the harmonization of the e-marking Directives.

9 Follow–up

Since the cooperation between the three participating countries worked out well, the experience from this project may be used as a basis for similar projects on market surveillance in the future.

The results from the investigation into the labeling of e-marked products show that the situation is apparently not satisfactory. Hence, there is a need for actions in this field. A follow-up to this project might be performed as a similar but more extensive investigation into the market. Or, a follow-up project might be of a more pro-active nature - such as a joint information campaign to packers. What will be done should be the topic for discussions in the three countries. ■

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- 2000 Review
- 2001 Forecasts

Activités techniques de l'OIML

- Rapport 2000
- Prévisions 2001

The information given on pages 34–40 is based on 2000 annual reports submitted by OIML secretariats. Work projects are listed for each **active** technical committee and sub-committee that produced and/or circulated a WD or CD during 2000, together with the state of progress at the end of 2000 and projections for 2001, where appropriate.

Les informations données en pages 34–40 sont basées sur les rapports annuels de 2000, fournis par les secrétariats OIML. Les thèmes de travail sont donnés pour chaque comité technique ou sous-comité **actif** qui a produit et/ou distribué un WD ou un CD pendant 2000, avec l'état d'avancement à la fin de 2000 et les prévisions pour 2001, si approprié.

KEY TO ABBREVIATIONS USED

WD	Working draft (Preparatory stage) *Projet de travail (Stade de préparation)*
CD	Committee draft (Committee stage) *Projet de comité (Stade de comité)*
DR/DD/DV	Draft Recommendation/Document/Vocabulary (Approval stage) *Projet de Recommandation/Document/Vocabulaire (Stade d'approbation)*
Vote	CIML postal vote on the draft *Vote postal CIML sur le projet*
Approval	Approval or submission to CIML/Conference for approval *Approbation ou présentation pour approbation par CIML/Conférence*
R/D/V	International Recommendation/Document/Vocabulary (Publication stage) For availability: see list of publications *Recommandation/Document/Vocabulaire International (Stade de publication)* *Pour disponibilité: voir liste des publications*
Postponed	Development of project suspended pending completion of relevant document by other international organization(s) *Développement du projet suspendu en attendant l'achèvement d'un document correspondant par une (d')autre(s) organisation(s) internationale(s)*

OIML TECHNICAL ACTIVITIES	2000	2001
TC 1 Terminology		
• Revision V 1: International Vocabulary of Terms in Legal Metrology (VIML)	V	-
TC 2 Units of measurement		
• Amendment* D 2: Legal units of measurement *(harmonized with resolution of 22nd CGPM (Paris, 1999)	-	1 CD
TC 3 Metrological control		
• Revision D 1: Law on metrology	WD	1 CD
TC 3/SC 1 Pattern approval and verification		
• Initial verification of measuring instruments utilizing the manufacturer's quality system (D 27)	Vote	D
TC 3/SC 2 Metrological supervision		
• Revision D 9: Principles of metrological supervision	1 CD	2 CD
TC 3/SC 3 Reference materials		
• Revision D 18: General principle of the use of certified reference materials in measurements	2 CD	Vote
TC 3/SC 4 Application of statistical methods		
• Applications of statistical methods for measuring instruments in legal metrology	WD	1 CD
TC 3/SC 5 Conformity assessment		
• Mutual acceptance agreement on OIML pattern evaluations	7 CD	DD
• Expression of uncertainty in measurement in legal metrology applications	WD	1 CD
• OIML Certificate System for Measuring Instruments	1 CD	2 CD/DD
• Interpretation document for application of ISO DIS 17025 in the assessment of laboratories performing pattern evaluation tests	WD	1 CD
• Interpretation document for application of ISO/IEC Guide 65 in the assessment of legal metrology certification bodies	WD	1 CD
• Peer review for assessing the competence of legal metrology testing laboratories and certifying bodies for pattern evaluation	WD	1 CD
• Checklists for issuing authorities and testing laboratories carrying out OIML type evaluations	-	1 CD

OIML TECHNICAL ACTIVITIES	2000	2001
TC 4 Measurement standards and calibration and verification devices		
• Revision D 5: Principles for establishment of hierarchy systems for measuring instruments	1 CD	2 CD
• Revision D 6 + D 8: Measurement standards. Requirements and documentation	1 CD	2 CD
TC 5/SC 1 Electronic instruments		
• Revision D 11: General requirements for electronic measuring instruments	WD	1 CD
TC 5/SC 2 Software		
• Software in legal metrology	-	WD
TC 6 Prepackaged products		
• Revision R 87: Net content in packages	2 CD	3 CD/DR
TC 7 Measuring instruments for length and associated quantities		
• Revision R 35: Material measures for length for general use	WD	1 CD
TC 7/SC 1 Measuring instruments for length		
• Revision R 30: End standards of length (gauge blocks)	WD	1 CD
TC 7/SC 4 Measuring instruments for road traffic		
• Electronic taximeters	-	WD/1 CD
TC 7/SC 5 Dimensional measuring instruments		
• Multi-dimensional measuring instruments (R 129)	R	-
TC 8 Measurement of quantities of fluids		
• Combined revision of: R 4: Volumetric flasks (one mark) in glass; R 29: Capacity serving measures; R 45: Casks and barrels; and R 96: Measuring container bottles	WD	1 CD

OIML TECHNICAL ACTIVITIES	2000	2001
TC 8/SC 2 Static mass measurement		
• Annex to R 125: Test report format for evaluation of mass measuring systems for liquids in tanks	-	WD
TC 8/SC 3 Dynamic volume measurement (liquids other than water)		
• Revision R 118: Testing procedures and test report format for pattern evaluation of fuel dispensers for motor vehicles	1 CD	2 CD
• Revision R 117: Measuring systems for liquids other than water (combined with revision R 105)	WD	1 CD
TC 8/SC 4 Dynamic mass measurement (liquids other than water)		
• Revision R 105: Direct mass flow measuring systems for quantities of liquids (with the intention of incorporating R 105 into R 117)	WD	1 CD
TC 8/SC 5 Water meters		
• Water meters intended for the metering of cold water (including requirements for electronic devices) (R 49-1)	R	-
• R 49-2: Test procedures	2 CD	3 CD/DR
• R 49-3: Test report format	WD	1 CD
TC 8/SC 6 Measurement of cryogenic liquids		
• Annex D to R 81: Test report format	R (Publishing delayed)	R
TC 8/SC 7 Gas metering		
• Metering systems for gaseous fuel	2 CD	3 CD/DR
• Compressed gaseous fuel measuring systems for vehicles	2 CD	3 CD/DR
TC 8/SC 8 Gas meters		
• Combined revision of R 6, R 31 and R 32	-	WD
TC 9 Instruments for measuring mass and density		
• Revision R 60: Metrological regulation for load cells (including Test report format)	R	-
• Revision R 74: Electronic weighing instruments	1 CD	2 CD

OIML TECHNICAL ACTIVITIES	2000	2001
TC 9/SC 1 Nonautomatic weighing instruments		
• Amendment to R 76: Nonautomatic weighing instruments	WD	1 CD
TC 9/SC 2 Automatic weighing instruments		
• Automatic instruments for weighing road vehicles in motion (Part A - total vehicle weighing) (Part B - axle weighing)	3 CD -	4 CD WD/1 CD
• Revision R 51: Automatic catchweighing instruments	WD	1 CD
• Revision R 61: Automatic gravimetric filling instruments	-	WD/1 CD
TC 9/SC 3 Weights		
• Revision R 111: Weights of accuracy classes E_1, E_2, F_1, F_2, M_1, M_2, M_3 plus test procedures and test report format (including requirements of R 47: Standard weights for testing high capacity weighing machines)	2 CD	DR/vote
• Revision R 33: Conventional value of the result of weighing in air	WD	1 CD
• Revision R 52: Hexagonal weights, ordinary accuracy class from 100 g to 50 kg	-	1 CD
TC 9/SC 4 Densities		
• Hierarchy scheme for density measuring instruments	1 CD	2 CD
TC 10/SC 1 Pressure balances		
• Pressure transducers with uniform output signal	2 CD	3 CD
TC 10/SC 2 Pressure gauges with elastic sensing elements		
• Pressure transmitters with elastic sensing elements	1 CD	1 CD/2 CD
• Revision R 101: Indicating and recording pressure gauges, vacuum gauges and pressure vacuum gauges with elastic sensing elements (ordinary instruments)	WD	1 CD
• Revision R 109: Pressure gauges and vacuum gauges with elastic sensing elements (standard instruments)	WD	1 CD
TC 10/SC 4 Material testing machines		
• Force measuring systems of material testing machines (R 65) (Revision R 65 combining requirements of R 64)	R	-
• Requirements for force measuring instruments for verifying material testing machines	-	WD

OIML TECHNICAL ACTIVITIES	2000	2001
TC 10/SC 6 Strain gauges		
• Revision R 62: Performance characteristics of metallic resistance strain gauges	-	1 CD
TC 11 Instruments for measuring temperature and associated quantities		
• Revision R 75: Heat meters (Part 1: General requirements; Part 2: Type approval and initial verification tests)	2 CD	3 CD/DR
TC 11/SC 1 Resistance thermometers		
• Revision R 84: Resistance-thermometer sensors made of platinum, copper or nickel (for industrial and commercial use)	2 CD	DR
TC 11/SC 2 Contact thermometers		
• Liquid-in-glass thermometers	2 CD	DR
TC 11/SC 3 Radiation thermometers		
• Revision R 48: Tungsten ribbon lamps for calibration of optical pyrometers	1 CD	2 CD
• Standard black-body radiator for the temperature range from – 50 °C to 3000 °C	WD	1 CD
TC 12 Instruments for measuring electrical quantities		
• Revision R 46: Active electrical energy meters for direct connection of class 2	WD	WD/1 CD
TC 13 Measuring instruments for acoustics and vibration ***(Secretariat of TC 13 vacant)***		
• Octave-band and fractional octave-band filters (R 130)	Approval	R
• Revision R 58 and R 88	Postponed	Waiting for IEC progress
TC 15/SC 2 Measuring instruments for ionizing radiations used in industrial processing		
• Polymethylmethacrylate (PMMA) dosimetry system for measuring ionizing radiations absorbed dose in materials and products (R 131)	Approval	R
• Alanine (EPR) dosimetry system for measuring ionizing radiations absorbed dose in materials and products (R 132)	Approval	R

OIML TECHNICAL ACTIVITIES	2000	2001
TC 16/SC 1 Air pollution		
• Annex to ISO 3930/OIML R 99: Test report format for the evaluation of instruments for measuring vehicle exhaust emissions	1 CD	2 CD
TC 16/SC 2 Water pollution		
• Revision R 100: Atomic absorption spectrometers for measuring metal pollutants in water	WD	1 CD
TC 16/SC 3 Pesticides and other pollutant toxic substances		
• Revision R 82: Gas chromatographs for measuring pollution from pesticides and other toxic substances	1 CD	2 CD
TC 16/SC 4 Field measurements of hazardous (toxic) pollutants		
• Fourier transform infrared spectrometers for measurement of air pollutants	WD	1 CD
TC 17/SC 1 Humidity		
• Revision R 59: Moisture meters for cereal grains and oilseeds	WD	1 CD
TC 17/SC 4 Conductometry		
• Revision R 56: Standard solutions reproducing the conductivity of electrolytes	WD	1 CD
• Revision R 68: Calibration method for conductivity cells	WD	1 CD
• Methods of measurement of the conductivity of electrolytic solutions	WD	1 CD
TC 17/SC 5 Viscometry		
• Reference standard liquids (newtonian viscosity standard for the calibration and verification of viscometers)	WD	1 CD
TC 17/SC 6 Gas analysis		
• Procedures for calibration of mine methanometers	WD	1 CD
• Procedures for calibration of alarms of combustible gases and vapors	WD	1 CD
TC 18 Medical measuring instruments		
• Ergometers for foot crank work (including Test report format) (R 128)	R	-

OIML TECHNICAL ACTIVITIES	2000	2001
TC 18/SC 1 Blood pressure instruments		
• Revision R 16: Manometers for instruments for measuring blood pressure (sphygmomanometers) (including Test report format) Note: 2 draft Recommendations developed: R 16-1: Noninvasive mechanical sphygmomanometers R 16-2: Noninvasive automated sphygmomanometers	DR	Approval
TC 18/SC 4 Bio-electrical measurements		
• Annex to R 90: Test report format for the evaluation of recording electrocardiographs	2 CD	3 CD/DR
TC 18/SC 5 Measuring instruments for medical laboratories		
• Absorption spectrometers for medical laboratories	1 CD	2 CD

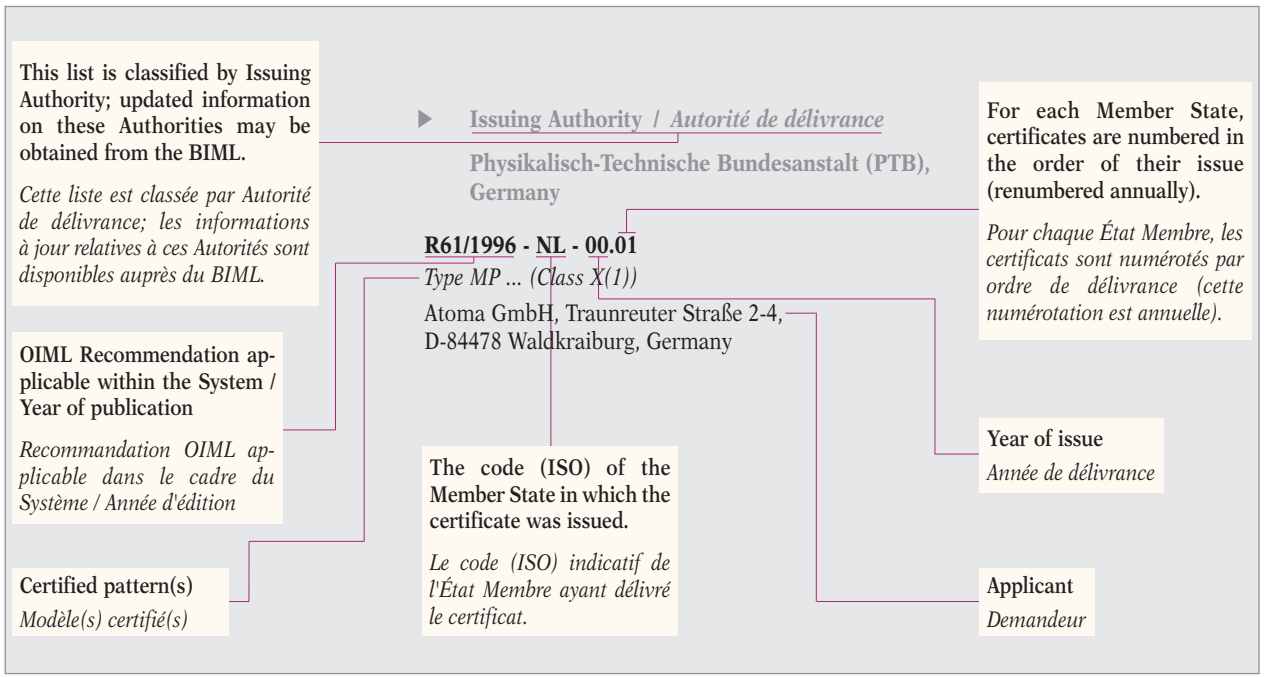
OIML Certificate System:
Certificates registered 2000.11–2001.01
For up to date information: www.oiml.org

The OIML *Certificate System for Measuring Instruments* was introduced in 1991 to facilitate administrative procedures and lower costs associated with the international trade of measuring instruments subject to legal requirements.

The System provides the possibility for a manufacturer to obtain an OIML certificate and a test report indicating that a given instrument pattern complies with the requirements of relevant OIML International Recommendations.

Certificates are delivered by OIML Member States that have established one or several Issuing Authorities responsible for processing applications by manufacturers wishing to have their instrument patterns certified.

OIML certificates are accepted by national metrology services on a voluntary basis, and as the climate for mutual confidence and recognition of test results develops between OIML Members, the OIML Certificate System serves to simplify the pattern approval process for manufacturers and metrology authorities by eliminating costly duplication of application and test procedures. ■



Système de Certificats OIML:
Certificats enregistrés 2000.11–2001.01
Pour des informations à jour: www.oiml.org

Le *Système de Certificats OIML pour les Instruments de Mesure* a été introduit en 1991 afin de faciliter les procédures administratives et d'abaisser les coûts liés au commerce international des instruments de mesure soumis aux exigences légales.

Le Système permet à un constructeur d'obtenir un certificat OIML et un rapport d'essai indiquant qu'un modèle d'instrument satisfait aux exigences des Recommandations OIML applicables.

Les certificats sont délivrés par les États Membres de l'OIML, qui ont établi une ou plusieurs autorités de délivrance responsables du traitement des demandes présentées par des constructeurs souhaitant voir certifier leurs modèles d'instruments.

Les services nationaux de métrologie légale peuvent accepter les certificats sur une base volontaire; avec le développement entre Membres OIML d'un climat de confiance mutuelle et de reconnaissance des résultats d'essais, le Système simplifie les processus d'approbation de modèle pour les constructeurs et les autorités métrologiques par l'élimination des répétitions coûteuses dans les procédures de demande et d'essai. ■

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Diaphragm gas meters
Compteurs de gaz à parois déformables

R 31 (1995)

▶ Issuing Authority / *Autorité de délivrance*
Sous-direction de la Métrologie, France

R31/1995-FR1-00.01
Gallus 2000 - G1,6
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.02
Gallus 2000 - G1,6
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.03
Gallus 2000 - G1,6
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.04
Gallus 2000 - G2,5
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.05
Gallus 2000 - G2,5
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.06
Gallus 2000 - G2,5
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.07
Gallus 2000 - G4
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.08
Gallus 2000 - G4
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

R31/1995-FR1-00.09
Gallus 2000 - G4
Schlumberger Industries, rue Chrétien de Troyes, BP 327, 51061 Reims cedex, France

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Continuous totalizing automatic weighing instruments (belt weighers)
Instruments de pesage totalisateurs continus à fonctionnement automatique (peseuses sur bande)

R 50 (1997)

▶ Issuing Authority / *Autorité de délivrance*
Swedish National Testing and Research Institute AB, Sweden

R50/1997-SE-00.01
Type T3B (Class 0,5)
SEG Instrument AB, Box 11143, SE-161 11 Bromma, Sweden

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic catchweighing instruments
Instruments de pesage trieurs-étiqueteurs à fonctionnement automatique

R 51 (1996)

▶ Issuing Authority / *Autorité de délivrance*
Physikalisch-Technische Bundesanstalt (PTB), Germany

R51/1996-DE-98.03 Rev. 1
Type GS ... (Classes X(1) and Y(a))
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Straße 65, D-72336 Balingen, Germany

▶ Issuing Authority / *Autorité de délivrance*
Sous-direction de la Métrologie, France

R51/1996-FR1-00.02
MC 400 (Classe Y(a))
Société ASCOREL, Z.I. de Montplaisir - Rue du Champ de Courses - BP 5, 38780 Pont-Evêque, France

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Metrological regulation for load cells
Réglementation métrologique des cellules de pesée

R 60 (1991), Annex A (1993)

▶ Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R60/1991-GB1-00.07
Type 65114 (Class C3)
Sensortronics Inc., 677 Arrow Grand Circle, Covina, CA 91722, USA

R60/1991-GB1-01.01
Type SCL30SA (Class C3)
Shering Weighing Ltd., Pitreavie Business Park, Dunfermline, Fife, KY11 5PU, Scotland, United Kingdom

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Metrological regulation for load cells (applicable to analog and/or digital load cells)
Réglementation métrologique des cellules de pesée (applicable aux cellules de pesée à affichage analogique et/ou numérique)

R 60 (2000)

▶ Issuing Authority / *Autorité de délivrance*

Netherlands Measurement Institute (NMi) Certin B.V., The Netherlands

R60/2000-NL1-00.13
Type 1260 (Class C)
Tedea Huntleigh International Ltd., 2 Hazoran street, Netanya 42506, Israël

R60/2000-NL1-00.14
Type FFX .... (Class C)
MASTER-K, 38, avenue des Frères Montgolfier, B.P. 186, 69686 Chassieu Cedex, France

R60/2000-NL1-00.15 Rev. 2
Type SB5-K5M (Class C)
PTM s.r.l., Via per Isorella 22/A, 25010 Visano (BS), Italy

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic gravimetric filling instruments
Doseuses pondérales à fonctionnement automatique

R 61 (1996)

▶ Issuing Authority / *Autorité de délivrance*

Netherlands Measurement Institute (NMi) Certin B.V., The Netherlands

R61/1996-NL1-00.06
Weighmaster CW (Class Ref(1))
Pro-Pak International B.V., Tielerweg 9, 4191 NE Geldermalsen, The Netherlands

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Nonautomatic weighing instruments
Instruments de pesage à fonctionnement non automatique

R 76-1 (1992), R 76-2 (1993)

▶ Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R76/1992-DE-99.07
Types BC... (Class III)
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Straße 65, D-72336 Balingen, Germany

R76/1992-DE-99.09
Types BS-... (Class III)
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Straße 65, D-72336 Balingen, Germany

R76/1992-DE-00.08
Type GLP-W... (Class III)
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Straße 65, D-72336 Balingen, Germany

R76/1992-DE-00.09
Type iso-TEST (Classes I, II and III)
Sartorius A.G., Weender Landstraße 94-108, D-37075 Göttingen, Germany

▶ **Issuing Authority / *Autorité de délivrance***

Centro Español de Metrologia, Spain

R76/1992-ES-98.01 Rev. 2
Nonautomatic, graduated, self-indicating, electronic counter-top/hanging weighing instrument, type "BASIC" intended for direct sale to the public (Class III)
Campesa S.A., Avinguda Cova Solera, 25-29, E-08191 Rubi-Barcelona, Spain

R76/1992-ES-99.02 Rev. 1
Nonautomatic, graduated, self-indicating, electronic counter-top weighing instrument, type "BASIC-Autonoma" intended for direct sale to the public (Class III)
Campesa S.A., Avinguda Cova Solera, 25-29, E-08191 Rubi-Barcelona, Spain

R76/1992-ES-99.03 Rev. 2
Nonautomatic, graduated, self-indicating, electronic counter-top/hanging weighing instrument, type "BASIC PRINT" intended for direct sale to the public (Class III)
Campesa S.A., Avinguda Cova Solera, 25-29, E-08191 Rubi-Barcelona, Spain

▶ **Issuing Authority / *Autorité de délivrance***

National Weights and Measures Laboratory (NWML), United Kingdom

R76/1992-GB1-00.05
GX 2xx series (Class III)
GEC Avery Limited, Foundry Lane, Smethwick, Warley, West Midlands B66 2LP, United Kingdom

▶ **Issuing Authority / *Autorité de délivrance***

Netherlands Measurement Institute (NMi) Certin B.V., The Netherlands

R76/1992-NL1-00.25
Type BW…. And BX…. (Class II)
Shimadzu Corporation, 1, Nishinokyo-Kuwabaracho, Nakagyo-ku, Kyoto 604, Japan

R76/1992-NL1-00.26
Type K-serie (Class III)
DIBAL S.A., c/ Astintze Kalea, 24, Poligono Industrial Neinver, 48016 Derio (Bilbao-Vizcaya), Spain

R76/1992-NL1-00.27
Type ECO (Class III)
Grupo Epelsa S.L., Ctra. Sta. Cruz de Calafell, 35 km. 9,400, E-08830 Sant Boi de Llobregat, Barcelona, Spain

R76/1992-NL1-00.28
Type BM-1 (Class III)
Digital Scales S.A., Pol, Ind Larrondo, Beheko Etorbidea, no. 2, 48180 Loiu (Vizcaya), Spain

R76/1992-NL1-00.29
Type PF(R) (Class I)
Shinko Denshi Co., Ltd, 3-9-11 Yushima, Bunkyo-ku, Tokyo 113-0034, Japan

R76/1992-NL1-01.01
Type NWT-series (Class III)
Jadever Scale Co. Ltd., No. 5, Wu-Chuan 2 RD., Wu-Ku Hsiang, Taipei Hsien, R.O.C., Taiwan

R76/1992-NL1-01.02
Type Spider SW, BC, FC and SC (Classes III and IIII)
Mettler-Toledo A.G., Im Langacher, 8606 Greifensee, Switzerland

R76/1992-NL1-01.03
*Type SRM-**S (Class III)*
Shang Juen Weighing Machine Co., Ltd, No. 53, Liao-Yang 4th St., Taichung City 406, R.O.C., Taiwan

▶ **Issuing Authority / *Autorité de délivrance***

Gosstandart of Russian Federation, Russian Federation

R76/1992-RU-00.01
Platform Skale LADOGA (Class III)
OOO "Petro VES", 18, Gorohovaja str., P.O. Box 246, 191186 Sankt-Petersburg, Russian Federation

R76/1992-RU-00.02
Scale LAHTA (Class III)
OOO "Petro VES", 18, Gorohovaja str., P.O. Box 246, 191186 Sankt-Petersburg, Russian Federation

R76/1992-RU-00.04
Type 23XXBB…C (Class III)
Technical industrial-scientific centre "TOM", PO Box 50, 65063 Odessa, Ukraine

R76/1992-RU-00.05
Type 23XXBB…C) (Class III)
Technical industrial-scientific centre "TOM", PO Box 50, 65063 Odessa, Ukraine

R76/1992-RU-00.06
Type 2100BA… (Class III)
Technical industrial-scientific centre "TOM", PO Box 50, 65063 Odessa, Ukraine

▶ Issuing Authority / *Autorité de délivrance*

Swedish National Testing and Research Institute AB, Sweden

R76/1992-SE-00.01
Type DP-3000 (Class III)
Ishida Co., Ltd., 959-1, Shimomagari, Ritto-cho, Kurita-Gun, Shiga 520-30, Japan

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic level gauges for measuring the level of liquid in fixed storage tanks
Jaugeurs automatiques pour le mesurage des niveaux de liquide dans les réservoirs de stockage fixes

R 85 (1998)

▶ Issuing Authority / *Autorité de délivrance*

Netherlands Measurement Institute (NMi) Certin B.V., The Netherlands

R85/1998-NL1-00.03
Model NMS 530 equipped with a field indicating device NRF 560 (Class 2)
Sakura Endress Co., Ltd., 862-1 Mitsukunugi, Sakaigawamura, Higashi-Yatsushiro-gun, Yamanashi Prefecture, Japan

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic rail-weighbridges
Ponts-bascules ferroviaires à fonctionnement automatique

R 106 (1997)

▶ Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R106/1997-GB1-01.01
Railweight MS 3000 (Class 0.5 for coupled wagon - Class 0.2 for total train)
Railweight, Hurstfield Industrial Estate, Hurst Street, Reddish, Cheshire, Stockport SK5 7BB, United Kingdom

▶ Issuing Authority / *Autorité de délivrance*

Gosstandart of Russian Federation, Russian Federation

R106/1997-RU-00.01
Type 23XXBB...) (Classes 0,2; 0,5; 1,0; 2,0)
Technical industrial-scientific centre "TOM", PO Box 50, 65063 Odessa, Ukraine

R106/1997-RU-00.02
Type 23XXBB...C) (Classes 0,2; 0,5; 1,0; 2,0)
Technical industrial-scientific centre "TOM", PO Box 50, 65063 Odessa, Ukraine

OIML TC 12 - INSTRUMENTS FOR MEASURING ELECTRICAL QUANTITIES

Revision of OIML R 46

PTB, 2000.10.26

HANS BACHMAIR, PTB (TC 12 Secretariat)

The OIML TC 12 Working Group on the revision of R 46 *Active electrical energy meters for direct connection of class 2* held its first meeting at the PTB in Braunschweig, Germany on 26 October 2000. Eleven delegates from eight OIML Member States were present.

The main topics were:

- Present status of standardization activities within the IEC;
- Present status of the European Measurement Instruments Directive (MID);
- Scope of the TC 12 Working Group; and
- OIML Recommendations on electricity meters.

The Secretary of TC 12 welcomed the participants on behalf of the PTB and CIML Vice President Prof. Manfred Kochsiek, and gave a short summary of the activities of TC 12 up to now.

Present status of standardization activities within the IEC

An overview of the existing IEC standards for electricity meters and the corresponding CENELEC standards was given; at present, these standards are the subject of a general revision. In future, there will be a basic standard describing general requirements for electricity meters and additional specific standards for the various different types of electricity meters. Furthermore, a comparison between IEC 521 and the former (now withdrawn) OIML R 46 was made. Contrary to R 46, the IEC standard contains neither requirements that are essential for legal metrology, nor guidelines for a test report format. For type approval tests, the majority of authorities responsible for pattern approval rely on the requirements given in the corresponding IEC standards, whereas for initial verification and re-verification most countries lay down their own requirements.

Present status of the European Measurement Instruments Directive (MID)

A new draft of the MID was published on 15 September 2000, together with the annexes MI xxx for the different types of measuring instruments which fall under the scope of this Directive. Annex MI 003 for electricity meters has remained unchanged. The full text of the MID is available on the Internet*.

WELMEC working group WG 8 developed and circulated a questionnaire, in particular for Appendix MI 003, in which members of the working group are asked for further comments and suggestions for improvements of the MID. The questionnaire is also available on the Internet** (for complete access a password is needed).

At present, the MID refers neither to CENELEC standards or OIML Recommendations, nor has the European Commission placed an official order to these Organizations to draft the corresponding documents.

Scope of the TC 12 Working Group and OIML Recommendations on electricity meters

The scope of the Working Group and the content of a possible new OIML Recommendation took up a large part of the discussions. The WG agreed to include induction as well as electronic meters, but felt that the main focus should be on meters for active power. Test methods - full tests and/or statistical sampling - for the verification of such meters were also discussed.

Different formats and contents of the new document were considered. The WG was in favor of issuing only one Recommendation which would sum up the legal requirements for all the meters and supplementary chapters for the different types of meters. However, the test report format should be published as a separate document. Only requirements that go beyond the scope of existing IEC standards should be addressed.

To obtain an overview of the current situation a questionnaire was proposed, which inquires about the legal regulations already effective in the various countries, as well as the content and format of the new

Recommendation. A similar questionnaire distributed to European countries was evaluated by the PTB.

Amongst other topics, participants felt that the following points should be included in the document:

- testing levels;
- full tests and sample tests;
- verification and re-verification;
- time of validity of verification;
- software requirements and remote control; and
- documents required for type approval.

The delegation from Sweden showed interest in developing the questionnaire and in taking on the chairmanship of the Working Group. The final decision must however be postponed until this has been discussed with the Swedish authorities, but the secretary of TC 12 was informed that Sweden will chair the Working Group for the revision of R 46. ■

* http://europa.eu.int/eur-lex/en/com/pdf/2000/com2000_0566en01.pdf

** http://www.industrie.gouv.fr/metro/wg8/subgroups/mi03.htm

OIML TC 11 - INSTRUMENTS FOR MEASURING TEMPERATURE AND ASSOCIATED QUANTITIES

Revision of OIML R 75

PTB, 2001.01.16–17

DIETER STUCK, PTB (TC 11 Secretariat)

Delegates from eight P-members (Austria, Denmark, Germany, Norway, Poland, Russia, Sweden and The United States), one O-member (Finland) and a delegate from France participated in this meeting. Representatives from The Netherlands, The United Kingdom and Switzerland were not able attend.

The document to be discussed was the newly drawn up 2nd Committee Draft of the revision of OIML R 75 *Heat meters*, in which the great majority of comments received from The Netherlands, Poland, The United Kingdom and Japan have been integrated.

One result is that the second draft of R 75 has been split up into three separate documents:

- OIML R 75-1 General requirements
- OIML R 75-2 Pattern approval and initial verification tests
- OIML R 75-3 Test report format (to be developed later)

It was of utmost importance to keep the contents of the existing European standard EN 1434 and of the revision of R 75 as closely related as possible, including the numbering of clauses and subclauses in each part of the text. This aim has largely been achieved, with the exception of those clauses and subclauses of R 75-2 that concern the initial verification tests: this results from the consolidation of parts 4 and 5 of EN 1434 into only one draft of R 75-2.

In subclause 6.5 of the newly drafted R 75-1, the text proposed by the Netherlands (and supported by Japan) has been incorporated in its entirety.

In Annex A, new formulas may be found for calculating the heat coefficients for water; these are drawn from Industrial Standard IAPWS-IF 97 *Thermodynamic properties of water and steam and supplementary equations for other properties* (1988, Springer Verlag). For the first time, use is made in these formulas (for water and steam) of the International Temperature Scale of 1990 (ITS - 90).

The references to IEC publications have been checked and renumbered with reference to the latest versions.

Subclause 6.18 of EN 1434-4 was not adopted into R 75-2 because "electromagnetic emission" is not a metrological characteristic.

Decisions were also made:

- to insert into the respective clauses/subclauses in the text some supplements to low-voltage operated instruments;
- to clarify the definition of the mpe of a complete instrument;
- to change the procedure of the durability test;
- to add some requirements for temperature sensors operated with pockets; and
- to make several editorial changes, which were accepted.

At the end of the meeting the improved text was unanimously adopted as discussed. However, the P-members present did not constitute the majority of P-members registered in TC 11. Therefore, the secretariat will amend the texts of R 75-1 and R 75-2 to take account of the changes discussed in the meeting and distribute it for postal vote in the near future to all members of TC 11. ■

RLMO MEETING

Seventh meeting of the Asia-Pacific Legal Metrology Forum (APLMF)

2–4 October 2000 Grand Hotel Taipei, Chinese Taipei

MRS. LOON KHOO, APLMF Secretariat

The Seventh meeting of the Asia-Pacific Legal Metrology Forum and Working Group meetings were held at the Grand Hotel, Taipei, Chinese Taipei on 2–4 October 2000.

Mr. Ruey-Jong Chen, Vice-Minister for Economic Affairs (Chinese Taipei) officiated at the opening ceremony. He highlighted the achievements of the APLMF, which has provided a forum for measurement authorities in the Asia-Pacific area to exchange their experience in the area of legal measurements, and emphasized the need to unify the system of measurements and the promotion of cooperation between economies.

Welcome address by Mr. John Birch AM, APLMF President

In his welcome address to delegates, Mr. John Birch AM, President of the APLMF, emphasized the role of legal metrology and the relationship between the government and metrology in the area of measurement for trade in commodities. He highlighted the role of the APLMF in facilitating trade and in developing trust and confidence amongst members through Forum activities and programs.

Mr. Neng-Jong Lin, Director General of the Bureau of Standards, Metrology and Inspection (BSMI) spoke on the need to harmonize weights and measures and on the APLMF's contribution to regional and international development.

Fifty delegates and observers from thirteen Asia-Pacific economies attended the conference, as well as Mr. Jean-François Magaña, representing the BIML and WELMEC, Mr. Gerard Faber, CIML President, Dr. Eberhard Seiler, Head of the Technical Cooperation Department, PTB and Mr. Nigel Jou, CNLA and APLAC.

Working Group meetings

As has become normal practice, working group meetings were held in association with the conference. This year working group meetings were held on mutual recognition arrangements, training, utility meters, goods packed by measure, medical measurements, rice moisture measurements, taximeters, and intercomparison calibration and testing.

The Forum agreed to a program of work to be carried out over the next few years.

APLMF Work Program 2000–2001

- The train-the-trainer courses for the pattern approval and verification of nonautomatic weighing instruments be promoted and further workshops be run as requested.
- Ensure that areas of inconsistency between economies identified through the results in the intercomparison (e.g. the interpretation of the checklist) be adequately covered in future training courses.
- An APLMF train-the-trainer course for the verification of fuel dispensers and LPG dispensers be completed, trialed and run in China in March 2001.
- A workshop or seminar be run on accreditation and quality certification on legal metrology aimed at highlighting possible issues, in particular those concerning:

Seventh APLMF Meeting and Working Group Meetings

Front row, left to right:

Ms. Angela Chang, Chinese Taipei

Mr. H. Prawoko, Indonesia

Mr. Gunaryo, Indonesia

Mr. G. Faber, CIML President

Mr. Ruey-Long Chen, Vice Minister of Economic Affairs, Chinese Taipei

Mr. John Birch AM, APLMF President

Mr. Neng Jong-Lin, Chinese Taipei

Mr. J.F. Magaña, Appointed BIML Director

Mrs. Loon Khoo, APLMF Secretary

  - Certifiers of private sector verifiers of weighing and measuring equipment; and
  - Certification of packers of goods packed by measure.
- Training priority be given to the following areas:
  - High capacity weighing;
  - High capacity flow measurement;
  - Goods packed by measure; and
  - Measurement of uncertainty in legal metrology.
- Consideration be given to organizing a seminar/ workshop for training providers in legal metrology 3throughout the region.
- Consideration also be given in the future to organizing training courses on:
  - Standards laboratories officers training;
  - Compressed natural gas dispenser pattern approval and verification; and
  - Vehicle speed measuring devices and evidential analysis devices.
- The APLMF be actively involved with OIML TC 12 *Electricity meters* and keep members informed on developments in this area.
- Support the OIML in developing a Recommendation on Statistical Sampling.
- The APLMF note the development in OIML and WELMEC on revision of requirements for goods packed by measure and support continued cooperation to develop requirements that facilitate trade in goods packed by measure.
- A speaker be invited to address the next Forum meeting on the importance of metrological control of medical measuring instruments, particularly sphygmomanometers. It was noted that Austria held the secretariat for this OIML Recommendation (R 16) and could be invited to give the presentation.
- Conduct a study of the Rice Measurement Control System of Japan in the last week of August 2001.
- Seek funding from the APEC SCSC to continue the project after the study tour of Japan.
- APLMF support the OIML revision of its Recommendation on taximeters (R 21).
- The report on nonautomatic weighing instruments, which had been finalized and circulated to members, be sent for publication in the OIML Bulletin.
- The report on load cells be finalized and circulated to members.
- The intercomparison testing of mass standards and master meters commence as soon as possible.
- The OIML be requested to finalize the revision of Document D 1 *Law on Metrology*.
- Consider ways to involve consumers in Forum activities.
- Support the work of OIML TC 3/SC 5 *Conformity Assessment* in developing the Mutual Acceptance Arrangements (MAA) on Test Reports.
- Survey action being taken by member economies to ensure compliance of production instruments with type.
- Survey members on the establishment of a Working Group on the application of weighing bulk commodity shipping to replace draft survey.

- Develop a project on economic analysis of legal metrology with the aim of setting priorities based on economic and social impacts.
- Circulate information to member economies on Measurement Canada's Market Place Intervention Model (available on the Internet).
- Provide reports to members on WTO review of TBT agreements.
- Attend OIML and CIML meetings and provide reports on Forum meetings for publication in the OIML Bulletin.
- Provide reports to APEC SCSC and attend at least one meeting per year.
- Exchange information with other specialist regional bodies and attend the annual meetings where appropriate.
- Exchange information with other regional legal metrology organizations (RLMOs) and attend coordinating meetings with them.
- Pursue opportunities for obtaining funding for the development of legal metrology in the region.
- Strengthen the policy focus of the Forum meetings.
- Support the organization of the 8th Forum meeting.

Opening address by Mr. Ruey-Long Chen, Vice Minister of Economic Affairs, Chinese Taipei

Major issues

One of the major issues discussed was the transfer of the responsibilities of the APLMF presidency and secretariat from Australia. Both these positions have been held by Australia since the establishment of the APLMF in 1994 and Japan agreed to accept both these responsibilities from 1 January 2002.

Another significant development was an in-principle agreement for the introduction of a new membership fee structure to partially support the secretariat.

Eighth Forum meeting

The Forum accepted the invitation of New Zealand to hold the 8th Forum meeting in New Zealand. ■

Second Regional Seminar on Legal Metrology for ASEAN and APLMF economies

5–6 October 2000 Grand Hotel Taipei, Chinese Taipei

Mrs. Loon Khoo, APLMF Secretariat

The Seminar was held in association with the Seventh APLMF meeting and was attended by twenty-seven participants from Indonesia, Malaysia, Singapore, Thailand, Vietnam, ASEAN Secretariat, Australia, Germany, Japan, New Zealand, Chinese Taipei and the United States of America.

The objectives of the Seminar were:

- To identify possibilities of cooperation in legal metrology among ASEAN countries;
- To stimulate metrological activities and regional cooperation;
- To increase participation in activities of the regional and international organizations; and

- To establish an ASEAN Consultative Committee on Legal Metrology (ACCLM).

The Seminar was chaired by Mr. John Birch AM, APLMF President, and opened by Mr. Neng Jong-Lin, Director General of the Bureau of Standards, Metrology and Inspection, BSMI, Chinese Taipei. Mr. Skol Harnsuthivarin, Deputy Director General, Department of Commercial Registration, Ministry of Commerce and Dr. Eberhard Seiler, PTB, introduced the aims and objectives of the seminar which arose out of the first regional seminar held in Chiang Mai, Thailand on 8–9 November 1999.

Recommendations and conclusions

Participants from the ASEAN nations reported on developments in their legal metrology systems since the first seminar and identified a number of areas appropriate for regional cooperation.

1 Need for a Forum

The Seminar agreed that there was a need for a Forum or Body on Legal Metrology in the ASEAN and recommended that initially an ASEAN Sub-Committee on Legal Metrology (ASCLM) be established under the auspices of the ASEAN Consultative Committee on Standards and Quality (ACCSQ).

2 Training

Training was seen as important both for developing national capability in emerging technologies and ensuring harmonization of capability in the region.

Training courses that would contribute to regional harmonization include:

- High capacity weighing including weighbridges;
- High capacity oil and gas flow measurement;
- Control of prepackaged goods;
- Application of quality certification and accreditation in legal metrology; and
- Standards Officer training course including uncertainty of measurement and evaluation of intercomparison results.

In addition, training in approval and verification of LPG and CNG dispensers was identified as an emerging technology in the region for which training was required.

Training effectiveness in the region will also be facilitated by the establishment of an ASEAN Legal Metrology Regional Training Network.

3 Legislation and administration

Most of the ASEAN legal metrology authorities are currently modernizing their legislation and there is the need to ensure that this does not result in introducing new legislative or administrative technical barriers to trade.

The Seminar recommended that an ASEAN Seminar on modernization of legislation and administrative systems be organized - this could include discussions on the role of government in legal metrology and a coordination mechanism for measurements used for regulatory purposes.

4 Mutual recognition

The Seminar noted the current activities within the OIML and the APLMF on developing the Mutual Acceptance Arrangement (MAA) on test reports and agreed to support this initiative and develop a profile of national measurement and testing capability on legal metrology in the region to facilitate access to the specialized facilities and to support the development of an ASEAN MAA for legal metrology.

5 Priority setting

(i) The Seminar recognized the challenges facing legal metrology in the region arising from new technology, globalization, the changing role of government and the expanding scope of legal metrology and recommended that an analysis of the economic and social benefits of legal metrology be undertaken to assist in prioritizing resource allocation.

(ii) The Seminar recognized that the next step in regional cooperation in legal metrology would be the establishment of the ASCLM and the development of the work program based on the above priorities.

(iii) It was noted that as eight of the ASEAN legal metrology authorities are also members of the

APLMF, the work of the ASCLM would be complementary to that of the APLMF and could draw on resources developed by the APLMF.

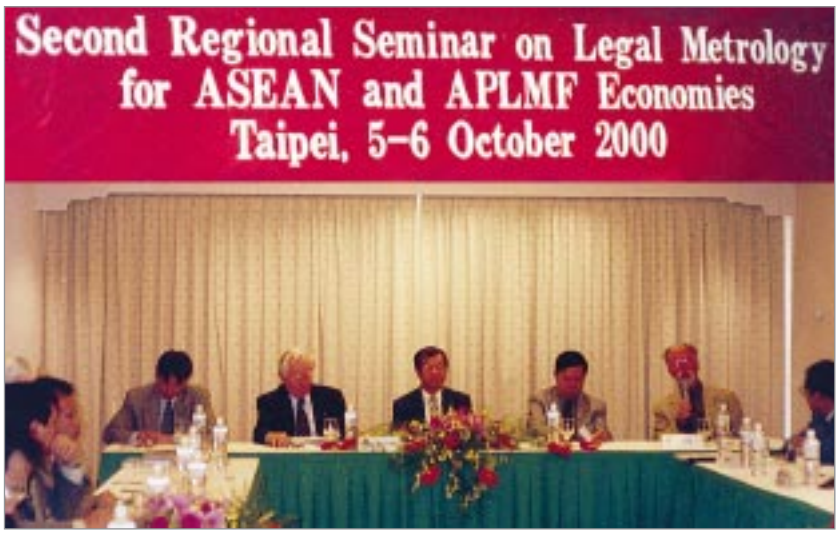
(iv) Thailand agreed to continue to act as Coordinator of this regional cooperation initiative and prepare the draft Terms of Reference for the ASCLM.

(v) Members were also requested to explore possible sources of funding to assist in establishing the ASCLM and in this regard the Seminar noted the expression of support given by the PTB and the BSMI.

(vi) It was recommended that ASCLM members discuss the outcomes of the Seminar with their respective members of the ACCSQ.

6 Conclusion

The Seminar expressed its appreciation for the support provided by the PTB, the Department of Commerce of Thailand, the BSMI and the APLMF for organizing and ensuring the success of the Seminar. ■



Second Regional Seminar on Legal Metrology for ASEAN and APLMF Economies.
Left to right: Dr. Pham The Vinh, ASEAN Secretariat; Mr. John Birch AM, APLMF President and Chairman of the Seminar; Mr. Neng Jong-Lin, Chinese Taipei; Mr. Skol Harnsuthivarin, Thailand; Dr. E. Seiler, PTB Germany

Delegates participating in the Seminar. *Left to right:* Dr. Chen Jay-San, Chinese Taipei; Mr. M. Ong, Singapore; Mr. John Barker, New Zealand; Mr. Chen SF, Malaysia; Mr. Abdul Rahman b Ghazali, Malaysia

SEMINAR REPORT

Conclusions of the Euro-Mediterranean Seminar on metrology serving economic and social development

2000.11.30 – 2000.12.01

JEAN-FRANÇOIS MAGAÑA, Appointed BIML Director
MICHÈLE FRITZ, Sous-Direction de la Métrologie, France

A seminar was organized by the French Secretariat of State to Industry on 30 November and 1 December 2000, under the aegis of the WTO, UNIDO and the OIML. This seminar, opened by Mr. Pierret, French Secretary of State to Industry, brought together international, European and Mediterranean experts in accreditation, metrology (scientific, industrial and legal) and testing, as well as European and Mediterranean industrials. The exchange of experience between the participants allowed a specific aspect of the mechanisms of economic, commercial and social development to be highlighted, which is visible in the Euro-Mediterranean partnership, but which is in fact present in all development zones.

The various technical mechanisms which contribute to the development of international trade, to economic development, to the protection of consumers and citizens and to that of the environment and of health, show a strong complementarity. Metrology, testing, certification, implementation of standards, consumer protection, protection of the environment and of health, development of quality and competitivity in industry, all call for a global technical infrastructure. As explained hereafter, metrology is at the root of this system.

1 Harmonization, confidence and control of the market

To achieve free circulation of consumer products, the regulatory requirements of the markets must be harmonized. An unjustified level of regulatory requirements is a barrier to trade, but an excessively low level of requirements leads to unfair competition.

But free circulation also requires that the compliance of products to market requirements can be demonstrated. Manufacturers must have easy means to prove to other countries' authorities that their products meet the applicable requirements. This requires *a fortiori* that the manufacturers are able to deliver products at the required quality level, and therefore that they have access to the necessary technologies, skills and technical services.

As far as equipment products are concerned, access to the markets of developed countries for suppliers and subcontractors of developing countries raises the same questions. Here the requirements are contractual, though generally harmonized by standards, and the demonstration of compliance is just as necessary. The need for competence and performance of these manufacturers of equipment products is also essential.

By reciprocity, the fair opening of developing countries' markets to the products of industrialized countries requires that the level of regulatory requirements in force in developing countries is comparable to that required in industrialized countries, in particular concerning consumer protection and protection of the environment and health.

2 Global infrastructure

The alignment of standards and regulatory requirements in developing countries with the levels of industrialized countries is an action which is generally conducted in the context of cooperation programs. But aligning regulations and standards is not sufficient to align the actual quality levels of the products nor to give mutual confidence in these quality levels. It is necessary:

- that industry is in a position to comply with these technical requirements,
- that industry is in a position to demonstrate the conformity of its products with these requirements,
- that developing countries are in a position to control their markets and to control the quality of the imported products.

The technical infrastructure that exists in developing countries does not generally allow these three conditions to be fulfilled. It is necessary to set up an appropriate infrastructure in these countries:

- to provide industry with technological support to enhance the quality of their products,
- to give local staff the technical training that is necessary for the development of quality,

- to put at the disposal of these enterprises the technical means to demonstrate the quality of their products, this demonstration having to be recognized in industrialized countries,
- to bring to these countries the technical means to control the regulatory quality of their products, in conditions comparable to those existing in industrialized countries.

3 Metrology, a fundamental discipline for quality

The whole set of disciplines which contribute to the compatibility of markets and to production, and which allow the quality of products to be demonstrated is generally designated by the initials "MSTQ" (metrology, standardization, testing and quality); it is necessary to add the notions of accreditation and certification. This set of disciplines constitutes a whole, interdependent and complementary.

- Standardization defines levels of quality requirements to which the contracts will refer. Similarly, regulations - which are often based on standards - define the levels of quality required to gain access to the markets.
- Voluntary or regulatory product certification demonstrates their conformity to the requirements of the standards or regulations; it is based on tests and measurements.
- Accreditation demonstrates the credibility of the certification, tests and measurements. It is the key tool for mutual confidence and mutual recognition.
- Tests give documented evidence as to the degree of conformity to the requirements, which are used as the basis for certification. Tests also allow manufacturers to develop their products and to qualify their processes. Tests are based on measurements.

So the basis of this whole system is measurement, and its discipline is metrology. Measurements must be representative, reliable, of appropriate accuracy, and they must be comparable in the different countries and for the various interested parties.

4 International recognition agreements and their coherence

International organizations work for the rapprochement and the recognition of national systems.

- International standardization organizations, in particular ISO and IEC, develop international standards, which are generally transposed by the Regional and national standardization bodies when they exist, or otherwise by national standardization organizations. Concerning measuring instrument regulations, the OIML develops International Recommendations which are models of technical regulations that are recommended to States.
- Concerning product certification and quality system certification, IAF coordinates the bodies in charge of accrediting the certification bodies, and sets up a multilateral recognition agreement for such accreditations.
- For regular tests and calibration, ILAC coordinates the bodies in charge of accrediting the test and calibration laboratories, and sets up a multilateral recognition agreement for these laboratory accreditations.
- For the national measurement standards and their implementation, the Meter Conference and its permanent office, the BIPM, are developing an international arrangement on the equivalence of these standards.
- For the regulatory certification of measuring instruments, the OIML is working to establish an international recognition arrangement.

All these recognition agreements and arrangements allow the compatibility of the products with the market requirements to be demonstrated, and forms a coherent technical system. In order to allow the reciprocal opening of markets among developing and industrialized countries and to promote economic development in the former, it is necessary that developing countries have access to the above-mentioned agreements.

5 Technical assistance programs to developing countries

Technical assistance programs to developing countries, either bilateral or multilateral (for example the MEDA program between Europe and Mediterranean countries) generally include a sub-program dedicated to quality and standardization. This sub-program mainly concerns two fields:

- industrial cooperation, industrial partnership and development of technical centers and training centers in the developing countries,
- setting up and development of standardization systems, accreditation bodies and certification bodies in these countries.

This approach is based on general principles known and agreed to by States and by development bodies, and especially promoted by the national and international standardization bodies:

- technical development activities of industry and of services to industry are the responsibility of the competitive sector,
- standardization, accreditation and certification are necessary activities which belong to independent bodies of general interest (generally non profit-making organizations in the first two cases).

The application of these two principles is the following:

- for the first principle, incentive actions for investment, for opening up the share capital of enterprises, and for the development of industrial partnerships,
- for the second principle, training and actions mainly of an organizational and documentary nature (setting up standardization bodies, accreditation bodies, quality system certification bodies, general training in quality). These programs are often designed and implemented by the standardization bodies of industrialized countries.

Such actions are indeed important, but it is not sufficient to diffuse standards if industry is not able to comply with them, or to set up accreditation bodies if the candidates for accreditation cannot technically comply with a serious accreditation.

6 The need for a global metrology infrastructure

The importance and the nature of legal metrology are not well known by a number of operators of technical assistance to development and by the governments. Metrology comprises three parts:

- industrial metrology, which provides services to industry (calibration, consultancy, training),
- primary metrology, which can be financed only by States,
- legal metrology, which is a specific field of the State.

The development of all the issues related to quality, certification and conformity evaluation requires metrological infrastructures to be set up in developing countries. These infrastructures must be able to benefit from international recognitions. Without such infrastructures, access to the various international agreements mentioned above would be difficult, if not impossible.

Further, this infrastructure is necessary for developing countries to be able to control their markets, and therefore for fair competition for imported products.

Such an infrastructure must in particular include:

- reference metrology laboratories, which may be national in certain fields, or common to a group of countries in other fields,
- a national institute of metrology which, besides keeping the appropriate national standards, plays the key role of a national competence center in metrology,
- appropriate equipment and resources for the metrological control required by market surveillance,
- according to the needs of industry, calibration laboratories and training bodies which can provide enterprises with the necessary services of calibration, consultancy and training.

The first three components must be financed by the State, both for investment and for their functioning. The fourth one may need State investment support in order to be set up.

At present however, developing countries have neither the resources nor the support from other States or from development organizations which would enable them to develop these infrastructures.

7 The role of development bodies and of the States

The WTO, which was at the origin of the organization of this Seminar, can encourage the development of programs on metrology in developing countries.

UNIDO already takes account of metrology issues in its integrated development programs.

It is necessary for all the development bodies to take account of the need to develop metrological infrastructures in developing countries, as a primary condition for developing quality and for opening up markets.

It is also imperative for the States themselves to allocate the appropriate level of priority to the development of these metrological infrastructures, and that the governments of developing countries consider metrology as an essential issue both when applying for assistance as well as in their internal autonomous policy. ■

COMPTE RENDU DE SÉMINAIRE

Conclusions du Séminaire Euro-Méditerranéen sur la métrologie au service du développement économique et social

2000.11.30 – 2000.12.01

JEAN-FRANÇOIS MAGAÑA, Directeur Nommé du BIML
MICHÈLE FRITZ, Sous-Direction de la Métrologie, France

Un séminaire a été organisé par le Secrétariat d'État français à l'Industrie les 30 novembre et 1er décembre 2000 sous l'égide de l'OMC, de l'ONUDI et de l'OIML. Le séminaire, ouvert par Monsieur Pierret, Secrétaire d'État à l'Industrie, a réuni des experts internationaux, européens et méditerranéens de l'accréditation, de la métrologie (scientifique, industrielle et légale) et des essais, ainsi que des industriels européens et méditerranéens. Les échanges d'expériences entre les participants ont permis d'éclairer un aspect particulier des mécanismes de développement économique, commercial et social, qui apparaît dans le partenariat Euro-Méditerranéen, mais qui est en fait présent dans toutes les zones de développement.

Les différents mécanismes techniques qui contribuent au développement des échanges internationaux, au développement économique, à la protection des consommateurs et des citoyens, à la protection de l'environnement et de la santé, présentent une très grande complémentarité. La métrologie, les essais, la certification, la mise en application des normes, la protection des consommateurs, la protection de l'environnement et de la santé, le développement de la qualité et de la compétitivité dans les industries, nécessitent une infrastructure technique globale. Ainsi qu'il est exposé ci-après, la métrologie est à la base de cet édifice.

1 Harmonisation, confiance et maîtrise des marchés

Réaliser la libre circulation des produits de consommation exige d'harmoniser les exigences réglementaires des marchés. Un niveau d'exigences réglementaires injustifié est une barrière aux échanges, mais un niveau d'exigences réglementaires anormalement bas introduit une concurrence inégale.

Mais la libre circulation exige aussi que l'on puisse démontrer que les produits satisfont aux exigences des marchés. Les producteurs doivent avoir des moyens aisés de prouver aux autorités des autres pays que leurs produits satisfont aux exigences applicables. Ceci exige *a fortiori* que les producteurs soient en mesure de livrer des produits du niveau de qualité requis, et qu'ils disposent par conséquent d'un accès aux technologies, aux compétences et aux prestations techniques nécessaires.

En ce qui concerne les biens intermédiaires, l'accès aux marchés de pays développés pour des fournisseurs et sous-traitants de pays en développement relève de la même problématique. Les exigences sont alors contractuelles, mais généralement harmonisées par les normes, et la démonstration de conformité est tout aussi nécessaire. L'exigence de compétence et de performance des producteurs de biens intermédiaires est par conséquent également impérieuse.

Par réciprocité, l'ouverture loyale des marchés des pays en développement aux produits des pays industrialisés exige que les niveaux d'exigence réglementaires en vigueur dans les pays en développement soient comparables aux niveaux d'exigence des pays industrialisés, notamment en matière de protection du consommateur, de protection de la santé et de protection de l'environnement.

2 Infrastructure globale

L'alignement des exigences réglementaires et des normes des pays en développement sur les niveaux des pays industrialisés est une action généralement menée dans les programmes de coopération. Mais aligner les réglementations et les normes ne suffit pas à aligner les niveaux effectifs de qualité des produits ni à produire la confiance réciproque dans ces niveaux de qualité. Il est impératif:

- que les industriels soient en mesure de respecter ces exigences techniques,
- qu'ils soient en mesure de démontrer la conformité de leurs produits avec ces exigences,
- que les pays en développement soient en mesure de maîtriser leurs marchés et de contrôler la qualité des produits introduits sur leurs marchés.

L'infrastructure technique existant dans les pays en développement ne permet pas en général d'assurer ces trois conditions. Il est nécessaire que se mette en place dans ces pays une infrastructure adaptée:

- pour apporter aux industriels un soutien technologique en matière de qualité de leurs produits,
- pour dispenser aux personnels des entreprises locales les formations techniques nécessaires au développement de la qualité,
- pour apporter aux entreprises les moyens techniques de démontrer la qualité de leurs produits, ces démonstrations devant être reconnues dans les pays industrialisés,
- pour apporter aux États les moyens techniques de contrôler la qualité réglementairement requise de leurs produits, dans des conditions comparables à celles existant dans les pays industrialisés.

3 La métrologie, discipline de base de la qualité

L'ensemble des disciplines qui contribuent à la compatibilité des marchés et des productions et qui permettent la démonstration de la qualité des produits est généralement désigné par les initiales "MSTQ", en anglais "metrology, standardization, testing and quality". Il faut ajouter à cette contraction les notions d'accréditation et de certification. Cet ensemble de disciplines forme un tout interdépendant et complémentaire.

- La normalisation définit des niveaux d'exigences de qualité auxquels les contrats feront référence. Par analogie, la réglementation, qui s'appuie souvent sur la normalisation, fixe les niveaux d'exigences qualité requises pour accéder aux marchés.
- La certification, volontaire ou réglementaire, des produits, démontre leur conformité aux exigences des normes ou règlements; elle se base sur des essais et des mesures.
- L'accréditation démontre la crédibilité des certifications, des essais et des mesures. Elle est l'outil essentiel de la confiance mutuelle et des reconnaissances mutuelles.
- Les essais donnent des preuves documentées de la conformité aux exigences, qui sont utilisées comme base des certifications. Les essais permettent également aux producteurs de développer leurs produits et de qualifier leurs procédés. Les essais sont fondés sur des mesures.

À la base de tout l'édifice se trouvent donc les mesures et leur discipline, la métrologie. Les mesures doivent être représentatives, fiables, d'une exactitude appropriée, et elles doivent être comparables dans les différents pays et pour les différentes parties intéressées.

4 Les accords de reconnaissance internationaux et leur cohérence

Des organismes internationaux œuvrent pour le rapprochement et la reconnaissance des systèmes nationaux.

- Pour les normes, en particulier l'ISO et la CEI élaborent des normes internationales, généralement reprises par les organes régionaux de normalisation lorsqu'il en existe, ou par les instituts nationaux de normalisation. En matière de réglementation des instruments de mesure, l'OIML élabore des Recommandations Internationales qui sont des modèles de réglementations techniques recommandés aux États.
- Pour la certification de produits et la certification de systèmes de qualité, IAF coordonne les organismes d'accréditation des organismes certificateurs et met en place un accord multilatéral de reconnaissance des accréditations d'organismes certificateurs.
- Pour les essais et les étalonnages usuels, ILAC coordonne les organismes d'accréditation des laboratoires d'essais et d'étalonnage et met en place un accord multilatéral de reconnaissance des accréditations de ces laboratoires.
- Pour les étalons nationaux de mesure, et pour leur mise en œuvre, la Conférence du Mètre et son organe permanent, le BIPM, mettent en œuvre un accord d'équivalence international.
- Pour la certification réglementaire des instruments de mesure, l'OIML mène des travaux en vue d'un accord international de reconnaissance des certifications réglementaires.

L'ensemble de ces accords de reconnaissance permet de démontrer la compatibilité des produits et des exigences des marchés, et forme un système technique cohérent. Afin de permettre l'ouverture réciproque des marchés des pays en développement et des pays industrialisés, et de promouvoir le développement économique de ces premiers, il est essentiel que ces pays aient accès aux accords de reconnaissance évoqués ci-dessus.

5 Les programmes d'aide au développement

Les programmes d'assistance technique aux pays en développement, programmes bilatéraux ou programmes multilatéraux (par exemple le programme MEDA entre l'Europe et les pays méditerranéens), comportent généralement un volet consacré à la qualité et à la normalisation. Le contenu de ces programmes est essentiellement consacré à deux domaines:

- les coopérations industrielles, les partenariats industriels et le développement de centres techniques et de centres de formation dans les pays en développement,

- la mise en place et le développement de systèmes de normalisation, d'organismes d'accréditation et d'organismes de certification dans ces pays.

Cette approche est fondée sur des principes généraux connus et admis par les États et les organismes de développement, et promus notamment par les organismes nationaux et internationaux de normalisation:

- les activités de développement technique des industries et des services à l'industrie relèvent du secteur concurrentiel,
- la normalisation, l'accréditation et la certification sont des activités nécessaires relevant d'organismes d'intérêt général autonomes (généralement associations à but non lucratif pour les deux premiers cas).

Les deux volets ci-dessus se traduisent:

- le premier par des actions d'incitation à l'investissement, à l'ouverture du capital des entreprises, à l'établissement de partenariats industriels,
- le second par des formations et par des actions de nature essentiellement documentaire et organisationnelle (mise en place d'organismes de normalisation, d'accréditation, de certification de systèmes qualité, de formations générales à la qualité). Ces programmes sont souvent conçus et mis en œuvre par les organismes de normalisation des pays industrialisés.

Les actions évoquées ci-dessus sont certes importantes, mais il ne suffit pas de diffuser des normes si les industriels ne peuvent les respecter, ou de mettre en place des organismes d'accréditation si les candidats à l'accréditation ne peuvent matériellement accéder à une accréditation sérieuse.

6 La nécessité d'une infrastructure globale de métrologie

L'importance et la nature de la métrologie sont mal connues de nombre d'opérateurs de l'aide au développement et des administrations nationales. La métrologie comporte trois volets:

- la métrologie industrielle, prestataire de services à l'industrie (étalonnages, conseil, formation),
- la métrologie primaire, qui ne peut être financée que par les États,
- la métrologie légale, qui est un domaine spécifiquement régalien et relève de l'autorité de l'État.

Le développement de l'ensemble des aspects liés à la qualité, à la certification et à l'évaluation de la conformité, nécessite que soit mise en place une infrastructure métrologique dans les pays en développement. Cette infrastructure doit pouvoir bénéficier de reconnaissances internationales. À défaut d'une telle infrastructure, l'accès aux différents accords de reconnaissance internationaux ci-dessus évoqués est difficile, voire impossible.

De plus, cette infrastructure métrologique est indispensable à la maîtrise de leur marché par les pays en développement, donc à une concurrence loyale pour les produits importés sur ces marchés.

Une telle infrastructure doit notamment comporter:

- des laboratoires métrologiques de référence qui peuvent être nationaux pour certains domaines, communs à un groupe de pays pour d'autres domaines,
- un institut national de métrologie assurant, outre le maintien des étalons nationaux pertinents, le rôle de pôle national de compétence en métrologie,
- des moyens matériels appropriés pour les contrôles métrologiques requis par la surveillance du marché,
- selon les besoins de l'industrie, des laboratoires d'étalonnage et des organismes de formation pouvant apporter aux entreprises les prestations d'étalonnage, de conseil et de formation indispensables.

Les trois premières composantes de cette infrastructure doivent être financées, en investissement et en fonctionnement, par les États. La quatrième composante peut nécessiter, pour sa mise en place, un soutien de l'État en matière d'investissement.

Or, à l'heure actuelle, les pays en développement ne disposent pas de ressources budgétaires, ni d'aides suffisantes d'autres États ou d'organismes de développement, permettant de développer ces infrastructures.

7 Le rôle des organismes d'aide au développement et des États

L'Organisation Mondiale du Commerce, qui était à l'origine de l'organisation de ce séminaire, peut appuyer la mise en place de programmes sur la métrologie dans les pays en développement.

Pour sa part, l'ONUDI prend déjà en compte les aspects relatifs à la métrologie dans ses programmes intégrés.

Il est indispensable que l'ensemble des organismes d'aide au développement prennent en compte la nécessité de développer des infrastructures métrologiques dans les pays en développement, comme condition amont du développement de la qualité et de l'ouverture des marchés.

Il est également indispensable que les États eux-mêmes accordent au développement de ces infrastructures métrologiques le degré de priorité qui convient, et que les gouvernements des pays en développement inscrivent la métrologie parmi les sujets essentiels, tant dans les demandes d'aide au développement que dans les actions menées de façon autonome. ■

WTO MEETING

First informal meeting on developing country participation in standard-setting activities and their TBT-related technical assistance needs

WTO, Geneva, 2001.01.23

IAN DUNMILL, BIML

Background

Since May 2000, the WTO's General Council has been examining the concerns raised by various developing countries regarding what they consider to be the inadequate implementation of some WTO agreements. With regard to the Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) and the Agreement on Technical Barriers to Trade (the TBT Agreement), developing countries proposed, *inter alia*, that:

> *"International standard-setting organizations shall ensure the presence of countries at different levels of development and from all geographical regions, throughout all phases of standard-setting."*

On 18 October 2000, the WTO's General Council agreed that WTO Members should consider dealing with this proposal under the TBT Agreement, on the basis of elements similar to those identified for the SPS Agreement, which were as follows:

1 encouraging international standard-setting organizations to ensure the participation of Members at different levels of development and from all geographic regions, throughout all of standard development;
2 requesting the Director-General to explore, with relevant international standard-setting organizations and intergovernmental organizations, financial and technical mechanisms to assist the participation of developing countries in standard-setting activities;
3 requesting the Director-General to coordinate efforts with relevant international standard-setting organizations to identify SPS-related technical assistance needs and how best to address these, taking into consideration the importance of bilateral and regional technical assistance in this regard; and
4 requesting the Director-General to make a progress report on his initiatives regarding elements 2 and 3 above to the General Council at its Special Session in December 2000.

The WTO's Director-General, Mike Moore, thus decided to convene informal meetings with the relevant organizations in order to identify ways of facilitating developing country participation in standard-setting activities addressing their technical assistance needs. The WTO does not have a list of "international standard-setting organizations", but the OIML was invited to participate in these meetings as an organization which has observer status in the TBT Committee.

The meeting

The first meeting was chaired by Paul-Henri Ravier, Deputy Director-General of the WTO and was attended by representatives of the following organizations:

FAO	(Food and Agriculture Organization of the United Nations)
IEC	(International Electrotechnical Commission)
ISO	(International Organization for Standardization)
ITC	(International Trade Center)
OECD	(Organization for Economic Cooperation and Development)
UN/ECE	(United Nations Economic Commission for Europe)
UNIDO	(United Nations Industrial Development Organization)
WHO	(World Health Organization)

as well as by Jean-François Magaña and Ian Dunmill representing the OIML.

Since this was the first meeting of this group, the various organizations involved introduced themselves and explained how developing countries were encouraged to participate in their activities. They also highlighted problems which they encountered in trying to improve developing country participation, such as:

- The difficulties faced by developing countries in identifying appropriate projects of interest and relevance, given the quantity of projects in progress within some organizations;

- The existence of conflicting requirements within different organizations;
- The prohibitive cost of participation in standard-setting activities;
- The difference between participation in standard-setting activities and implementation of standards by developing countries;
- Although use of e-mail and Internet makes it easier to comment on documents, attendance at meetings is still required if a case is to be effectively argued;
- The difficulties in obtaining information on needs from developing countries.

Some of the solutions to improve participation, which are currently employed by various organizations were explained to be as follows:

- "Twinning" of committee secretariats between industrialized and developing countries;
- Compulsory distribution of secretariats on a geographical or developmental basis;
- Use of e-mail and Internet to make participation more accessible;
- Simplification of processes;
- The establishment of a trust fund to enable developing country participation and attendance at meetings, requiring a certain minimum domestic effort in order to benefit from such aid;
- Regional cost sharing initiatives.

The representatives of the WTO then asked the organizations present to supply them with responses to a questionnaire which they had prepared. The information sought included the following:

- The extent to which developing countries are present at relevant meetings and contributing to the process of standards development;
- The reasons for, or problems causing limited participation;
- Current or planned activities to increase developing country participation;
- Assistance to developing countries concerning needs assessment and prioritization;
- Ways in which coordination and cooperation between relevant organizations (including regional and national bodies) may be improved;
- Financial considerations;
- Ways in which the provision of information to developing countries may be improved.

Conclusions

The WTO is to compile the information supplied by organizations in response to the above-mentioned questionnaire in order to prepare a report which will be presented to potential donor organizations, who have already been approached concerning their participation. ■

REPORT

Presidential Council Meeting

BIML, 2001.02.19–20

The Presidential Council, the composition of which was significantly modified following the 35th CIML Meeting in October 2000, met at the BIML on Monday 19 and Tuesday 20 February 2001.

Introduction

Mr. Faber welcomed the participants and reminded them of the role of the Presidential Council in preparing OIML long-term policy and financial and technical matters, with a view to their approval by the CIML or OIML Conference. He indicated that he had given specific responsibilities to the two Vice-Presidents: developing countries and certification to M. Kochsiek and technical work to L. Issaev. He pointed out the increasing role of regional legal metrology organizations and underlined the fact that practically all regions were now represented at the Presidential Council.

He then asked the BIML Director to rapidly review the decisions made in October 2000 by the Conference and the CIML in order to make sure that all the relevant decisions would be duly considered during this Presidential Council meeting.

The financial situation of the Organization was examined and found to be satisfactory - as was the membership which is increasing, the OIML comprising a total of 109 Members (57 Member States and 52 Corresponding Members) at the time of the meeting. The situation of certain Members which are very late in the payment of their contributions or subscriptions was examined and instructions were given to the BIML Director to try to solve the problem. The composition of the staff of the Bureau was also rapidly examined.

Participation

G. Faber	CIML President
M. Kochsiek	CIML First Vice-President
L. Issaev	CIML Second Vice-President
G.E.M. Annabi (Mrs)	Chairperson, Development Council
B. Beard	Council Member
C. Ehrlich	Council Member
H. Imai	Council Member
A. Johnston	Council Member

Messrs. Li Zhonghai, Liu Xinmin, and Han Jianping represented Mr. Li Chuanqing, Council Member.

BIML staff

B. Athané	Director
J.F. Magaña	Appointed Director
A. Szilvássy	Assistant Director
I. Dunmill	Assistant Director
C. Pulham	Editor
E. Weber	Engineer

Agenda

1 Opening by President Faber - Attendance list - Adoption of the agenda
2 Review of the decisions of the Eleventh Conference/ 35th CIML Meeting and their implementation
3 The financial situation of the Organization - Membership - The situation of certain Members
4 Staff of the Bureau
5 Review of the Action Plan: implementation and possible amendments/extension
6 Review of technical activities (including certification activities under the responsibility of TC 3/SC 5 and horizontal matters: uncertainty, calibration/ verification, etc.
7 MAA on type evaluation test results
  7.1 Examination of comments received from certain CIML Members
  7.2 Review of the analysis made by J.F. Magaña
  7.3 Views expressed by Council Members
  7.4 Conclusions
8 IQ mark
  8.1 Examination of comments received from certain CIML Members
  8.2 Views expressed by Council Members
  8.3 Conclusions
9 Meter Convention/ILAC/OIML joint meeting - Examination of the proposed agenda - Views of Council Members concerning the items to be discussed
10 Preparations for the 36th CIML Meeting
11 Other matters
  11.1 Workshop on the long-term evolution of legal metrology
  11.2 Market surveillance
  11.3 Inter-relations between the OIML and European bodies
  11.4 Priorities
  11.5 RLMOs
12 Next Council Meeting
13 Closure

Presidential Council Members. *Left to right*:
Li Zhonghai, B. Athané, A. Johnston, C. Ehrlich, G. Faber, M. Kochsiek, G.E.M. Annabi (Mrs), L. Issaev, J.F. Magaña, H. Imai, B. Beard

Action Plan

The 1999–2002 Action Plan which had been developed by the Presidential Council, approved by the CIML and endorsed by the Conference was reviewed point by point. It was found that certain deadlines should be changed owing to specific problems in the achievement of related actions. Working groups responsible for certain other actions were also reestablished in order to take into consideration changes at CIML/BIML levels. A number of new or extended actions were also identified and the BIML Director was requested to prepare a draft action plan covering also the years 2003–2004 and to submit it to the Presidential Council before its possible approval by the CIML.

Technical activities

Mr. Szilvássy summarized the technical activity of OIML TCs and SCs during 2000 and plans for 2001. It resulted from the annual reports that this technical activity was slightly greater than over the two last years. Certification activities were developing satisfactorily. Horizontal activities, of interest to all TCs/SCs, were also examined in fields connected with e.g. uncertainty, software, calibration versus verification, etc.

MAA on type evaluation test results

Mr. Ehrlich summarized the result of the postal consultation of TC 3/SC 5 P-members concerning the 7th Committee Draft on an OIML Mutual Acceptance Arrangement. Participants were also informed of the results of the inquiry carried out by the BIML amongst all CIML Members in order to know their views concerning the feasibility of an OIML MAA and their intent to sign it and to actually participate in such an arrangement. Mr. Magaña also presented his views concerning various possibilities of using OIML certificates and/or associated test reports to issue national type approvals. After a long discussion it appeared that only accreditation or peer assessment should be used to prove competence of test laboratories and bodies which issue OIML certificates. Self declaration of capabilities of laboratories should be a component of accreditation or peer assessment but could not be considered as sufficient by itself. TC 3/SC 5 was requested to pursue its activity on this basis and the urgent need for an OIML MAA was underlined.

IQ mark

Mr. Ehrlich summarized the results of the postal consultations amongst P-members of TC 6 and all CIML Members concerning (i) the current draft revision of R 87 - which includes as an annex a proposal to establish an international mark (IQ-mark) which would certify that prepackages have been filled and checked following the relevant OIML requirements and (ii) the general feasibility of such a mark, in particular its compatibility with the existing e-mark. It was found that TC 6 should continue its work on both the revision of R 87 and the establishment of an IQ-

mark - however the two topics should be separated, the IQ-mark being the subject of an individual work project. It was also concluded that if for the time being an IQ-mark could coexist or supersede the current e-mark, the situation might change within some years following a reexamination of this e-mark by the European Commission.

Meter Convention/ILAC/OIML joint meeting

The Presidential Council examined the proposed agenda for this joint meeting (BIML, 21 February 2001) and Council members presented President Faber their views concerning the items to be discussed.

Preparations for the 36th CIML Meeting

Mr. Issaev gave information concerning the current state of preparations for this Meeting and the proposed agenda. In addition to the CIML Meeting on Tuesday 25–Thursday 27 September, a Development Council Meeting will take place on Monday 24 and Tuesday 25 morning.

Long-term evolution of metrology and market surveillance

Mr. Magaña developed his views concerning the organization - if possible in February 2002 - of a workshop intending to evaluate the possible developments of legal metrology during the next fifteen years. This workshop should closely associate experts from national legal metrology services, representatives of regional legal metrology organizations, manufacturers and users of measuring instruments, consumer associations, etc. One important topic would be market surveillance since there may be a need for metrology to focus less on type evaluation and more on verification and supervision of measuring instruments in use.

Inter-relations between the OIML and European bodies

This matter was examined in depth. Obviously it is necessary to make sure that the future European Directive on measuring instruments will be such that European countries may continue to fulfill their obligations as OIML Members and WTO members (OIML Recommendations being considered as international standards in the framework of the WTO/TBT Committee activities). It is also appropriate to ensure good technical relations between the OIML and CEN/CENELEC which may be considered as regional legal metrology standardizing bodies owing to the possibility for the European Commission to mandate them with a view to developing European standards giving presumption of conformity to the metrological requirements in the MID. However this cooperation between the OIML and European bodies shall not be detrimental to the cooperation with other regions and shall not create additional burden or costs to be born by the OIML Member States as a whole. In this connection, the development of "normative documents" based on existing OIML Recommendations to give presumption of conformity to the MID requirements should not be the responsibility of the BIML.

Conclusion

In line with CIML policy, information concerning this Presidential Council is hereby communicated to all CIML Members via the OIML Bulletin. In addition a report will be delivered by President Faber at the next CIML Meeting which will be preceded on Sunday 23 September by a brief Presidential Council Meeting. ■

During the Presidential Council meeting, Lev Issaev congratulated Manfred Kochsiek on his 60th birthday

Meter Convention | ILAC | OIML

PRESS RELEASE

Joint Meeting (BIML, 21 February 2001)

A total of 14 persons - made up of the Presidents, Vice-Presidents, Steering Committee Secretaries, Council Members and Bureau Directors - representing the Meter Convention, the International Laboratory Accreditation Cooperation (ILAC) and the International Organization of Legal Metrology met at the OIML headquarters in Paris on Wednesday 21 February 2001 in order to discuss matters of common interest and initiate joint actions whenever appropriate. Many of the participants are also active within other international or regional bodies such as IMEKO, the Asia-Pacific Metrology Program or the European Accreditation Cooperation.

Meter Convention/OIML meetings have been held annually for some five years, with a view to developing cooperation between the two intergovernmental metrology organizations as an alternative to a merger, which has transpired not to be feasible at least for the next five or ten years. The necessity to associate ILAC in these meetings has increasingly become clear, owing to the role of metrology as a technical basis for accreditation and to the increasing cooperation between ILAC and both the BIPM and the OIML in many fields.

The meeting began with brief descriptions of the major events that had taken place within each of the three organizations since the previous meeting (23 February 2000). Information was also given concerning the activity within the Joint Committee for Guides in Metrology (JCGM) in which eight international bodies cooperate: BIPM, IEC, IFCC, ILAC, IUPAC, IUPAP, ISO and OIML, to maintain and develop a joint vocabulary on metrology and a guide on measurement uncertainty.

Participants then examined those activities that are currently carried out within one organization which might influence activities within the other two (or one). The CIPM and ILAC Mutual Recognition Arrangements are obviously interrelated (the equivalence of national measurement standards and the recognition of calibration and measurement certificates issued by National Metrology Institutes being a necessary basis for the mutual recognition of national accreditation systems) and a CIPM/ILAC Memorandum of Understanding is being discussed. These MRAs will also have an influence on the future OIML Mutual Acceptance Arrangement on the recognition of test results associated with OIML type evaluations. In the same way, the accreditation of laboratories that perform legal metrology evaluations and tests is a topic of common interest for ILAC and the OIML.

Another subject of a common and urgent nature is the development of a model law on metrology that would deal with the role of National Metrology Institutes and National Legal Metrology Services in the maintenance of national measurement standards, traceability matters, calibration services, technical basis for the accreditation of testing and calibration laboratories, control of measuring instruments subject to regulations, etc. This model law would also give guidance for the establishment of national metrology infrastructures. It was decided to create a working group of

six experts (two from each organization) to prepare a proposal.

Assistance to developing countries in the establishment of sound metrology, legal metrology and accreditation bodies was also identified as a priority action; ILAC and OIML will start their cooperation in this field and the BIPM will be kept informed of any progress but will not be able to participate in this work - at least for the time being.

After the success of the International Seminar on the *Economic and Social Role of Metrology* held in Germany in June 1998, efforts have been made by the BIPM to find a country willing to organize a follow-up seminar in close cooperation with the BIPM, the OIML and ILAC. It is hoped that a solution will be found for 2002 at the latest.

The current development of the ISO standard 17011 - which might affect the role of certain National Metrology Institutes - and the possibility for the three organizations to cooperate in order to find acceptable solutions was discussed.

The next meeting between the three organizations will be held in February 2002 at the BIPM. ■

Paris, 23 February 2001

PRESIDENTS MEET AT THE BIML

Left to right:	Dr. K. Iizuka	Immediate Past-President, IMEKO
	Prof. J. Kovalevsky	President, CIPM
	Mr. G. Faber	President, CIML
	Mr. M. Peet	President, ILAC
	Dr. H. Imai	President, APMP

ANNOUNCEMENT AND CALL FOR PAPERS

International Conference on Metrology

celebrating the 50th Anniversary of the Romanian National Institute of Metrology

BUCHAREST, 18–20 SEPTEMBER, 2001

ORGANIZED BY:
- MINISTRY OF TRADE AND INDUSTRY
- NATIONAL INSTITUTE OF METROLOGY
- ROMANIAN BUREAU OF LEGAL METROLOGY
- ROMANIAN MEASUREMENT SOCIETY

Aims of the Conference

The Conference is intended to be a forum for discussing the new role of metrology in a changing society, as well as a venue for the latest developments in theoretical and applied metrology. The organizers welcome contributions from authors regarding the following topics, though other topics connected with metrology in a broad sense will also be considered:

- theory of measurement
- measurement standards and realization of the measurement units
- measurement principles and methods
- new developments in measuring instruments
- metrology in chemistry
- automation of the measurement processes
- virtual instrumentation
- new approaches in legal metrology
- MRA and the future of metrology
- metrology as a service to industry, calibration, accreditation

Preparation of abstracts and papers

The abstracts of the contributions to the Conference, of maximum 1 page, should make clear the scope and the contribution of the paper. The full papers, of maximum 6 pages, should contain the title (not exceeding 12 words), names and affiliations of the authors, address, phone, fax and e-mail of the contact person (one of the authors), a short abstract (maximum 10 lines of text), introduction, presentation, conclusions and references. The papers should be sent in digital form, in MS Word 97 or Word Perfect 8 format (or earlier versions), on 3.5" diskettes or as an e-mail attachment (max. 2 MB).

Detailed instructions regarding the presenting of the full paper will be provided to the authors together with the acceptance of the contribution. Sufficient and uniform editing of papers by authors is important for the subsequent printing of the Conference Proceedings. The abstracts, full papers and other correspondence should be written in English and addressed to the secretariat of the Conference, by fax, mail or e-mail.

Deadlines

Abstracts:	15 March 2001
Full papers:	15 June 2001

Registration fee

The registration fee for the Conference is USD 100, payable at the Conference desk on the opening day.

This fee includes the admission to the Conference sessions and the cost of a copy of the Conference Proceedings.

Arrival and accommodation

Participants may either take a taxi, a limousine (shuttle) or City Bus No. 783 from Bucharest Otopeni International Airport to their hotel.

Hotel rooms can be booked in advance, by writing to the Conference Secretariat at least three months before the date of arrival.

Additional program

During the Conference a measuring instrumentation exhibition will be organized.

Technical visits to places of interest and to the National Institute of Metrology, as well as a guided City tour will also be included in the program. ■

Correspondence

The address for additional information and other correspondence is:

International Conference on Legal Metrology

Secretariat:

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75669 Bucharest 4, Romania
Phone: +40-1-334 55 20
Fax: +40-1-334 53 45
E-mail: conference@inm.ro

A brief history

In 1883, Romania adhered to the Meter Convention. In 1889 the Central Service of Weights and Measures was created and operated up to 1951; afterwards, legal metrology was entrusted to the General Directorate for Metrology, Norms and Inventions, and later to the General State Inspectorate for Quality Control, until 1990. Scientific and industrial metrology were institutionalized on September 16, 1951, by the foundation of the Institute of Metrology, which became the National Institute of Metrology (INM) in 1971. Its main mission is the assurance of the scientific basis for the accuracy and conformity of measurements. In 1992 new legislation on standards and metrology was issued, according to which the Romanian Bureau of Legal Metrology (BRML), a newly created specialized public institution, is responsible for coordinating Romanian metrology.

CALL FOR PAPERS

What will Legal Metrology be in the Year 2020 ?

Workshop

Legal metrology must not only react to profound changes in the needs of society, technology, administrative organization, political structures and priorities, but also it must adapt to international globalization.

In the first part of 2002, the OIML intends to organize a Workshop related to the long term fundamental evolution of legal metrology. This Workshop will be open to OIML Member States and Corresponding Members, to other interested organizations and to industry and will allow participants to exchange views on the major trends in legal metrology and to consider these views in the context of their own national policy. Some of the issues which could be addressed are listed below.

Scope of legal metrology

New fields of measurement are developing in trade, safety, the environment and law enforcement. In parallel, many countries are endeavoring to reduce both State intervention and the number of regulations in force. What will be the implications on regulations resulting from these two contradictory considerations?

New technologies and information technologies

New technologies make it possible to record and process measurement results in remote databases, and so measuring instruments may become just one of the functions of complex systems. What will remain of the current notions related to such instruments and how should legal metrology adapt to this? Will manufacturers of measuring instruments still exist as such?

Role of the State

A general trend in many countries is to contract most technical activities out to specialized independent bodies while the authorities play a role of orientation, monitoring and surveillance. What will a legal metrology department look like in twenty years?

Future of legal metrology technical bodies

Legal metrology bodies in charge of technical evaluations are increasingly private or semi-private. At the same time, mutual recognitions result in a reduction in their volume of activity and in their specialization. Will these bodies become trans-national? Will they be replaced by an international network of technical bodies? What will be the consequences of this evolution? How will States monitor these bodies?

Conformity assessment and market surveillance

Due to the technical evolution of instruments and to the development of quality assurance procedures, conformity assessment of instruments is achieved partially by means of third party evaluation and partially from the liability of the manufacturer. A third party ensures more impartiality, whereas the manufacturer may assure a better control over the conformity. How will this balance evolve?

What should State market surveillance activities be, and what should be placed under surveillance?

Legal metrologists, experts from organizations linked with legal metrology and experts from industry may send proposals of presentations for this Workshop, in the form of a short abstract, before September 15th, 2001. These proposals should be sent to:

Bureau International de Métrologie Légale
11, rue Turgot, F-75009 Paris
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OIML Member States and Corresponding Members are invited to circulate this call for papers within their country to all interested parties and to industry.

The proposals of presentations will be examined in September 2001 and the date and program of this Workshop will be finalized in October.

OIML

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The OIML is pleased to welcome the following new

Corresponding Members

Benin

Gabon

Malta

OIML Meetings

June 2001

22–23 TC 17/SC 1 Humidity (Venue to be confirmed) GERMANY

September 2001

22–27 36th CIML and Development Council Meetings MOSCOW

October 2001

9–10 TC 8/SC 5 Water meters (Date to be confirmed) BRUSSELS

Committee Drafts

received by the BIML, 2000.11.01 – 2001.01.31

Revision R 82:	Gas chromatographic systems for measuring pollution from pesticides and other toxic substances	English	2 CD	TC 16/SC 3	USA
Revision D 9:	Principles of metrological supervision	English	1 CD	TC 3/SC 2	Czech Rep.
Revision R 87:	Net quantity in prepackages	English	2 CD	TC 6	USA
R 99 / ISO 3930:	Instruments for measuring vehicle exhaust emissions. Part X: Test report format	English	1 CD	TC 16/SC 1	Netherlands
Revision R 48:	Tungsten ribbon lamps for calibration of radiation pyrometers	English	1 CD	TC 11/SC 3	Russia
R 49-2:	Water meters intended for the metering of cold potable water. Part 2: Test methods	English	2 CD	TC 8/SC 5	UK
-	Check lists for Issuing Authorities and testing laboratories carrying out OIML type evaluations	English	1 CD	TC 3/SC 5	USA
-	Measuring systems for gaseous fuel	English	2 CD	TC 8/SC 7	Belgium/France
-	Compressed gaseous fuel measuring systems for vehicles	English	2 CD	TC 8/SC 7	Belgium/France