

LEGAL METROLOGY

NIST/Office of Weights and Measures (OWM)

Carol Hockert, Chief

Carol.hockert@nist.gov

www.nist.gov/owm

SIM Metrology School

November 1, 2013

Learning Objectives

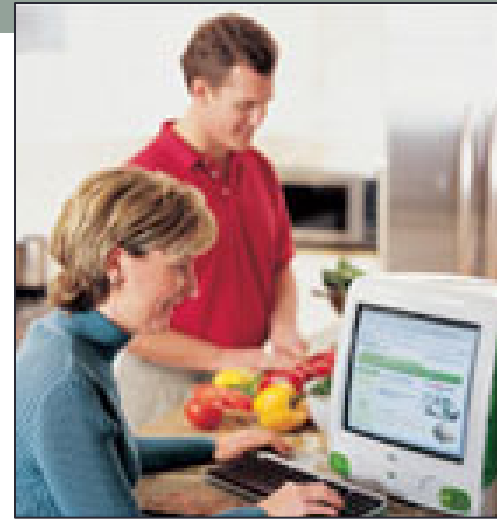
- At the end of this session and using your notes, you will be able to:
 - Define Legal Metrology;
 - Provide examples of legal metrology applications and measuring instruments;
 - List some roles that government plays in legal metrology; and
 - Describe the benefits of harmonized legal metrology standards.

Legal Metrology

- Definition: The practice and process of applying statutory and regulatory structure and enforcement to metrology.
 - Commerce
 - Law Enforcement
 - Environment
 - Health/Safety

Commerce: Goods sold by measure

- Buyers and Sellers
- National and International Trade
- Retail & Wholesale
- Impact:
 - Consumers
 - Industry
 - Manufacturers
 - Businesses



Law Enforcement

- Defendable actions in a court of law
- Forensics
- Impact:
 - Citizens
 - Law Enforcement Officials
 - Courts

Manual and Automated Speed Enforcement



Serial nr:	lane 1	lane 2	lane 3	GATSO	lane 4	Location:	Date:	Time:
	● 2.3 ● 23.0	● 0.0 ● 23.0	● 0.0 ● 23.0			GUAS3N2001	2013-01-28	01:24:49.757
nr	Lane	Date	Time	Offence Type	Speed	OffenceInfo	Elapsed	
2774	3	2013-01-29	02:02:49.740	speed	68 km/h		0.014	

Breath Alcohol Testing

Intoximeter tests drivers for drunkenness. Below, Trooper Sam MacIntire of the East Lansing, Mich., post gives the test to a fellow officer who simulates a drunken driver.



Environment

- Water
- Air
- Soil

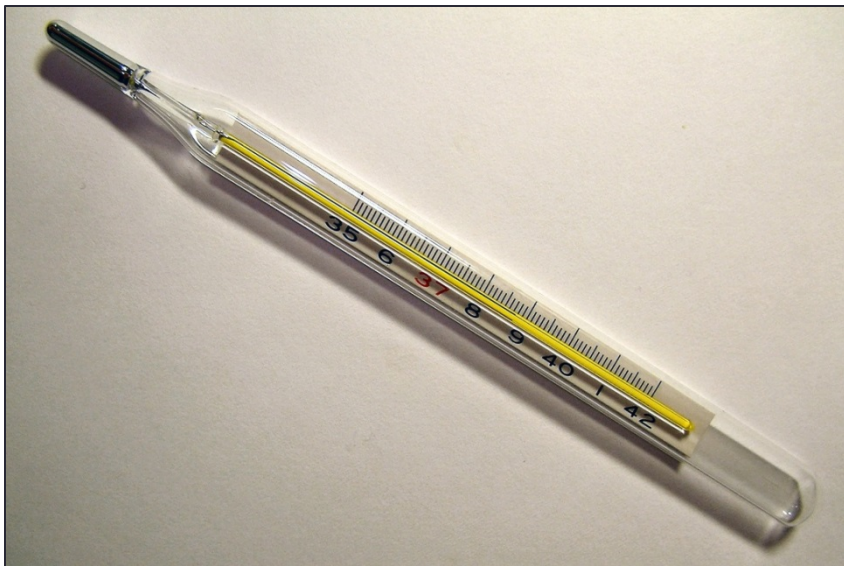
- Impact:
 - Citizens
 - Industry
 - Manufacturers



Health and Safety

- Medical field
- Building codes
- Impact:
 - Doctors
 - Hospitals
 - Citizens

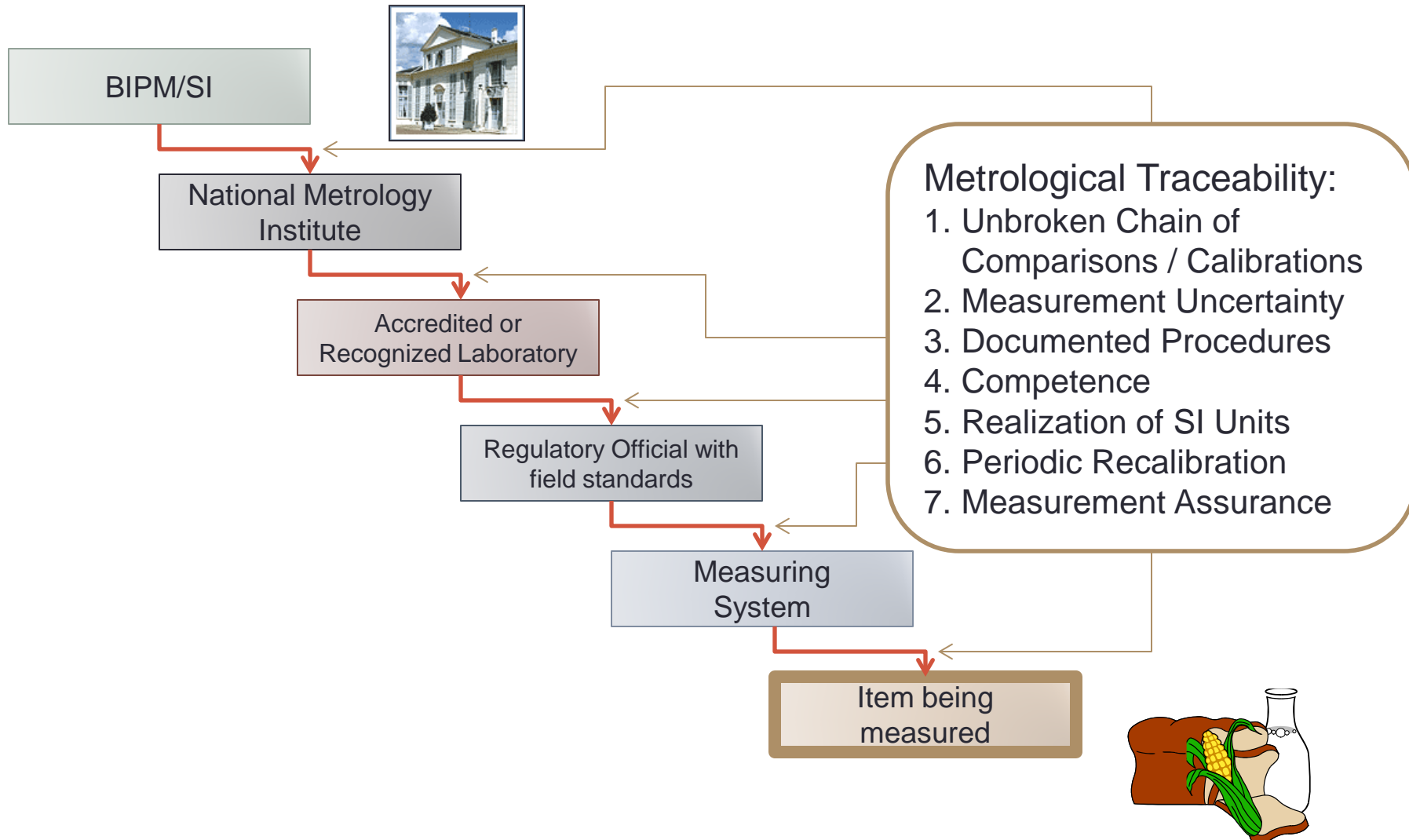
Medical Thermometer and Monitoring Systems



Sphygmomanometers



Metrological Traceability Hierarchy



Legal Metrology

- Legal Metrology encompasses all legislative, administrative, and technical procedures which work to ensure measurement quality and credibility.
 - Focuses on the need for confidence and equity in measurements.
 - Specifies performance requirements for measuring instruments.

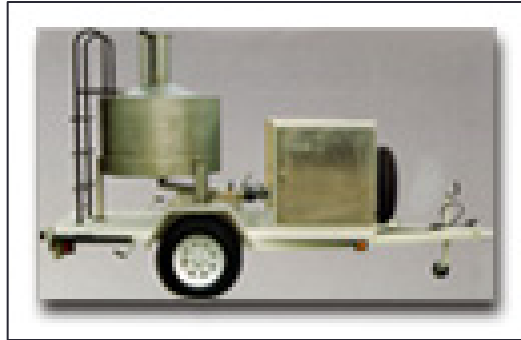
Measuring Instruments

- Scales
- Meters
- Measuring systems
- Medical devices
- Radar
- Many others



Elements of Metrological Control

- Pattern (Type) Evaluation
- Initial Verification
- Subsequent Verification



Main Roles of Government in Legal Metrology

- Enforcement
 - Compatible units
 - Measurement standards
 - Traceability
- Accreditation systems
- Research
- Training
- Information

Laws and Regulations

- Must define:
 - Scope of regulation
 - Powers of regulatory officials regarding right of access, actions
 - Surveillance
 - Legal Units of Measurement
 - Responsibilities
 - Procedures
 - Offences
 - Financial Provisions

Benefits to Society of a Well-written Law on Metrology

- Reduced disputation and transaction costs;
- Consumer protection;
- Level playing field for commerce;
- Control of fraud;
- Full collection of taxes (when based on measurement);
- Full national benefit for commodity export; and
- Support of trade in measuring instruments.

Regional Legal Metrology Organizations

- SIM (Americas)
- WELMEC(Western Europe)
- APLMF (Asia-Pacific)
- MENAMET (Middle East/North Africa)
- SADC MEL (Southern Africa)
- COOMET (Eastern Europe)

International Organization of Legal Metrology (OIML)

- International Conference on Legal Metrology
- International Committee of Legal Metrology (CIML)
- Technical Committees and Subcommittees (TCs and SCs)
- Project Groups (PGs)
- International Bureau of Legal Metrology (BIML)

OIML Objectives

- Harmonize national laws and regulations on performance of measuring instruments.
- Facilitate international commerce of measuring instruments and affected products.
- Ensure quality measurements for public and worker health and safety and protection of the environment.
- Harmonize national procedures for testing and verifying the performance of measuring instruments.

Scope of OIML Activities

- 59 Member States (voting)
- 67 Corresponding Members (nonvoting)
- 18 Technical Committees
- 44 Technical Subcommittees
- 109 Current Work Projects
- 114 Recommendations
- 27 Documents
- 20 Other Publications (including Vocabularies and Bulletin)

National Working Groups

- Manufacturers (Trade Associations)
- Regulators (Federal and State)
- Users

Benefits of Harmonization

- Increased international trade
- Reduced costs for manufacturers
- Quality products/measurements for society

New Technologies

Examples:

- Electric Vehicle Charging
- Hydrogen Cars
- Taxis using GPS as a basis for charging fees
- Compressed Natural Gas Vehicles

Needs:

- Method of Sale
- Documentary Standards
- Laws and Regulations
- Test Standards
- Test Methods
- Training

Summary

- Legal Metrology is:
 - Applying regulation/enforcement to metrology
- Examples of its application:
 - Trade and Commerce
 - Healthcare
 - Law Enforcement
 - Environment

Summary

- Role of Government in legal metrology:
 - Enforcement
 - Traceability
 - Standards
 - Training
- Benefits of harmonized legal metrology laws and regulations:
 - Increased trade
 - Cost savings to manufacturers/industry
 - High quality products

Resources

- www.nist.gov/owm
- www.oiml.org
- www.bipm.org

NIST/Office of Weights and Measures (OWM)

Carol Hockert, Chief

Carol.hockert@nist.gov