

Metrology—science of measurement

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Metrology is the science of measurement, which comprises both experimental and theoretical measurements and determinations at any level of uncertainty in any field of science and technology. The intricate and mostly invisible networks of services, suppliers and communications upon which we are all dependent, rely on metrology for their efficient and reliable operation.

Wrong or inaccurate measurements can lead to wrong decisions, which can have serious consequences, costing money and even lives. The human and financial consequences of wrong decisions based on poor measurement being taken in matters as important as environmental change and pollution, are almost incalculable.

The earliest systems of weights and measures were based on human morphology. The names of units often referred to parts of the body: the inch, the hand, the foot, and the yard or cubit corresponded to dimensions of the human body.

One of the first such natural measures was the metre, which was defined in a decree of the French National Assembly (7 April 1795) as being equal to the ten millionth part of one quarter of the terrestrial meridian.

Traceability means that the result of a measurement, no matter where it is made, can be related to a national or international measurement standard, and that this relationship is documented [1].

In measurement science, the word 'standard' is used with two different meanings: first, as a widely adopted specification, technical recommendation or similar document; and, second, as a measurement standard [1].

Legal metrology, as represented by the work of the International Organization of Legal Metrology (OIML) is

concerned with the chain of measurement traceability that directly affects consumers.

The World Meteorology Organization (WMO)[2] regularly attends meetings at the BIPM concerned with radiometry as they have a specific interest in solar radiance and ozone measurements.

World-wide trade necessitates world-wide measurements. If measurements made by an exporter are not recognized and accepted by importers, the measurements may have to be repeated to conform with local requirements for traceability [3].

The international metrology community is, for example, making good progress in understanding and reducing the uncertainties associated with many common medical measurements such as cholesterol in blood or the reliable detection of heart disease markers such as troponin [2].

On 20 May 1875, 17 States became the founding Members of the Metre Convention. The date is now celebrated as World Metrology Day [3].

It is clear that the best route for any economy to prosper in the global market place is to improve the international competitiveness of its manufacturing industry and, thus, to make contribution to metrology.

Bibliography:

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