Weighs and Measures, A Tribute

In the course of human history, WEIGHTS and MEASURES has been proven to be an indispensable necessity for life on this planet. From the time you were weighed at birth, to the measure of embalming fluid used before you are buried. Everyday life “requires” this process to keep our society strong. The majority of people take for granted that everything we purchase, or use, is accurate and correct.

So who does this? Who are the ones in society that “regulate” this? You are, the Weights and Measures Inspector.

In the world of Weights and Measures, we few, select individuals are charged with the responsibility of keeping this essential process running. We come from all walks of life, with the one unified goal, EQUITY. Equity needed to “maintain a reasonable or accustomed standard of living.” Basically, we are men and women who are dedicated to what is fair. Our jobs are not only to protect the consumer from an unscrupulous retailer, but to assure that the mega manufacturer isn’t selling themselves short. You are the only individuals who truly possess and understand the complexity.
of this process. You are the Weights and Measures Inspector. To you, inspecting is not simply “pump and dump” or “pass or fail”. To you, it is a measure of pride in doing what is right, and what is expected. Plus, you continue to grow by obtaining the necessary knowledge to accomplish your never ending, ever changing, and oft times thankless mission. So to all that have come before, and to all that hold, and will hold the title of WEIGHTS and MEASURES INSPECTOR, I raise my glass (12 oz) and offer up a toast, “to Equity in the marketplace” brought to you by (drum roll please) The Weights and Measures Inspectors across the globe! Hang in there, and I for one, salute you.

NIST, Office of Weights and Measures would like to thank Ivan for his contribution to Weights and Measures Week and for allowing us to publish his work.


In August 2012, the National Institute of Standards and Technology (NIST), Office of Weights and Measures (OWM) formed the U.S. National Work Group on Measuring Systems for Electric Vehicle Fueling and Submetering (USNWG EVF&S) to develop proposed requirements for commercial electricity - measuring devices (including those used in sub-metering electricity at residential and business locations and those used to measure and sell electricity dispensed as a vehicle fuel) and to ensure that the prescribed methodologies and standards facilitate measurements that are traceable to the International System of Units (SI). This work is not intended to address utility metering in the home or business where the metered electricity is consumed by the end purchaser and falls under the authority of entities such as the local utility commission.

On August 29, 2012, the USNWG held its first meeting via web conference. During this meeting, USNWG administrative issues and structure were covered.

In November 2012, OWM prepared and distributed draft proposals for method of sale requirements (for inclusion in NIST Handbook 130, Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality) and a device code (for inclusion in NIST Handbook 44, Specifications, Toler-
ances, and Other Technical Requirements for Weighing and Measuring Devices) to USNWG members.

Based on comments received, OWM prepared updated drafts of these proposals and distributed them at a second USNWG meeting held January 15 - 17, 2013, at NIST in Gaithersburg, Maryland. Of the 39 total attendees, 21 attended in person, while 18 attended online. Attendees included representatives from:

- vehicle charging equipment and electric meter manufacturers,
- state and local weights and measures jurisdictions,
- energy distribution companies and service providers,
- national laboratories,
- technical committees (e.g., the ANSI C12 Chair),
- standards organizations (i.e., UL and NEMA), and
- NIST, OWM and NIST Smart Grid Interoperability Panel.

After reviewing and revising the method of sale proposal during the meeting, the USNWG voted 12 to 1 to recommend to the National Conference on Weights and Measures (NCWM) Laws and Regulation (L&R) Committee that the proposal be presented for voting. The USNWG recognized that some members need to further vet the revised proposal within their organizations, but expects this process to be complete within the next few weeks. Any changes would be forwarded to the L&R Committee in time for inclusion in the NCWM Publication 16. The USNWG will continue its review of the device code at its next meeting, which will be scheduled via web conference in the near future.

During the meeting, a subcommittee to develop methods and equipment needs for field testing electric vehicle (EV) charging devices was also formed. The USNWG encourages review and input on the draft MOS proposal as well as the draft device code.

Additional information can be obtained from the Technical Advisor, Mr. Marc Buttler, NIST, OWM telephone: (301) 975-4615; e-mail: marc.buttler@nist.gov, or the work group; or the work group Chair, Ms. Juana Williams, NIST, OWM telephone: (301) 975-3989; e-mail: juana.williams@nist.gov.

The Office of Weights and Measures will gladly include your weights and measures related events in our calendar.

Contact the Editor: Linda.Crown@nist.gov
NIST Launches New Website to Educate Industry About Alternatives to Mercury Thermometers

Byline: Mark Esser, NIST

As part of a larger effort to reduce the amount of mercury, a potent neurotoxin, in the environment, the National Institute of Standards and Technology (NIST) has launched a new website (www.nist.gov/pml/mercury.cfm) to help industry scientists and engineers decide the best temperature measurement alternative for their purposes. The website also includes information about myths pertaining to mercury and temperature measurement and how to safely package and recycle mercury-containing products.

NIST stopped providing calibration services for mercury thermometers on March 1, 2011. This was motivated in part by NIST’s work with the Environmental Protection Agency to eliminate as many sources of mercury in the environment as possible.

According to Greg Strouse, leader of NIST’s temperature, pressure and vacuum programs, mercury thermometers are neither a superior nor a standard method for measuring temperature.

“We haven’t used mercury thermometers as a calibration standard since 1927 when the platinum resistance thermometer standard was adopted,” says Strouse. “Our goal with this new website is to show that there is a temperature-sensing technology that will satisfy their needs as well as, or better than, a mercury thermometer, all without the added liability of containing a neurotoxin that is hugely expensive to clean up if released into the environment.”

According to NIST researcher Dawn Cross, industrial scientists commonly object to replacing their mercury thermometers because they have grown accustomed to getting the same answer from their mercury thermometers over the years, even if it is less accurate than can be provided by modern digital thermometers.

“Some people who are used to using mercury thermometers think that they define temperature, and this simply isn’t true,” Cross says. “Graduations on a piece of glass filled with a fluid can never give as accurate a reading as a digital thermometer, based on how the conductivity of metals change as a function of temperature, something we know and can characterize very, very well.”

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Cross points out that other thermometers based on the principle of thermal expansion of a fluid, such as alcohol, are not hopelessly inaccurate. In fact, they are as accurate as mercury thermometers and are suitable for some applications that don’t require stringent temperature control. For example, alcohol thermometers might be suitable for measuring the temperature of gasoline and other fuels, but they would be unsuitable for monitoring the temperature of vaccines, the viability of which relies on strict control of their temperature.

Visit the website at www.nist.gov/pml/mercury.cfm for more information about how NIST can help your industry find an accurate, non toxic and environmentally benign alternative to mercury thermometers. 

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Link to original article: www.nist.gov/public_affairs/tech-beat/index.cfm