

# MEASUREMENT MATTERS

News from the NIST Office of Weights & Measures



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## Notes from the Chief

*Byline: Katrice A. Lippa*



Happy New Year 2022 from the NIST Office of Weights and Measures (OWM)! A new year is a perfect chance to embrace new ideas and approaches and make change for the betterment of our community. Within the year, OWM plans to roll out new communication and engagement tools, enhanced training offerings, and a redesign of our website. We will also take this opportunity to relook at our engagements with stakeholders and important partnerships, and we welcome and encourage suggestions from all. Please send along your ideas and feedback to [OWM@nist.gov](mailto:OWM@nist.gov), and feel free to contact me directly at [katrice.lippa@nist.gov](mailto:katrice.lippa@nist.gov).

This issue of *Measurement Matters* will highlight OWM's recent collaborations with NCWM, specifically a new National marketplace survey for liquefied petroleum gas (LPG) 20 lb cylinders. Please see David Sefcik's article within for full details. As NCWM's Executive Secretary, I also describe OWM's new engagements with NCWM to both strengthen our cooperative partnership and streamline NIST OWM services for the weights and measures community.

The 2022 editions of [NIST Handbook 44](#) and [NIST Handbook 130](#) are now available as pdfs and as the individual sections (docx and pdf) via the [NIST Weights and Measures Publications](#) webpage. Notably the printed copies of the NIST Handbooks are just coming in now, and we aim to have all requests distributed by the mid-January. The 2020 edition of [NIST Handbook 133](#) remains the current edition of this handbook. We also have recently released an updated 2021 edition of [NIST Handbook 105-2](#).

Our current engagements and recent recognition of our staff contributions to the International Organization of Legal Metrology (OIML) are also featured in this issue. Chuck Ehrlich provides a short overview on the OIML Conference, which met virtually for the first time this past October 2021.

We also pay tribute to John Barton, a weights and measures coordinator in OWM, who died this past year. Tina Butcher provides a remembrance of our esteemed colleague and a recollection of his impact on the weights and measures community.

# NIST and NCWM: New Ventures to Better Serve the Weights and Measures Community

Byline: Katrice A. Lippa



As the incoming Executive Secretary for the National Conference on Weights and Measures (NCWM) Board of Directors (BOD), my main objectives have been to strengthen the partnership between NIST and NCWM while critically evaluating how NIST/OWM staff can best serve both the NCWM committees and the weights and measures community at large.

I am happy to report that working with NCWM Chairman Ivan Hankins over the past few months on how best to engage the community has been quite productive – albeit, we have more ideas than we can get reasonably accomplished during his 1-year term! One of the exciting new NCWM-NIST efforts is the recent launch of the LPG 20 lb Cylinder Marketplace Survey. (Please see David Sefcik’s article beginning on page 3 for more details.) As Chairman Hankins recently noted *“In this ever-changing marketplace of convenience, the mantra of Equity in the Marketplace has never been more important. We as Weights & Measures officials and technical thinkers of the profession, have a duty and obligation to make sure that the convenient is correct and accurate... for the sake of equity.”*

As part of these improvements, the NCWM is also piloting a new Committee Coordinator role that will provide assistance and planning guidance to the Committees and help ensure adherence to NCWM policies, while serving as resource for Committee Chairs to develop agendas, record notes, facilitate member’s participation, and review and assemble reports by the established deadlines. The Committee Coordinator also serves as a liaison for the Committees to the NCWM Executive Director (Don Onwiler), and the BOD as needed. Constantine Cotsoradis began serving this new role on October 1 for the Laws and Regulations Committee.

The roles and responsibilities of the NIST Technical Advisor in the NCWM Standing Committees will also pivot to a more focused technical role. This will include the development, gap analysis and technical review of proposals (provided in a NIST OWM Technical Analysis), assisting and identifying Federal regulations and requirements, liaising with Federal agencies and trade associations, and serving as a resource for international harmonization with the International Organization of Legal Metrology. NIST OWM will discontinue the responsibility of preparing the “carry over report” (i.e., a report including unresolved items that forms the basis of the S&T and L&R Committees’ the fall Regional Weights and Measures Association Agendas and the subsequent year’s NCWM Interim Meeting Agenda) and oversight of the assembly of the Interim and Final Reports; these tasks we agreed were better assumed by NCWM.

Diane Lee, Juana Williams, and Rick Harshman will serve the Specifications and Tolerances (S&T) Committees and Task Groups with backup from Tina Butcher; Lisa Warfield and David Sefcik will serve the Laws and Regulations (L&R) Committee and Task Groups; Tina Butcher will serve as liaison to the Professional Development Committee; and Ralph Richter and Chuck Ehrlich will serve as liaisons regarding International Organization of Legal Metrology (OIML) activities of interest to NCWM members. NIST OWM technical staff will also continue to serve as Technical Advisors to many of the NCWM National Type Evaluation Program Technical Sectors and Work Groups.

The NIST Technical Advisors will continue to assist the NCWM Committees in their development and documentation of meeting decisions and discussions and will provide ongoing technical advice to Committee members and other NCWM stakeholders. NIST OWM will also maintain an annual record of proposed and adopted changes to NIST Handbooks 44, 130, and 133, including background information, key technical points, and discussions and actions from NCWM and regional weights and measures association meetings. NIST OWM plans to provide this information to the weights and measures community as a resource publication that will provide an archival record of the history of such changes. Along with other resources provided by NIST, this will assist regulators and industry in interpreting and applying the provisions of the NIST Handbooks. Stay tuned!

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# NCWM National Survey on 20 lb Cylinders of LPG (Propane)

Byline: David Sefcik

The National Conference on Weights and Measures (NCWM) has initiated a 2021-2022 project for a national marketplace survey on LPG (Propane) 20 lb cylinders. This survey is a multi-state and multi-purpose effort involving collaboration between NCWM, NIST OWM and several state and local jurisdictions. In partnership with NCWM Chairman Ivan Hankins, OWM will help plan and coordinate the survey, while also providing LPG training (see **Weights and Measures Calendar of Events | NIST**) and analysis of the resultant survey data supported by Alan Heckert of NIST's Statistical Engineering Division. The survey will occur in three phases between February 2022 through April 2022 – Phase I: Point of Pack, Phase II: Direct Sale Refilling Stations, and Phase III: Exchange Locations.

**Phase I: Point of Pack.** Phase I is scheduled to occur during February 2022. The purpose is to determine the accuracy of the stamped tare weight compared to the actual tare weight of new and used cylinders. This will be determined by data collected primarily at the plant location. These results will be used to inform the NCWM and states if they should petition the Department of Transportation (DOT) to reconsider its regulations issued in a Final Rule (49 CFR § 178.35 “General Requirements for Specification Cylinders” in the Federal Register of December 28, 2020) that take effect December 28, 2022. These requirements will preempt and significantly relax the requirements currently found in NIST Handbook 130.



Figure 1. An example of Stamped Tare Weight (TW) on the collar of the cylinder.



Figure 2. An example of a Direct Sale Refilling Station. Provided by NC Department of Agriculture & Consumer Services (used with permission).

## Phase II: Direct Sale

**Refilling Stations.** Phase II is scheduled to occur during March 2022. The purpose is to collect data at Direct Sale Refilling Stations, documenting the Method of Sale, Price Posting and Filling Procedure. This information will be used to evaluate the impact the various marketing practices have on consumers and help determine whether the Method of Sale Regulation should be revised to add new requirements related to advertising and priceposting. For example, this may include unit pricing and clarified labeling requirements associated with exchange cages and LPG vending machines.

**Phase III: Exchange Locations.** Phase III is scheduled to occur during April 2022. The purpose is to determine net weight compliance of 20 lb cylinders and assess how much product is left behind by customers when performing a

cylinder exchange. The results are anticipated to demonstrate the impact of both underfill and overfill on both consumers and industry and may prompt the need for the development of new “good quantity control practices” for the LPG industry. The results may also be used to determine if current industry filling procedures are being followed. The results are anticipated to assist and inform states of any present need to better cooperate with their stakeholders (e.g., Propane Education and Research Council, National Propane Gas Association (NPGA), National Fire Protection Association, OSHA, U.S. DOT) to establish improved procedures and oversight.



Figure 3. An example of a cylinder cage at a customer exchange location.

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## NCWM National Survey on 20 lb Cylinders of LPG (Propane) (Continued from Page 2)

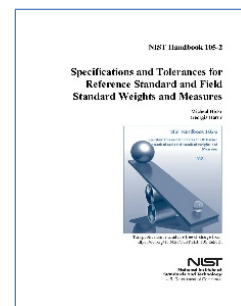
**Survey Data and Results.** Upon completion of each Phase, all survey data will be submitted to and collated by NIST, and then anonymized, analyzed and summarized. The anonymized and summarized results will be provided to the NCWM Chair and Executive Director. A publicly available report of the results of the survey (with all data anonymized) is anticipated for Summer 2022.

An overview and training for officials participating in the LPG survey is scheduled for January 26, 2022. If you need additional information or have any questions, or if you would like to participate in the survey (one or all phases) as a representative of a state or local jurisdiction, please contact David Sefcik at [david.sefcik@nist.gov](mailto:david.sefcik@nist.gov).

## Handbook 105-2 (2021 Edition) Now Available

*Byline: Georgia Harris, Micheal Hicks*

NIST Handbook 105-2 *Specifications and Tolerances for Reference Standard and Field Standard Weights and Measures. 2. Specifications and Tolerances for Field Standard Measuring Flasks* (2021 Edition) has been reviewed, updated and now available: [doi.org/10.6028/NIST.HB.105-2e2021](https://doi.org/10.6028/NIST.HB.105-2e2021). Handbook 105-2 is part of the Handbook 105-series of specifications and tolerances identified in NIST Handbooks 44, 130, and 133 for use as field standards in weights and measures enforcement actions. This handbook covers the specifications and tolerances for glass flasks used primarily in package testing commodities as a part of weights and measures enforcement activities conducted by legal weights and measures jurisdictions. This edition supersedes the 1996 edition.



## A Brief History on the OIML Conference

*Byline: Charles (Chuck) Ehrlich*

The International Conference on Legal Metrology (“OIML Conference”) is the highest decision-making body in the International Organization of Legal Metrology (“OIML”). The OIML Conference is comprised of representatives of the OIML Member States, of which there are presently 62 (see Figure 1). The purpose of the OIML Conference is to:

- consider questions concerning the aims of OIML and to take decisions with respect to them
- secure the establishment of the directing bodies whose task is to carry out the work of OIML
- review and approve reports made on the conclusions of their work by the various legal metrology bodies set up in conformity with the OIML Convention.

The OIML Conference usually meets every four years, although due to the covid pandemic it was postponed from 2020 until 2021 and met virtually for the first time on October 20-21, 2021 (see Figure 2). Typical decisions of the OIML Conference include:

- final approval of the financial accounts of the Organization for the expired financial period
- adoption of the budget of the Organization and of Member State contributions for the next financial period
- decisions about debts to be cancelled, written off or about delays to be granted
- confirmation (also termed as sanction) of the approval of OIML Recommendations

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## A Brief History on the OIML Conference

(Continued from page 4)

The International Committee of Legal Metrology (“CIML”) is the functional decision-making body of OIML. CIML Members (one per Member State) are designated by their government. The CIML Members are the main permanent contact of the OIML in the Member States. They have a double role in representing their country both on the Committee, and in the OIML. They are in principle officials in the department concerned with measuring instruments or have active official functions in the field of legal metrology. The U.S. Department of State serves as the official U.S. Member of OIML, and delegates a representative from NIST to serve as U.S. CIML Member. According to Article IX of the OIML Convention, “The Conference shall elect from its Members, for the duration of each of its sessions, a President and two Vice Presidents to whom is attached the Director of the Bureau, as secretary”, where the Bureau is the [International Bureau of Legal Metrology \(“BIML”\)](#), the headquarters office of OIML, located in Paris, France.



Figure 1. [OIML Member States \(62\)](#); created by mapchart.net



# OWM Leadership and Recognition within OIML

*Byline: Katrice Lippa*

Historically, the CIML Member from the country hosting the Conference is elected as the President of the Conference. However, since there was no host country for the virtual Conference held in 2021, Dr. Charles Ehrlich was selected and elected to serve as the Conference President, in recognition of his currently being the longest-serving CIML Member, as well as longest serving Member of the OIML Presidential Council. Notably Dr. Ehrlich, Leader of the International Legal Metrology Program, has served as U.S. CIML Member since 2000. He was also elected to the position of CIML 1st Vice President in October 2018, for a six-year term.

Ken Butcher (retired, Leader for the Laws and Metric Program) was also awarded an OIML Letter of Appreciation during the recent CIML Meeting that recognizes his outstanding contributions to numerous projects of significance to OIML. Mr. Butcher served as the U.S. technical point of contact for numerous OIML working groups and projects devoted to the development and maintenance of OIML Recommendations. Some notable areas included:

- OIML R 51 Automatic catchweighing instruments
- OIML R 60 Load cells
- OIML R 76 Nonautomatic weighing instruments
- OIML R 111 Weights
- OIML R 79 Labeling requirements for packages
- OIML R 87 Quantity of products in packages
- OIML R 150 Arched chute type weighing instruments

Ken was unable to attend the CIML Meeting, thus I was pleased to accept the award of his behalf. I made note that Ken was regarded not only as an expert in legal metrology laws and regulations, but also in the more subtle nuances of technical areas such as test procedures for weighing and measuring devices. He also regularly provided guidance and mentoring on how best to promote and encourage consideration of OIML standards and to identify opportunities for harmonization of U.S. standards with those recommended by OIML.

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## A Tribute to John Barton

*Byline: Tina Butcher*

John Barton, a weights and measures coordinator in OWM, died after a brief illness on August 31. He was 63 years old.



Figure 1. John Barton on his motorcycle.

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## A Tribute to John Barton

*(Continued from page 6)*

John was a legal metrology technical expert working in the Legal Metrology Devices Program. His particular area of expertise was with commercial weighing systems, though he also provided technical guidance and direction in other areas of legal metrology. He was active in several OIML work groups on both static and dynamic weighing as well as on load cells. In addition, he served as a NIST technical advisor to the NCWM S&T Committee.



Figure 2. John (wearing a red shirt) instructing a class on the testing of livestock scales.

John established and led several national work groups of stakeholders — manufacturers, service providers, weights and measures regulators and consumer groups — to develop standards and test procedures for new commercial measurement applications and to ensure the accuracy of these measurements in the marketplace. He established and led one such national work group focused on belt conveyor scales and another on measurement systems used in taxis and other transportation applications.

In 2018, he was awarded a NIST Bronze Medal for his work in the area of “transportation network systems,” expanding legal metrology requirements to support the implementation of ride-sharing services such as Uber and Lyft and helping to ensure equity for consumers as well as service providers. Previous transportation measurement systems, such as taxi meters, had measured distance and assessed customer charges based on the number of wheel rotations of the vehicle. New systems are making use of global positioning systems (GPS) and software to assess charges for transportation services. John managed to get consumer groups, weights-and-measures officials, and ride-sharing services to agree on standards and test procedures for these new measurement systems that rely on GPS rather than on wheel rotations. Though

John had little experience with this field, he willingly took on the project, successfully gathered experts to create standards and test procedures for these systems, and developed the expertise needed to support the regulators, manufacturers and service providers who are adopting and implementing the standards.

John was always willing to help others meet their goals. He seemed to enjoy providing ongoing technical guidance to industrial corporations and weights and measures officials, and to take satisfaction in improving the development and implementation of standards and test procedures that have a direct impact on people’s everyday lives.

Though it might sound clichéd, John was a model employee and a kind and gentle person. He was thoughtful, conscientious and more than capable. He independently led and/or contributed to a wide range of projects — collaborating on technical issues with a wide range of other experts in the legal metrology community to find solutions to complex problems. He was thorough in his work, ensuring that it was not only completed on time but with attention to accuracy and detail.

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**A Tribute to John Barton**  
*(Continued from page 7)*



Figure 3. The photo of John taken by NIST when he received his 2018 Bronze Award.

He got along well with his NIST colleagues as well as with the wide range of external stakeholders, both domestic and international. He was known for interjecting light humor into interactions with others, diffusing tension and lightening the mood of many situations.

In his spare time, John enjoyed spending time with his family and especially with his grandson Latreyvion, aka LJ, with whom he had many Lego, dinosaur and monster truck adventures. John also did carpentry, repaired household machinery, and was an avid outdoorsman, enjoying hunting, fishing and just spending time outdoors. Unknown to many of his colleagues, John was also an accomplished artist.

He is survived by his wife Darlene, son Kyle, and daughter Savannah and her family (including John's grandson, LJ). John is also survived by his mother, two sisters, and a number of nieces and nephews.

(A version of this article was previously published on December 1, 2021 in the NIST Employees and Associates Newsletter NIST Connections)



## Calendar of Events - Training

Date	Time (Eastern Time Zone)	Event Name	Online or Location	Class
January 4, 2022	11:00 a.m. to 1:00 p.m.	<a href="#">NIST Handbook 130 - Examination Procedure for Price Verification</a>	Online webinar	5765
January 5, 2022	11:00 a.m. to 1:00 p.m.	<a href="#">NIST Handbook 133 - How to Test Animal Bedding</a>	Online webinar	5766
January 19, 2022	10:00 a.m. to 3:00 p.m.	<a href="#">LPG (Propane) -Verifying the Net Contents of 20 lb Cylinders (Part 1)</a>	Online webinar	5770
January 20, 2022	11:00 a.m. to 1:00 p.m.	<a href="#">NIST Handbook 130 - Overview of the Uniform Packaging and Labeling Regulation</a>	Online webinar	5767
January 25, 2022	11:00 a.m. to 1:30 p.m.	<a href="#">Weights and Measures Inspections - Evidence, Search and Seizure, and Due Process</a>	Online webinar	5768
January 31 to February 4, 2022	8:00 a.m. to 5:30 p.m.	<a href="#">Fundamentals of Metrology*</a>	Gaithersburg, MD	5786*
February 7 to 11, 2022	8:00 a.m. to 5:30 p.m.	<a href="#">Volume Metrology Seminar*</a>	Gaithersburg, MD	5787*
February 10, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Education Resources</a>	Online webinar	5771
February 14 to 18, 2022	8:00 a.m. to 5:30 p.m.	<a href="#">Volume Metrology Seminar*</a>	Gaithersburg, MD	5778*
February 17, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Estimation</a>	Online webinar	5773
February 24, 2022	2:00 to 4:00 p.m.	<a href="#">Internal Auditing Best Practices*</a>	Online webinar	5790*
February 28 to March 11, 2022	8:00 a.m. to 5:30 p.m.	<a href="#">Mass Metrology Seminar*</a>	Gaithersburg, MD	5789*
March 3, 2022	2:00 to 3:30 p.m.	<a href="#">Measurement System Basics: SI &amp; U.S. Customary Units for Regulatory Officials</a>	Online webinar	5774
March 17, 2022	2:00 to 4:00 p.m.	<a href="#">Basic Uncertainty Concepts*</a>	Online webinar	5791*
April 21, 2022	2:00 to 4:00 p.m.	<a href="#">Document Control and Record Keeping*</a>	Online webinar	5792*

*\*State W&M labs only or invitation only.*

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## Calendar of Events - Training

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Date	Time (Eastern Time Zone)	Event Name	Online or Location	Class
April 25 to May 6, 2022	8:00 a.m. to 5:30 p.m.	<a href="#">Mass Metrology Seminar*</a>	Gaithersburg, MD	5793*
July 21, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Education Resources</a>	Online webinar	5772
July 28, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Estimation</a>	Online webinar	5775
September 15, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Education Resources</a>	Online webinar	5776
September 29, 2022	7:00 to 8:30 p.m.	<a href="#">Metric System Estimation</a>	Online webinar	5777
November 17, 2022	2:00 to 3:30 p.m.	<a href="#">Measurement System Basics: SI &amp; U.S. Customary Units for Regulatory Officials</a>	Online webinar	5778
February 9, 2023	7:00 to 8:30 p.m.	<a href="#">Metric System Education Resources</a>	Online webinar	5779
February 23, 2023	7:00 to 8:30 p.m.	<a href="#">Metric System Estimation</a>	Online webinar	5780

\*State W&M labs or by invitation only.

## Calendar of Events – Meetings and RMAPs

NCWM and RMAP Associations			
January 9 to 12, 2022	Tampa, FL	NCWM Interim Meeting	<a href="http://www.ncwm.com">www.ncwm.com</a>
March 28 to 31, 2022	Frankfort, KY	<a href="#">Southeast Measurement Assurance Program (SEMAP)</a>	5781**
May 16 to 19, 2022	Sparks, NV	<a href="#">Western Regional Assurance Program (WRAP)</a>	5782**
May 23 to 26, 2022	Bismarck, ND	CWMA Meeting	<a href="http://www.cwma.net">www.cwma.net</a>
June 13 to 16, 2022	Avenel, NJ	<a href="#">Northeast Measurement Assurance Program (NEMAP)</a>	5783**
July 10 to 14, 2022	Tacoma, WA	NCWM Annual Meeting	<a href="http://www.ncwm.com">www.ncwm.com</a>
September 12 to 15, 2022	Las Cruces, NM	<a href="#">Southwest Assurance Program (SWAP)</a>	5784**
September 26 to 29, 2022	Madison, WI	<a href="#">MidAmerica Measurement Assurance Program (MidMAP)</a>	5785**

\*\*Regional Measurement Assurance Program "MEMBERS" (State and Industry RMAP member laboratories).

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## \* NIST Gaithersburg Campus

*The NIST Gaithersburg campus is currently operating in a limited access status. The majority of NIST OWM staff will continue with maximum teleworking.*