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What's Next in Hydrogen?

By Juana Williams

Work at NIST Weights and Measures Division (WMD) to develop legal metrology standards for hydrogen (H₂) refueling stations is expanding. In March 2007, WMD received funding as part of the American Competitiveness Initiative for its work in support of the U.S. transition to a hydrogen economy. This is the first in a series of articles on the status of WMD's work, related hydrogen issues, and information of interest to the weights and measures community.

Over the past four years Juana Williams, representing WMD and NIST, has participated in the National Hydrogen Fuel Cells Codes and Standards Coordinating Committee (NHFCCSCC). The NHFCCSCC is sponsored by the U.S. Department of Energy National Renewable Energy Laboratory, National Hydrogen Association, and U.S. Fuel Cell Council. The NHFCCSCC coordinates the development and implementation of a uniform set of H₂-related codes to ensure the safe production, delivery, and use of H₂. This collaborative effort was undertaken to make it possible for the commercialization of H₂ technology in stationary, transportation, and portable applications. The NHFCCSCC also collaborates with other national and international organization conducting similar H₂ work.

Currently WMD is creating a long-range plan for the development of commercial H₂ measurement standards that encompasses: (1) codes; (2) method of sale requirements; (3) marking and labeling requirements; (4) quality; (5) sampling procedures; (6) inspection procedures, equipment suitability, and safety; (7) training for officials and service companies; and (8) education on H₂ measurement. WMD will need to accelerate its work to stay ahead of emerging technology and to have standards in place when the public is permitted access to H₂ refueling stations. WMD plans to establish a U.S. National Work Group (USNWG) of industry and regulatory experts as well as conduct educational workshops on H₂ measurement. Part of its outreach will be to the 17 States that already have refueling dispensers operating in support of fleet and other fuel cell vehicles.

WMD and other organizations are already at work on several standards in those key areas. In 2005 WMD developed and distributed a first draft of an H₂ Gas Meters Code. The first draft is currently posted at www.fuelcellstandards.com and is based on existing technical requirements and test procedures that apply to other commercial measuring devices similar to those used in the delivery of hydrogen. To date comments from industry indicate the 1.5 % acceptance tolerance based on NIST Handbook 44 Section 3.37 Mass Flow Meters Code requirements for Accuracy Class 2.0 devices used to meter compressed natural gas (CNG) as a motor-fuel is too stringent. Additionally, standards may be needed to address equipment that dispenses liquid H₂ or a CNG and H₂ blend. Other agencies such as the California Division of Measurement Standards are working to establish a quality standard for H₂ used by fuel cell vehicles. The multitude of national and international groups working on H₂ projects offers many opportunities for collaboration and will continue to require coordination of our efforts to avoid redundancy and nonuniform standards.

WMD has tentative plans for an August 2007 USNWG meeting and a September 2007 educational workshop. Involvement of weights and measures administrators, officials, and industry experts will be essential to developing appropriate and fair weights and measures standards. WMD will keep all stakeholders posted on these upcoming activities.

If you have questions about the standards development process or are interested in participating in a work group or workshop, please contact Juana Williams by email at juana.williams@nist.gov or by telephone at 301-975-3989.