



CGA Advances Hydrogen Standards Development

By Marc Meteyer

The US Government and industry are investing billions in research and development that will help pave the way for ubiquitous use of hydrogen as an energy source. This movement has been accelerated by the substantial increase in the cost of fossil fuels, especially oil and gas. When the transition from fossil fuels to a “hydrogen economy” will begin is anyone’s guess but most are betting that it is only a matter of time.

Hydrogen represents both an opportunity and a challenge for the United States. The opportunity for our society is the potential for an abundant source of a very clean fuel. Beyond the technological challenges that must be overcome to achieve this goal is an acceptance of hydrogen by the public. Key to that acceptance is the development of standards that support safe production, transportation and use of hydrogen. Standards establish guidelines (and requirements if adopted in law or regulation) that help ensure the consistent application of best practices that provide for a high level of safety.

The hydrogen standards landscape is very complex. There are hundreds of standards developers, each with their own goals and objectives. Also, there are thousands of political jurisdictions and related organizations that have some oversight on the infrastructure and products that will emerge with a broader use of hydrogen. Compounding the domestic situation is development of hydrogen standards in the international community. These standards can be adopted in United Nations’ model regulations, which can be adopted by its member nations.

The Compressed Gas Association (CGA) is the leading industrial and medical gas and equipment standards development organization for the US and Canada. The association represents over 125 member companies engaged in all facets of the industry, including manufacturers, distributors, suppliers, and transporters of gases, cryogenic liquids, and related products and services. Since 1913, CGA has established standards and other guidance to ensure the safety of this industry.

CGA has historically set standards for hydrogen and its applications. As early as 1966, CGA’s *Handbook of Compressed Gases* has included information on hydrogen and its safe handling. Since then, CGA has published standards that establish commodity specifications as well as standards for high pressure hydrogen piping and venting systems. CGA has focused its efforts on metal hydride hydrogen storage by setting standards for cylinder and tank service conditions and associated labeling requirements. Since 2004, CGA has developed standards that support commercial application of hydrogen as product developers have directed their efforts on hydrogen as an alternative energy source. For access to CGA hydrogen documents, including the *Handbook of Compressed Gases*, log onto www.cganet.com.

CGA is about to take a significant step in advancing its standards program with the publication of “H-5 *Installation Standards for Bulk Hydrogen Supply Systems*.” This publication is the culmination of

several years of work and the incorporation of CGA position statements that were created to address storage needs at commercial locations. H-5 addresses larger cryogenic hydrogen systems and gaseous systems up to 15,000 psig. CGA is the first to publish such a comprehensive document, which will likely serve as the primary standard for hydrogen storage at commercial facilities in the US and help advance

the use of hydrogen as a vehicular fuel. H-5 will be available on the CGA website by April 2008.

CGA also has a history of working with fire and building code officials, federal regulators and industry experts at large in developing codes for hydrogen safety. CGA participated in the creation of NFPA 55: *Standard for the Storage, Use and Handling of Compressed Gases in Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*. Provisions from NFPA 55 have been incorporated into other significant codes, including NFPA 1 *The Uniform Fire Code* and NFPA 2 *Hydrogen Technologies Code*, which is currently under develop-

ment. NFPA codes are available at www.nfpa.org. The International Code Council has also looked to CGA for advice and counsel on its major codes, especially the *International Fire Code* and the *International Fuel Gas Code*. These codes are often adopted by federal, state and local governments. ICC codes are available at www.iccsafe.org.

Finally, CGA and its members are heavily involved in international hydrogen standards development. Through the International Organization for Standardization (ISO), CGA’s members serve on several technical advisory groups that represent the US voice in ISO. These include Technical Committee 197, which works in the areas of metal hydrides, fueling stations, and hydrogen quality for proton exchange membrane fuel cells. In support of the US delegation to ISO and to advance the development of these standards, CGA provides the administrative support for the US Technical Advisory Group. As a service to ISO, CGA serves as the Secretariat for the ISO technical committee that develops standards for gas cylinder operational requirements, which sets specifications for gas cylinder and cryogenic vessels as well as inspection and testing standards.

Where do we go from here? To ensure that CGA’s mission is advanced in the new hydrogen economy, CGA’s Executive Committee has initiated a comprehensive evaluation of how CGA can best continue in its role of assuring that safety is a top priority as society moves to expanded use of hydrogen. The results of this evaluation will be incorporated into the association’s strategic plan which will guide the industry’s efforts to continue to make it the safest it can be.

Marc Meteyer is CGA’s President and CEO. Prior to joining CGA, he represented the American Petroleum Institute and has primary issue expertise is in the refining sector, especially in clean-fuel reformulation. A research scientist by training, Meteyer has written standards for the oil and gas industry and has published in the scientific literature. He can be reached at mmeteyer@cganet.com. □



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