Obituary | Larry Herbert Royster | *1936–2019*

Larry Herbert Royster was born on September 22, 1936, in Durham County, NC, and passed away on March 18, 2019, in Raleigh, NC. He was a professor in the Mechanical and Aerospace Engineering Department at North Carolina State University (NCSU; Raleigh); a Fellow of the Acoustical Society of America (ASA) and the American Industrial Hygiene Association (AIHA); a past chair of the noise committees of both of those associations; and a recipient of the ASA Silver Medal in Noise, the AIHA Borden Award, and the National Hearing Conservation Association (NHCA) Outstanding Hearing Conservationist Award.

Royster attained a strong grounding in theoretical and experimental analysis while investigating aerodynamic flutter models and advanced underwater acoustic transducers for North American Aviation (Royster, 1969). He earned his PhD at NCSU and remained there, teaching for 34 years. Although comfortable with theoretical acoustics, Royster's passions were practical noise and vibration control, hearing conservation, and teaching.

Royster first assisted the North Carolina Department of Labor (NCDOL) and later the federal Occupational Safety and Health Administration (OSHA) in developing noise and hearing conservation regulations. He created the noise program for the NCDOL, training their inspectors, calibrating their instruments, and establishing and chairing the NCDOL OSHA Advisory Council. He pioneered a unique enforcement concept by which industries with documented effective safety programs, even if in exceedance of permissible noise levels, could avoid citations by contributing their audiometric data to the NCDOL for analyses. Regarding the federal OSHA, Royster testified at the hearings in Washington, DC, in the 1970s when the Hearing Conservation Amendment was being hashed out; as a measure of the importance of his contributions, he was cited 23 times in the original and subsequent final version of the rule.

Two of Royster's principal contributions in hearing conservation pertained to describing the "real world" of hearing conservation in industry and evaluating the true effectiveness of hearing conservation programs. He led a 4-year-long research project in which he visited and interviewed hearing protection issuers who directly interfaced with workers at 213 sites across the United States. This unique study provided valuable insight into American hearing conservation circa 1980 (Royster and Royster, 1990). His other key contribution was developing objective methods of evaluating the adequacy of hearing conservation programs using group audiometric data for employees, including the creation of appropriate reference and control databases (Royster et al., 1980).

Royster loved stimulating "students" to solve real-world problems as evidenced by his authorship of the AIHA *Noise-Vibration Problem-Solution Workbook*, a companion to the highly regarded AIHA *Noise Manual* for which he was an editor of both the fourth and fifth editions. Besides these efforts, Royster published numerous scientific papers, book chapters, and technical reports.

After retirement, Royster studied widely divergent topics, reaching his goal in 2013 of reading more than 500 books postretirement, and pursued new hobbies in amateur radio, golf, and gardening. He is survived by his dear wife of 41 years, Julia Doswell Royster.

Selected Publications by Larry H. Royster

Royster, L. H. (1969). The flextensional underwater acoustic transducer. *The Journal of the Acoustical Society of America* 45(3), 671-682.

Royster, L. H., and Royster, J. D. (1990). Important elements and characteristics of hearing conservation programs and determination of their effectiveness. *Environment International Journal* 16, 339-352.

Royster, L. H., Royster, J. D., and Berger, E. H. (1982). Guidelines for developing an effective hearing conservation program. *Sound and Vibration* 16(1), 22-25.

Royster, L. H., Royster, J. D., and Cecich, T. F. (1984). An evaluation of the effectiveness of three hearing protection devices at an industrial facility with a TWA of 107 dB. *The Journal of the Acoustical Society of America* 76(2), 485-497.

Royster, L. H., Royster, J. D., and Thomas, W. G. (1980). Representative hearing levels by race and sex in North Carolina industry. *The Journal of the Acoustical Society of America* 68(2), 551-566.

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