

Improving the Noise Climate in the United States – Part 2

Robert D. Hellweg, Jr., Hellweg Acoustics, Wellesley, Massachusetts

George C. Maling, Jr., Member, NAE, Washington, DC

Eric W. Wood, Contributing Editor, Acentech, Cambridge, Massachusetts

The first part of this editorial appeared in the August 2014 issue of *S&V* and described two workshop reports that are follow-ups to the publication of the National Academy of Engineering (NAE) report *Technology for a Quieter America* (TQA) report in 2010 (www.nap.edu/catalog/12928).

These first two TQA workshops addressed recommendations aimed at improving the noise climate in the United States. “Noisy Motorcycles: An Environmental Quality-of-Life Issue” based on a roundtable held on October 24, 2012, and “Cost-Benefit Analysis: Noise Barriers and Quieter Pavements” based on a workshop held on January 16, 2014, both hosted by the NAE in Washington, DC.

This editorial describes two more-recent TQA workshop reports that have also been approved by the board of directors of the Institute of Noise Control Engineering (INCE-USA) for distribution as public information documents and are available for download without cost at the website: www.inceusa.org/publications/technical-reports.

The third TQA workshop “Reducing Employee Noise Exposure in Manufacturing – Best Practices, Innovative Techniques, and the Workplace of the Future” was hosted by NAE on February 19-20, 2014, in Washington, DC. This workshop was organized by the INCE Foundation and the National Institute for Occupational Safety and Health (NIOSH). The workshop was co-chaired by W. Gregory Lotz and George C. Maling, Jr.

Approximately one-third of the workshop was devoted to the availability of effective, low-cost techniques for reducing noise in industry and design of low-noise machines for industrial use. The second third was devoted to techniques for reducing noise through changes in industrial processes. The final portion was devoted to the future manufacturing environment and its implications for new noise goals in manufacturing facilities. Lower noise goals will lead to the need to design low-noise machinery and equipment as well as low-noise manufacturing processes.

The workshop report includes summaries of presentations in five topic areas by 28 technical experts from manufacturing, consulting, academia, and government:

Hearing Conservation Programs in Manufacturing Industries addresses the “safe in sound” award given by NIOSH to companies with outstanding hearing conservation programs. In addition, representatives from three major manufacturers described specific hearing conservation programs that have been implemented successfully in their companies.

Best Practices: Noise Control in Manu-

facturing Industries summarizes presentations by five knowledgeable speakers. Computer modeling of workplace noise is described together with several successful examples. Information is provided on the physics of low-noise product design and the planning process used by NIOSH in procuring equipment used in the mining industry. Key American national standards for noise emissions are described as well as “buy quiet” programs addressing the question: “Why buy noise problems?”

Engineering for Noise Control in Manufacturing provides an overview of what progress has (and has not) been made in reducing noise by America’s manufacturing sector. A history of noise control efforts in the textile, tobacco, and woodworking industries is described. Specific examples are provided for shredding machines, injector drills, vibratory feeders, and other noise sources.

Innovative Techniques for Engineering Noise Control addresses advanced aeroacoustic-modeling techniques being used in the design of compressors and pneumatic tools. Manufacturing techniques now being used in the automotive industry are described as well as how the use of rotary equipment, instead of reciprocating equipment, can lead to lower noise levels. Techniques for reducing noise from power generator sets are addressed. Also described is a project that is said to result in a safer and quieter process for removing fasteners such as rivets from aircraft fuselage panels.

The Manufacturing Workplace of the Future provides a range of visions of future manufacturing work places based on programs undertaken by the NAE, the National Institute for Standards and Technology (NIST), and the National Center for Manufacturing Sciences (NCMS). Included are insights about moving sales and engineering personnel from traditional office spaces out onto the factory floor.

In summary, successful future manufacturing will create value by integrating manufacturing, design, and innovation. This effort has implications for the noise environment on future manufacturing floors, which has further implications for the design of both manufacturing facilities and manufacturing equipment. A wide range of valuable noise control engineering insights from experienced professionals is provided in this report from the TQA workshop.

The fourth TQA workshop and International-INCE symposium “Engineering a Quieter America: Progress on Consumer and Industrial Product Noise Reduction” was hosted by the NAE on October 6-7,


2015, in Washington, DC. This workshop was organized by the INCE Foundation. The workshop was co-chaired by Adnan Akay and the authors of this *S&V* editorial.

Thirty-one people attended the workshop, and 25 technical presentations were made on a wide variety of topics in two broad categories – consumer products and commercial and industrial products.

Consumer Products at Home. This topic included nine papers, including several on a range of products including home appliances, leaf blowers, and computer products. Significant progress has been made over the last two decades in the production of quiet products, and consumer demand for quiet products is high. Other papers in this session included methods to facilitate customers using noise information as a part of the decision making process when purchasing products. The final paper was on progress made in reducing automobile interior noise, since quiet automobile interiors are highly prized by consumers.

Commercial and Industrial Products. This topic had 16 papers, the first of which was on the need for quieter machines in industry. Other papers addressed the progress in noise reduction in specific product types: heating and ventilation equipment, large industrial air moving devices, industrial power generation equipment, electric power generator sets, industrial motors, compressors, transformers, valves and piping, gears, off-road machines, mining equipment, and natural gas pipelines. The sources of the demand for quiet commercial and industrial products include community requirements, community pressure, customer requirements, and government requirements. Two additional papers covered noise control progress by the U.S. Navy and international and national noise standards for consumer and industrial products.

The workshop report addressed these contributions by noise control engineers to improving both quality of life and the U.S. economy by providing domestic manufacturers with the expertise to develop, produce, and sell quieter products now demanded by domestic and global markets. This report was prepared by professional science writer Tamar Nordenberg, www.viecommunications.com, together with the TQA technical editing team.

After the final report is prepared, we plan to write a future editorial that will describe the fifth TQA workshop on engineering technology transfer held in late 2016. 

The authors can be reached at: ewood@acentech.com.