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## CDC Addresses Non-Occupational Noise-Induced Hearing Loss

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For nearly five decades, the Centers for Disease Control and Prevention (CDC) has researched noise-induced hearing loss (NIHL) in the workplace and disseminated that research through the National Institute for Occupational Safety and Health (NIOSH) to prevent occupational hearing loss. In 2015, CDC received inquiries from the public and the medical community about NIHL in non-workplace settings. To address these issues, CDC formed an unfunded intra-agency workgroup within the National Center for Environmental Health (NCEH). This small workgroup, comprised of audiologists, scientists, and health educators from NCEH, NIOSH, and the National Center on Birth Defects and Development Disorders, gathers evidence and creates educational resources to increase awareness and promote the prevention of NIHL from exposures at home and in the community.

In February 2017, the CDC NIHL workgroup launched its hearing loss campaign with a special edition of the Morbidity and Mortality Weekly Report (MMWR): “Vital Signs: Noise-Induced Hearing Loss Among Adults.”<sup>1</sup> The launch included a website with infographics, videos, and other sharable media, most of which are available in English and Spanish. In April, *The Hearing Journal* published “CDC Research on Non-Occupational NIHL.”<sup>2</sup> The June 2017 CDC Public Health Grand Rounds topic followed with “It’s Loud Out There: Hearing Health Across the Lifespan” and included presentations from NCEH, NIOSH, Dangerous Decibels®, and the World Health Organization.<sup>3,4</sup>

In 2018, the workgroup developed an interactive infographic, partner advisories, social media content, videos, and factsheets in recognition of World Hearing Day, Better Hearing and Speech Month, and Protect Your Hearing Month. Workgroup members made related presentations at meetings of the Acoustical Society of America, the International Society for Environmental Epidemiology, the National Hearing Conservation Association, and the National Conference on Health Communication, Marketing, and Media. In April, the Journal of Environmental Health published “*Loud Noise: Too Loud, Too Long!*” authored by two NCEH workgroup members.<sup>5</sup> In recognition of 2018 Protect Your Hearing Month, CDC published the MMWR “Use of Personal Hearing Protection Devices at Loud Athletic or Entertainment Events among Adults,” which was selected for an online MMWR/Medscape professional continuing education activity.<sup>6</sup>

In 2019, the workgroup ran full-page color public service announcements in the program books for Super Bowl LIII, the NFL Pro Bowl, the NHL All-Star Game, the NBA All-Star

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Game, multiple NASCAR Motorsports races, and the Indianapolis 500. Each contained a QR code and weblink to a six-question quiz entitled “How much sound can your ears safely take? And for how long?” The correct answers for the duration without wearing hearing protection were based on the 24-hour daily sound allowance of 70 dB<sup>7,8</sup> rather than the widely cited eight-hour 85 dB Recommended Exposure Limit for occupational noise exposure.

In October 2019, for National Protect Your Hearing Month (#NPYHM), the workgroup promoted multiple social media materials on Facebook, Twitter, Instagram, and LinkedIn. One of the Instagram posts (“Musicians wear earplugs, so why don’t you?”) generated more than 1,400 likes within 24 hours. *“Roll, Pull and Hold,”* a 30-second animated video demonstrating foam earplug use, generated over 6.5K Instagram views. A 60-second version posted on YouTube (<https://bit.ly/3jY4BA8>) has been viewed over 3,000 times and counting.

During the weeks around Thanksgiving (11/25/19–12/02/19) and New Years’ (12/24/19–12/31/19), clips from the #NPYHM animated video were projected on the electronic billboards in New York City Times Square. For 20 hours per day, four 15-second spots per hour were projected on the screens of the 10,080 square foot, seven-story NASDAQ Tower (Broadway @ 43rd St), and the 7,691 square foot, 22-story tall Thompson Reuters building (7th Ave @ 43rd St). These generated an estimated 3 million impressions each day.

In July 2020, the workgroup launched a new animated, narrated video in recognition of National Fireworks Safety Month to inform families about NIHL and demonstrate the preventative actions for hearing protection. During that month, the video was viewed nearly 2,000 times on YouTube (<https://bit.ly/35jXZIh>). The CDC Environment Twitter account (@CDCEnvironment) added another 15.7K views.

The workgroup also created a 10-page Steampunk-themed graphic novel/comic book entitled *“How Loud is Too Loud?”* as part of the CDC Healthy Schools “Ask a Scientist” comic series (access these shareable resources here: <https://bit.ly/2Zph883>). CDC graphic designers, the Office of Laboratory Science and Safety, and the School Health Branch within CDC’s National Center for Chronic Disease Prevention and Health Promotion collaborated on the novel. This project was designed to increase students’ knowledge about hearing anatomy, NIHL, tinnitus, and prevention in a fun and engaging way. To further engage educators, 11,871 hard copies of the comic book were distributed with the April 2020 edition of Scholastic SuperScience magazine to teachers of grades three to six in all 50 states, DC, Guam, and the Armed Forces Europe/Armed Forces Pacific. Included with this edition was a four-page standards-based teacher’s guide with lesson plans on the science of sound, including hearing protection and related student activities.

## Biography



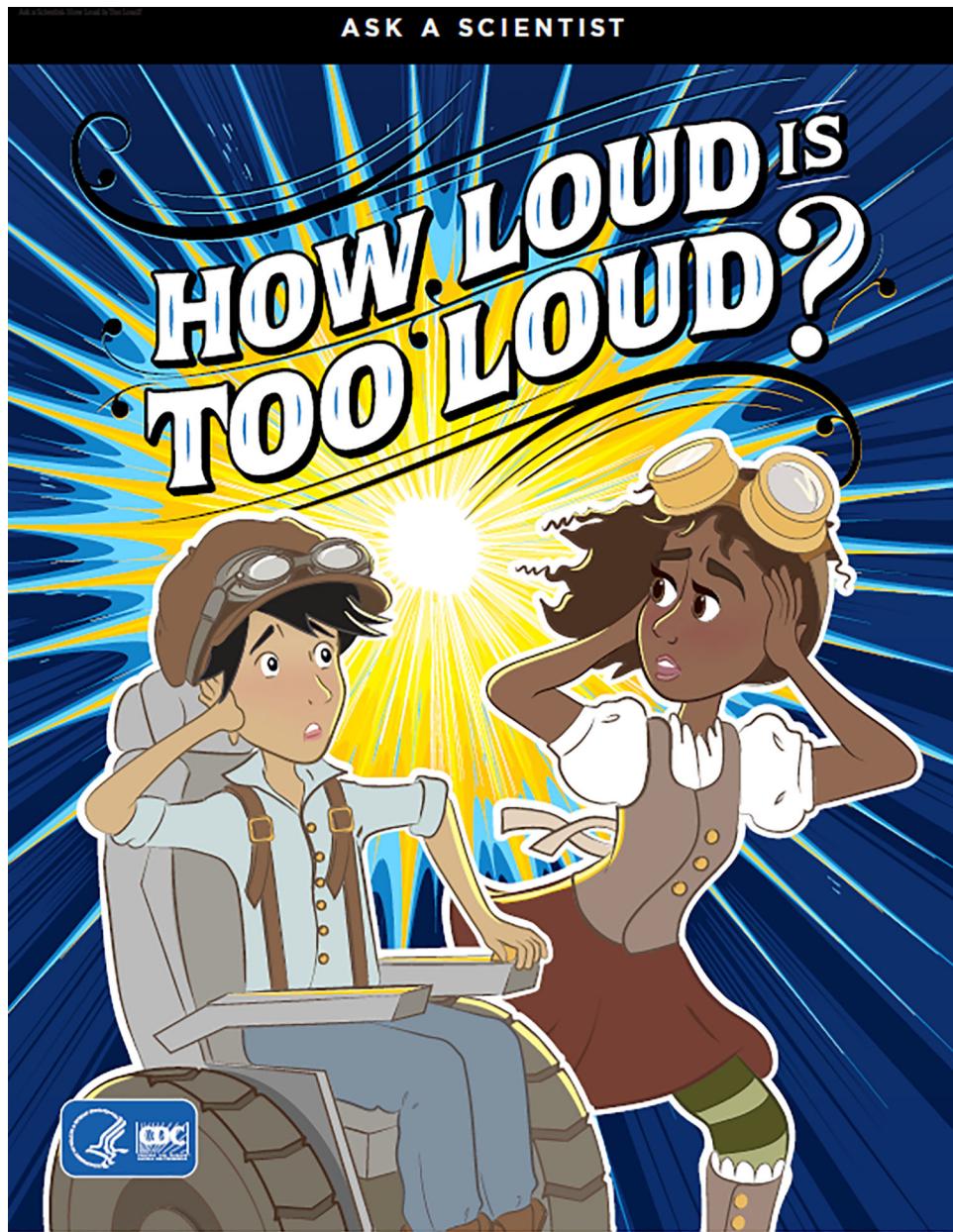
**Mr. Eichwald**, left, is an audiologist within the Office of Science in the CDC National Center for Environmental Health. Before working at CDC, he spent nearly 20 years at the Utah Department of Health serving in both clinical practice and administrative positions.



**Ms. Benet** is a health communication specialist with the National Center for Environmental Health and the Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) Office of Communication in Atlanta, GA. She has an extensive 34-year career in the federal government and worked in direct patient care for 16 years before joining the CDC in 1997.

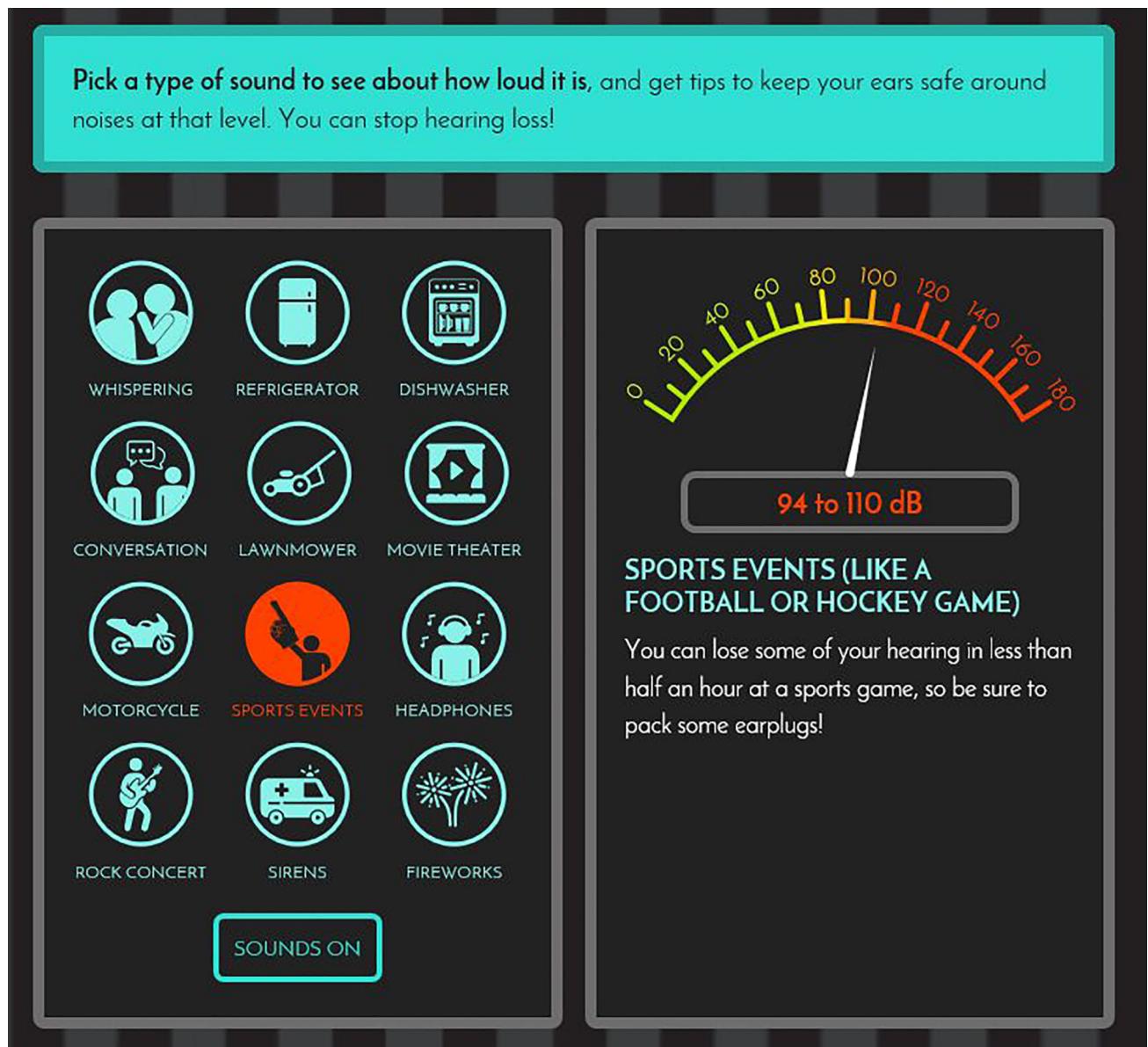
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**Figure 1.**

“How Loud is Too Loud?” part of the CDC Healthy Schools “Ask a Scientist” comic series.



**Figure 2.**  
interactive infographic. Collaborative NCEH/NIOSH

# Take Our Quiz

## Take Our Quiz

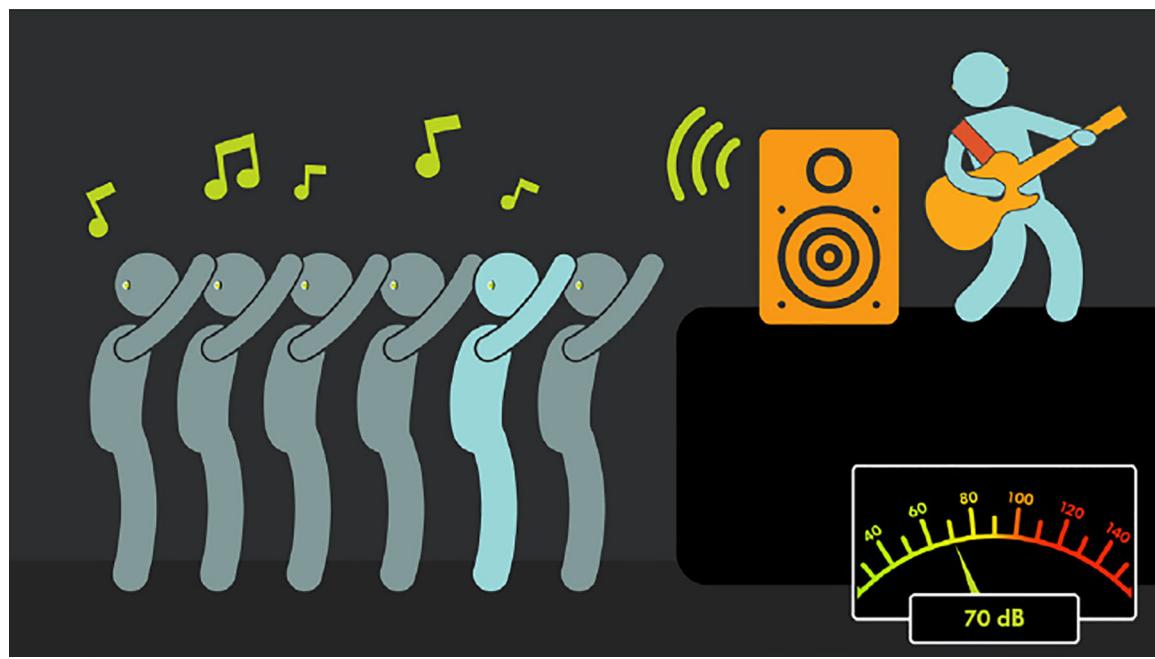


Learn how every day prolonged and repeated activities can damage your hearing permanently



**Figure 3.**

PSA quiz developed for NFL, NBA, NHL, and motorsports races.



**Figure 4.**

YouTube video “Roll, Pull, and Hold. How to Wear Soft Foam Earplugs.”