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Loud Noise: Too Loud, Too Long!

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Hearing trouble is the third most prevalent health condition reported by U.S. adults (1); and noise is the most common modifiable environmental cause of hearing loss (2). Chronic exposure to noise has been associated with increased stress, anxiety, depression, blood pressure, heart disease incidence, and many other health problems (3). Despite recent studies reporting on increased exposure to loud noise during leisure activities, we do not know how much of hearing loss is related to noise outside of work, nor are there any federal regulations regarding safe noise exposures outside of the workplace. In 2016, the National Academies of Sciences published a report, *Hearing Health Care for Adults: Priorities for Improving Access and Affordability*, which called for action at several agencies, including CDC. In response to it, as well as recent public health inquiries regarding noise-induced hearing loss (NIHL), in 2016 CDC's National Center for Environmental Health (NCEH)/ Agency for Toxic Substances and Disease Registry (ATSDR) formed a small unfunded intra-agency workgroup to address the issues of non-occupational NIHL. The vision of this workgroup is to provide data and education, increase awareness and prevent noise-related hearing loss at home and in the community. In addition to NCEH/ATSDR, the workgroup brings experts from the CDC National Institute for Occupational Safety and Health (NIOSH), the National Center on Birth Defects and Developmental Disabilities and the National Center for Chronic Disease Prevention and Health Promotion.

In February 2017, CDC launched a hearing loss campaign to address the issue with a special edition of the *Morbidity and Mortality Weekly Report* (4). The issue, titled “Vital Signs: Noise-Induced Hearing Loss Among Adults,” was based on the most recent available data from the National Health and Nutrition Examination Survey (NHANES) reporting on audiometric notches suggestive of noise-induced hearing damage. The study revealed NIHL is much more prevalent and under-recognized than previously thought:

About 40 million US adults aged 20–69 years have NIHL. The presence of NIHL increased from 1 in 5 among young adults aged 20–29 years to 1 in 4 among adults aged 50–59 years.

Nearly 1 in 5 adults who reported no occupational exposure had an audiometric notch. This suggests twenty-one million adults in the US likely have hearing damage from loud sound sources at home or in their communities.

About 1 in 4 US adults who report excellent to good hearing already have hearing damage. This suggests many people are either unaware of the existing damage to their hearing from noise exposure.

Almost all hearing loss from noise exposure is preventable. However, the NHANES survey found that 70% of persons exposed to loud noise in the past 12 months had never or seldom worn hearing protection.

Although there are no federal regulations regarding exposure to non-occupational noise, a 1974 Environmental Protection Agency report identified 70 dB over 24 hours (75 dB over 8 hours) as the average exposure limit for intermittent environmental noise. World Health Organization (WHO) 1999 Guidelines for Community Noise recommend avoiding noise exposure levels that exceed 70 dB(A) over a 24-hour period or 85 dB(A) over a 1-hour period. NIOSH has established an 8-hour, time-weighted average 85 dB(A) recommended exposure limit to protect most workers from developing hearing loss from noise exposure over a 40-year career. However, at that sound pressure level, approximately 8% of workers could still develop hearing loss, and thus NIOSH recommends that hearing protection be worn whenever noise levels exceed 85 dB(A), regardless of the length of exposure.

Because NIHL can occur any time in life and accumulates over time, there is a heightened need for prevention efforts, particularly among children, adolescents and young adults. CDC is working with various organizations and continues to analyze national data in order to shed more light on this public health need. NIHL is a health condition that can be prevented or slowed in its progression, most easily accomplished by individuals taking relatively simple precautions. Many people may not recognize that excessive sound levels from common activities, such as mowing the lawn or attending sporting events, can be as loud as the noise found in the workplace and is enough to damage hearing. The CDC and its partners want to let the public know that the louder the noise and the longer exposure, the more likely hearing damage will occur. Getting out preventive messages may be helpful. These messages include: avoidance or minimizing exposure to noisy environments whenever possible; use of hearing protective devices, such as earplugs; and keeping the volume down. CDC encourages health care providers to ask about hearing activity and loud noise exposure as part of routine care, refer their patients to hearing health professionals whenever there is a concern, and provide information on how noise exposure can permanently damage hearing and how to protect their hearing.

A large body of scientific literature supports the recognition that excessive exposure to loud sound from both recreational and occupational sources leads to NIHL. As this preventable hearing loss often progresses insidiously for years before being self-perceived or diagnosed, it underscores the need for improving the availability of public health information for individuals and their healthcare providers. Downloadable shareable resources are available at no charge on the CDC website <https://www.cdc.gov/media/dpk/injury-violence-safety/noise-induced-hearing-loss/hearing-loss.html>

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