

PETITION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Petition to EPA to implement, enforce, and update its non-discretionary duties under Sections 5, 6, 8, and 14 of the Noise Control Act, 42 U.S.C. §§ 4904, 4905, 4907, and 4913, to identify and regulate products that are major sources of noise, update and enforce product noise emission and protection labeling regulations, and reestablish federal and state noise-control cooperation through the Quiet Communities program.

NOTICE OF PETITION

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Quiet Communities is a 501(c)(3) non-profit public interest group dedicated to protecting public health, the environment, and quality of life by reducing ambient noise levels. Members of Quiet Communities throughout the United States work with communities, businesses, and schools to educate the public about the health risks associated with chronic noise exposure, and to advocate for alternative quiet solutions. Quiet Communities submits this petition on its own behalf and on behalf of its members throughout the country who seek to: 1) reinvigorate federal programs to address products that are major sources of noise; 2) update labeling standards for noise-emitting products and hearing protection devices to reflect current technology and testing standards; and 3) develop state and local noise education and abatement in coordination with the federal government through the Quiet Communities Program.

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I. SUMMARY OF PETITION REQUEST

Despite ongoing Congressional recognition and public concern with the damaging effects of noise on public health, dating back to the passage of the Noise Control Act (NCA) in 1972,¹ the United States has since faltered and lagged behind much of the rest of the world in noise protection advancements.² Excessive noise is not just a nuisance or annoyance; it is also a growing cause of permanent hearing damage in a growing percentage of younger people;³ it leads to serious conditions including cardiovascular disease, depression, and learning disorders;⁴ and it affects particularly vulnerable populations such as children,⁵ the elderly,⁶ and military personnel.⁷ After EPA's Office of Noise Abatement and Control (ONAC) was defunded in 1981,⁸ a full generation has grown into adulthood entirely without the benefit of health protections provided by the NCA. Over 100 million Americans are now exposed to noise that endangers their health,⁹ causing billions of dollars in health-related economic losses annually.¹⁰

Ironically, the technically active but defunded status of the NCA and the failure to update the regulations passed by ONAC before its defunding have curtailed the use of noise abatement

¹ 42 U.S.C. §§ 4901, *et seq.* (2012).

² *See, e.g.*, WORLD HEALTH ORGANIZATION EUROPE, NIGHT NOISE GUIDELINES FOR EUROPE (Charlotte Hurlley ed., 2009) [hereinafter NIGHT NOISE].

³ *See, e.g.*, Lisa Goines and Louis Hagler, *Noise Pollution: A Modern Plague*, 100 Southern Med. J. 287, 288 (2007).

⁴ *E.g.*, Wolfgang Babisch, *Cardiovascular Effects of Noise*, 13 Noise and Health 201, 201 (2011).

⁵ *E.g.*, NIGHT NOISE, *supra* note 2 at 25–33.

⁶ *Id.* at XII, 40, 110.

⁷ *E.g.*, Kurt Yankaskas, *Prelude: Noise-Induced Tinnitus and Hearing Loss in the Military*, 295 Hearing Research 3, 3 (2013).

⁸ Sid Shapiro, *Lessons from a Public Policy Failure: EPA and Noise Abatement*, 19 Ecology L. Q. 1, 19 (1992).

⁹ Tracy K. Swinburn, et al., *Valuing Quiet: An Economic Assessment of U.S. Environmental Noise as a Cardiovascular Health Hazard*, 49 Am. J. Prev. Med. 345, 345 (2015).

¹⁰ *See id.* at 352 (estimating a 5 dB reduction in environmental noise would save over \$3.9 billion annually on hypertension and coronary heart disease costs); *see also* Richard L. Neitzel, et al., *Economic Impact of Hearing Loss and Reduction of Noise-Induced Hearing Loss in the United States*, 60 J. Speech Lang. Hear. R. 182, 187 (2017) (estimating that a ten to twenty percent reduction in employee hearing loss would save an average \$123 billion in productivity and earnings, annually) [hereinafter Neitzel *Economic Impact*].

and hearing protection technology¹¹ and suppressed state and local government action. The combination of these factors causes continued harm by preventing American industries from remaining competitive with an advancing global market, and allowing consumers to be harmed by missing, misleading, or outdated labels.

Simultaneously, state and local governments, who once enjoyed a fruitful partnership with EPA under the Quiet Communities Act¹² (a later addition to the NCA) to educate and protect their communities from harmful noise, have since had to cut back or abandon their own programs.¹³ State and local attempts to regulate noise are preempted in some areas by the NCA, despite the general lack of federal enforcement.¹⁴

EPA, vested with near sole authority to regulate in this field under the NCA, has several non-discretionary duties it must exercise, as well as some updates it should implement, to guide our country back to a healthier, quieter, more economically competitive nation. First, EPA must comply with its primary statutory mandate to identify major sources of noise and to promulgate appropriate regulations on those noise source emissions. Second, EPA must designate products which emit harmful levels of noise and therefore require consumer warning labels. As a corollary, EPA should update its 1979 hearing protection devices labeling regulations to account for advances in technology and medical research. Third, EPA must—and should in the spirit of cooperative federalism—provide guidance and assistance to state and local governments to implement noise education and protection programs on a community level.

¹¹ Product Noise Labeling Hearing Protection Devices, 74 Fed. Reg. 39149, 39150 (proposed Aug. 5, 2009) [hereinafter 2009 Proposed Labeling].

¹² NCA § 14, 42 U.S.C. § 4913 (2012).

¹³ Shapiro, *supra* note 8 at 19.

¹⁴ *Id.* at 29.

II. FACTS

A. A brief history of the Noise Control Act

In 1972, Congress determined there was a significant need in the United States to adequately control the levels of noise to protect the general health and welfare of the population.¹⁵ To accomplish this, Congress passed the NCA, which authorizes the federal government to regulate noise via, among other things, noise emission standards on any product distributed in commerce,¹⁶ and a labeling system to inform the public about potential health impacts of products.¹⁷ Congress established four categories of products that EPA must regulate under the NCA: 1) construction equipment, 2) transportation equipment (including recreational vehicles and related equipment), 3) any motor or engine (including any equipment of which an engine or motor is an integral part), and 4) electrical or electronic equipment.¹⁸ Based on the mandate established by Congress, EPA in 1974 produced a national noise study which reported the then-current levels of environmental noise pollution across the country.¹⁹ The Administrator of EPA, based on this study, listed major sources of noise that required regulation to protect the health and welfare of the public in three reports published in the late 1970's.²⁰

In an effort to support local and state noise programs, Congress passed the Quiet Communities Act (QCA) in 1978 as a supplement to the NCA.²¹ The QCA was designed to help meet its mandatory duties under the NCA by promoting cooperation between state and local

¹⁵ NCA § 1, 42 U.S.C. § 4901.

¹⁶ NCA §§ 5, 6, 42 U.S.C. §§ 4904, 4905.

¹⁷ NCA § 8, 42 U.S.C. § 4907.

¹⁸ NCA § 6(a)(1)(C), 42 U.S.C. § 4905(a)(1)(C).

¹⁹ EPA, INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY B-1 (1974) [hereinafter LEVELS DOCUMENT].

²⁰ Identification of Products as Major Source of Noise, 40 Fed. Reg. 23105 (report May 28, 1975); Identification of Products as Major Sources of Noise, 42 Fed. Reg. 2525 (report Jan. 12, 1977); Identification of Major Sources of Noise: Pavement Breakers and Rock Drills, 42 Fed. Reg. 6722 (report Feb. 3, 1977).

²¹ NCA § 14, 42 U.S.C. § 4913.

noise research programs, furthering research on the "psychological and physiological effects noise [has] on humans and the effects of noise on domestic animals, wildlife, and property and the determination of dose/response relationships suitable for decision making."²²

In 1981, the Office of Noise Abatement and Control was officially defunded due to budget-cutting amid a general deregulatory environment.²³ In the years following, the Administrator removed all classifications of products earlier identified as major sources of noise for which regulations had not been finalized, obviating the need to create regulations for those products.²⁴

B. Noise is a nationwide threat to public health

Environmental noise, i.e., non-occupational noise in our daily environment, comes from a variety of sources, including indoor and outdoor appliances, lawn care equipment, construction equipment, public gathering places like restaurants, concerts, and sporting events, and personal devices like headphones, televisions, and radios.²⁵ Many health researchers, including EPA itself, have found that traffic (including air traffic) is one of the most significant contributors to noise disturbance overall, especially in urban environments.²⁶ The Center for Disease Control has recently compiled a list of many other everyday sources of damaging noise, including toys and personal headphones.²⁷

²² NCA § 14(b)(1), 42 U.S.C. § 4913(b)(1).

²³ Shapiro, *supra* note 8 at 17.

²⁴ Proposed Withdrawal of Products from the Agency's Reports Identifying Major Noise Sources and Withdrawal of Proposed Rules, 47 Fed. Reg. 54,106 (proposed Nov. 22, 1982) (finalized Dec. 01, 1987 at 52 Fed. Reg. 40,882) [hereinafter Withdrawal].

²⁵ *E.g.*, Goines and Hagler, *supra* note 3 at 288; Daniel J. Fink, *What Is a Safe Noise Level for the Public?*, 107 Am. J. Public Health 44, 44 (2017) [hereinafter Fink, *Safe Noise*].

²⁶ LEVELS DOCUMENT, *supra* note 19 at B-1; Swinburn, *supra* note 9 at 346; Tara P. McAlexander et al., *Street-Level Noise in an Urban Setting: Assessment and Contribution to Personal Exposure*, 14 Environmental Health 1, 2 (2015).

²⁷ *What Noises Cause Hearing Loss?*, CENTER FOR DISEASE CONTROL (Feb. 6 2017), https://www.cdc.gov/nceh/hearing_loss/what_noises_cause_hearing_loss.html.

Noise is most intuitively linked to hearing loss and other ear damage, but it has less obvious—and more devastating—health consequences. Chronic noise exposure has been well established to contribute to myriad health problems, including sleep disruption,²⁸ cognitive impairment,²⁹ and increased stress hormones, blood pressure, and cardiovascular disease.³⁰ It also disproportionately affects vulnerable populations: children,³¹ pregnant women, the elderly, the chronically ill, night shift workers,³² and military personnel.³³

1. *Hearing Loss*

While most people know that hearing loss may result from excessive noise exposure, the general public is still unaware how little noise is necessary to cause hearing damage. In its initial study, EPA suggested a 24-hour average of no more than 70 dB (roughly the sound level of a vacuum cleaner³⁴) to prevent hearing loss.³⁵ Yet, many product and safety warnings are premised on 85 dB, the eight-hour occupational daily limit set by the National Institute of Occupational Safety and Health (NIOSH) in 1972.³⁶ However, the NIOSH limit assumed no additional noise exposure for the remaining sixteen hours of the day.³⁷ Such limited exposure outside the

²⁸ *E.g.*, Swinburn, *supra* note 9 at 345 (2015); Babisch, *supra* note 4 at 201.

²⁹ *E.g.*, Babisch, *supra* note 4 at 201; ALICE H. SUTER, NOISE AND ITS EFFECTS, 22–24 (1991) (report to the Administrative Conference of the United States).

³⁰ *E.g.*, Babisch, *supra* note 4 at 201; Fink, *Safe Noise*, *supra* note 25 at 44; Monica S. Hammer et al., *Environmental Noise Pollution in the United States: Developing an Effective Public Health Response*, 122 *Environ. Health Persp.* 115, 115 (2014).

³¹ NIGHT NOISE, *supra* note 2 at 25–33.

³² *Id.* at XII, 40–41.

³³ Yankaskas, *supra* note 7 at 4.

³⁴ WORLD HEALTH ORGANIZATION, OCCUPATIONAL EXPOSURE TO NOISE EVALUATION, PREVENTION AND CONTROL 33 (Berenice Goelzer et al. eds., 2001) (Figure 1.5) [hereinafter OCCUPATIONAL EXPOSURE].

³⁵ LEVELS DOCUMENT, *supra* note 19 at 28.

³⁶ NAT'L INST. OF OCCUPATIONAL SAFETY AND HEALTH, CRITERIA FOR A RECOMMENDED STANDARD: OCCUPATIONAL NOISE EXPOSURE (1972) [hereinafter NIOSH CRITERIA]. Available at <http://www.cdc.gov/niosh/docs/98-126/pdfs/98-126.pdf>.

³⁷ *Id.*

workplace rarely if ever occurs in modern society, particularly in urban and metropolitan areas where basic street noise can reach an average of 73 dB from medium traffic.³⁸

Although NIOSH set the 85 dB occupational safety limit, many researchers believe that this limit does not fully protect workers from noise-induced hearing loss. Long-term exposure to noise above a 70 dB level can cause hearing loss by destroying sensory hair cells in the cochlea.³⁹ This exposure can also destroy neurons, thereby reducing the ability to understand the meaning of sounds.⁴⁰ This loss can reduce the ability to communicate, resulting in loss of productivity, social isolation, and depression.⁴¹

To protect the public from any overall adverse health effects, EPA in 1974 recommended that exposure averages for a full 24-hour period be limited to 55 dB.⁴² Yet, by 1981, EPA estimated that at least nine million people were exposed to average daily noise levels above 85 dB.⁴³ Because there have been no further nationwide studies, the current extent and degree of noise exposure is not known. Recent estimates indicate that 100–104 million Americans are at risk for noise-induced hearing loss due to average noise exposure above a 70 dB level.⁴⁴

2. *Cardiovascular Disease*

Cardiovascular disease is the leading cause of death in the world.⁴⁵ While many factors may contribute to cardiovascular disease, “it is becoming clear that even normal sleep is a complex and dynamic process with profound effects” on maintaining cardiovascular health.⁴⁶

Sleep disturbances are causally linked to cardiovascular disease, even in people who are

³⁸ McAlexander, *supra* note 26 at 1.

³⁹ Hammer, *supra* note 30 at 116.

⁴⁰ *Id.*

⁴¹ Hammer, *supra* note 30 at 116; Goines and Hagler, *supra* note 3 at 289; SUTER, *supra* note 29 at 15.

⁴² LEVELS DOCUMENT, *supra* note 19 at 33.

⁴³ NAT'L ACAD. OF SCIENCES, TECHNOLOGY FOR A QUIETER AMERICA, 31 (2010).

⁴⁴ Hammer, *supra* note 30 at 115; Swinburn, *supra* note 9 at 345.

⁴⁵ *Cardiovascular Diseases Fact Sheet*, World Health Organization (Sept. 2016), <http://www.who.int/mediacentre/factsheets/fs317/en>.

⁴⁶ Robert Wolk et al., *Sleep and Cardiovascular Disease*, 30 *Curr. Probl. Cardiol.* 625, 627 (2005).

otherwise healthy.⁴⁷ Unsurprisingly, a noisy environment is a major cause of sleep disturbances.⁴⁸ Even people who feel acclimated to their noisy environments experience sleep disruption “from deep sleep to a lighter stage of sleep in response to noise” as part of the fight-or-flight response.⁴⁹ By extension, sleep disruption increases blood pressure and stress hormone levels, leading to atherosclerosis and heart disease.⁵⁰ Such effects are demonstrated at noise levels we do not experience as loud: as little as 30–35 dB—roughly, a soft whisper⁵¹—of continuous noise can disturb sleep.⁵² Thus, noise can indirectly cause cardiovascular disease by disrupting normal sleep cycles and inducing a stress mediated response, even in people who may not be aware of the disruption.

Consistent noise can also increase the risk for cardiovascular disease during waking hours. The same fight-or-flight response triggered in sleep disturbance can also be triggered by long-term exposure to noise starting at just 65 dB, or repeated sudden bursts of noise above 80 dB, depending on the situation and the activity that is being disturbed.⁵³ Such disturbances increase the release of stress hormones such as epinephrine, norepinephrine, and cortisol, as well as increase blood pressure and heart rate.⁵⁴ While the body can return to homeostasis when the noise stops, “noise exposure of sufficient intensity, duration, and unpredictability provokes changes that may not be so readily reversible.”⁵⁵

⁴⁷ *Id.* at 634.

⁴⁸ Swinburn, *supra* note 9 at 346.

⁴⁹ Hammer, *supra* note 30 at 115–116; *see also* NIGHT NOISE, *supra* note 2 at 24.

⁵⁰ Hammer, *supra* note 30 at 115–116; *see also* NIGHT NOISE, *supra* note 2 at 24.

⁵¹ NAT’L ACADEMY OF SCIENCES, *supra* note 43 at 6 (Table 1-1).

⁵² Goines and Hagler, *supra* note 3 at 290; NIGHT NOISE, *supra* note 2 at XIII–XVII.

⁵³ Goines and Hagler, *supra* note 3 at 290; Babisch, *supra* note 4 at 201; Swinburn, *supra* note 9 at 346.

⁵⁴ Goines and Hagler, *supra* note 3 at 290.

⁵⁵ *Id.* at 290–291.

In short, long-term exposure to noise—even low-level noise of which a person may not be consciously aware—can lead to cardiovascular disease from elevated stress levels, both during waking and sleeping hours.

3. *Noise effects on diabetes, sleep, mental health, and cognition/learning*

Noise-induced sleep disruptions can lead to other serious conditions besides heart disease. The European Union recently conducted a sweeping study of the health effects of nighttime noise, and concluded not only that there is “sufficient evidence for biological effects of noise during sleep,” but also that noise-induced “environmental insomnia” is a health problem itself and “leads to further consequences for health and well-being.”⁵⁶ The combination of increased stress hormones and sleep disturbances from “normal urban levels” of traffic noise have been shown to increase the risk of developing type-2 diabetes by eight to eleven percent in a Danish study.⁵⁷ The EU also recognizes many secondary effects of noise-induced insomnia, including fatigue, irritability, proneness to accidents, gastrointestinal problems, and tension.⁵⁸

In addition, noise can exacerbate or instigate latent mental disorders, including anxiety, sexual impotence, social disorders, mood swings, neurosis, and psychosis.⁵⁹ Very recent studies reveal a link between chronic noise exposure and changes in the brain that contribute to Alzheimer’s disease.⁶⁰ Similar to other stress-inducers, noise can significantly reduce quality of life by triggering increased aggressiveness, depression, exhaustion, and numerous other

⁵⁶ NIGHT NOISE, *supra* note 2 at XII. Note that even though the study concludes there is “limited evidence” that sleep disturbances cause “clinical conditions” like cardiovascular disease, “[i]t should be stressed that a plausible biological model is available with sufficient evidence for the elements of the causal chain.” *Id.*

⁵⁷ Mette Sorensen et al., *Long-Term Exposure to Road Traffic Noise and Incident Diabetes: A Cohort Study*, 121 *Environ. Health Persp.* 217, 220 (2013).

⁵⁸ NIGHT NOISE, *supra* note 2 at 18–19.

⁵⁹ Goines and Hagler, *supra* note 3 at 291.

⁶⁰ Zhihui Gai et al., *Effects of Chronic Noise on mRNA and Protein Expression of CRF Family Molecules and Its Relationship with p-tau in the Rat Prefrontal Cortex*, 368 *J. Neurol. Sci.*, 307 (2016).

symptoms.⁶¹ The risk of developing anxiety and alcohol abuse is significantly linked to noise-induced insomnia, and the risk of depression is four times higher in insomniacs.⁶² People who experience such mental and emotional strains do not acclimate to continuous noise exposure.⁶³

EPA itself in its 1974 Levels Document recognized that noise interference with communication and cognitive abilities should be a factor in setting health-protective noise limits.⁶⁴ At the time, the available data on noise disruption to concentration were mostly subjective reports, though noise disruption to speech was backed by quantified data.⁶⁵ Since 1974, many studies have filled in those data gaps and shown concentration, memory, and work and school performance are strongly impaired by noise.⁶⁶

While many of these health issues are the subjects of ongoing studies, a wealth of science across the globe has confirmed and expanded EPA Level Document's recognition that noise directly and indirectly causes health problems beyond hearing loss. The United States has largely fallen behind other countries on this research, as well as the resulting noise protections. Likely all of the American population is exposed to harmful levels of noise at some point,⁶⁷ and a few particularly vulnerable segments of the population need immediate attention.

4. *Vulnerable Populations*

Children are widely recognized by the scientific and medical communities as particularly vulnerable to noise.⁶⁸ Long-term disturbed sleep may be linked to attention-deficit hyperactivity

⁶¹ *Id.*

⁶² NIGHT NOISE, *supra* note 2 at 24.

⁶³ Goines and Hagler, *supra* note 3 at 292.

⁶⁴ LEVELS DOCUMENT, *supra* note 19 at 30–31. *See also id.* at Appendix D.

⁶⁵ LEVELS DOCUMENT, *supra* note 19 at 30–31. *See also id.* at Appendix D.

⁶⁶ NIGHT NOISE, *supra* note 5 at 24; Goines and Hagler, *supra* note 3 at 291.

⁶⁷ *See, e.g.,* Hammer, *supra* note 30 at 117. For a specific example, *see* Richard L. Neitzel et al., *Exposures to Transit and Other Sources of Noise Among New York City Residents*, 46 *Environ. Sci. Technol.* 500, 505 (2012) (“Over nine in ten transit users and nearly nine in ten nonusers had annual total exposures that exceeded EPA-recommended limit”) [hereinafter Neitzel, *Exposures to Transit*].

⁶⁸ *E.g.,* Goines and Hagler, *supra* note 3 at 291; NIGHT NOISE, *supra* note 2 at 25–33.

disorder, as it manifests symptoms such as difficulties focusing attention, increased irritability, and lower impulse control.⁶⁹ Lower sleep quality (i.e., frequent disruptions) has been shown to reduce memory even more strongly than short sleep duration,⁷⁰ and may even physically stunt growth.⁷¹ Noisy environments, at home or school, diminish academic performance and social and emotional development.⁷²

Chronic noise exposure also creates greater risk of other mental and physical problems: “[C]hildren and adolescents with disturbed sleep report more depression, anxiety, irritability, fearfulness, anger, tenseness, emotional instability, inattention and conduct problems, drug use and alcohol use;”⁷³ in addition, children aged three to five years, especially boys, had an 86% increased risk of injury when they got less than ten hours of sleep.⁷⁴ Children are also more sensitive to noise-induced hearing loss.⁷⁵ The ubiquitous use of headphones to mask noise pollution with higher-volume sound is of particular concern, as children’s shorter ear canals allow greater, more concentrated sound energy to reach their ear drums than adults.⁷⁶ So-called “safe” headphones for children are misleading, as they recommend that output not exceed 85 dB, the recommended maximum for industrial work, not for children.⁷⁷

Other groups that experience more fragmented sleep, and are therefore more susceptible to noise disturbances, include pregnant women, the elderly, the chronically ill, and night-shift

⁶⁹ NIGHT NOISE, *supra* note 2 at 25, 28.

⁷⁰ *Id.* at 27.

⁷¹ *Id.* at 31.

⁷² *Id.* at 27–29; Goines and Hagler, *supra* note 3 at 291; Hammer, *supra* note 30 at 116.

⁷³ NIGHT NOISE, *supra* note 2 at 31.

⁷⁴ *Id.* at 32.

⁷⁵ Goines and Hagler, *supra* note 3 at 289.

⁷⁶ Carolina Abdala and Douglas H. Keefe, *Morphological and Functional Ear Development*, in HUMAN AUDITORY DEVELOPMENT, 19, 20 (L.A. Werner et al. eds., 2012).

⁷⁷ *See* Fink, *supra* note 25 at 44.

workers.⁷⁸ People with certain psychiatric and neurological disorders—particularly phobias, autism spectrum disorders, and depression—tend to be particularly sensitive to noise and are less able to adapt to noisy environments.⁷⁹

Finally, certain industry workers and military personnel are at particularly high risk of noise-induced hearing loss and related health problems.⁸⁰ In 2011, the Occupational Safety and Health Administration (OSHA) estimated that 30 million American workers are exposed to hazardous occupational noise levels.⁸¹ The prevalence of hearing loss and tinnitus “amongst military personnel is considerably greater than in the general public,” and are the two most prevalent disabilities compensated by the U.S. Department of Veterans Affairs.⁸² OSHA recommends no exposure at all to sounds over 140 dB, yet military equipment often exceeds that level: the M16 rifle creates 156 dB bursts when fired.⁸³ Hearing protection devices currently used by the military not only offer inadequate protection, but also are often not worn because they decrease personnel’s life-saving ability to communicate and be aware of their environment.⁸⁴ Unlike many other occupations, deployed military personnel on ships also have

⁷⁸ NIGHT NOISE, *supra* note 2 at XII, 40–41.

⁷⁹ *Id.* at 89.; *See also* Sarah J. Carrington et. al., *DSM-5 Autism Spectrum Disorder: In Search of Essential Behaviours for Diagnosis*, 8 *Research in Autism Spectrum Disorders* 701, 701–15 (2014) (discussing noise sensitivities for individuals with Autism Spectrum Disorders).

⁸⁰ For a nearly comprehensive list of sound levels, *see* Elliott H Berger et al., *Noise Navigator Sound Level Database with Over 1700 Measurement Values* (June 26, 2015).

⁸¹ Yankaskas, *supra* note 7 at 4. Because general occupational noise safety levels are set by OSHA, we do not discuss other occupations in depth here. However, as stated in Section 4 of the NCA, EPA also has a duty to consult with OSHA in setting safe noise levels. 42 U.S.C. § 4903(c).

⁸² Yankaskas, *supra* note 7 at 3. *See also* Office of Disease Prevention and Health Promotion, *Hearing and Other Sensory or Communication Disorders*, Healthy People 2020 Report. Available at <https://www.healthypeople.gov/2020/topics-objectives/topic/hearing-and-other-sensory-or-communication-disorders>. Accessed Feb. 7, 2017.

⁸³ Eric D. Lynch and Jonathan Kil, *Compounds for the Prevention and Treatment of Noise-Induced Hearing Loss*, 10 *Drug Discov. Today* 1291, 1291 (2005).

⁸⁴ Lynch and Kil, *supra* note 83 at 1292; Yankaskas, *supra* note 7 at 5.

no quiet spaces to allow their ears to recover; for example, noise levels in most areas of an aircraft carrier exceed 85 dB, and crew sleeping areas may have noise levels over 94 dB.⁸⁵

In summary, many millions of Americans are exposed to excessive noise annually, which can cause hearing loss, cardiovascular disease, and numerous other serious medical conditions. In addition, vulnerable populations—including children, the elderly, the chronically ill, workers in noisy occupations, and military personnel—are at higher risk for these health conditions but are not receiving adequate protection from noise.

III. EPA HAS A NON-DISCRETIONARY DUTY TO IDENTIFY AND PROMULGATE REGULATIONS ON PRODUCTS THAT ARE MAJOR SOURCES OF NOISE, AND TO UPDATE ITS NOISE STUDIES

A. EPA's mandatory duties under Section 5

Section 5 of the NCA states that the Administrator "shall . . . compile and publish a report or series of reports (1) identifying products (or classes of products) which in his judgment are major sources of noise."⁸⁶ These reports under Section 5 are the heart of the NCA process for regulating noise; they are created after consultation with accompanying federal agencies, and EPA's regulations are based on the published reports. The Administrator must then promulgate and publish proposed standards for such products identified in the reports published in the Federal Register.⁸⁷ These standards and criteria are to be created with respect to the "scientific knowledge most useful in indicating the kind and extent of all identifiable effects on public health or welfare."⁸⁸ The NCA also requires that from "time to time" the Administrator review and revise or supplement any criteria or reports published under this section.⁸⁹

⁸⁵ Yankaskas, *supra* note 7 at 6.

⁸⁶ NCA § 5(b)(1), 42 U.S.C. § 4904(b)(1).

⁸⁷ NCA § 5(d), 42 U.S.C. § 4904(d).

⁸⁸ NCA § 5(a)(1), 42 U.S.C. § 4904(a)(1).

⁸⁹ NCA § 5(b)(2), 42 U.S.C. § 4904(b)(2).

After the passing of the NCA in 1972, the Administrator published, in accordance with Section 5, three reports classifying products beyond those identified in the NCA as major sources of noise. In the first report, issued in 1975, the Administrator found that portable air compressors and medium and heavy trucks were major sources of noise in need of regulation for the health and welfare of the population.⁹⁰ The second report, issued in 1977, added power lawn mowers to the list of major sources of noise in need of regulation.⁹¹ Finally, on February 3, 1977, pavement breakers and rock drills were identified as major sources of noise.⁹²

In the last 40 years, the Administrator has not published any further reports identifying products which are major sources of noise. Not only has the Administrator not carried out EPA's mandatory duties under the NCA in over a generation, he has removed the designation of "major source of noise" from all products identified in Section 5 reports since 1977.⁹³ In 1982, the Administrator proposed revising all three of EPA's initial reports, effectively removing the "major source of noise" designation from all products due to "[f]ederal budgetary constraints, Agency regulatory priorities, and national economic conditions."⁹⁴ Since this decision, the 10th Circuit held in *Forest Guardians v. Babbitt* that "resource limitations " cannot justify an agency's failure to comply with mandatory, non-discretionary duties imposed by an act.⁹⁵ Congress had given EPA funding at the time of the reports; therefore, EPA was statutorily

⁹⁰ Identification of Products as Major Source of Noise, 40 Fed. Reg. 23105 (report May 28, 1975).

⁹¹ Identification of Products as Major Sources of Noise, 42 Fed. Reg. 2525 (report Jan. 12, 1977).

⁹² Identification of Major Sources of Noise: Pavement Breakers and Rock Drills, 42 Fed. Reg. 6722 (report Feb. 3, 1977). Later, in 1977, the Association of American Railroads brought suit against EPA to create additional standards for their rail yards, which the Administrator promulgated on January 4, 1980. 42 Fed. Reg. 1252; *Ass'n of Am. R.R. v. Costle*, 562 F.2d 1310 (D.C. Cir. 1977). However, this rule was subsequently challenged by the Association, and as part of a settlement agreement on Nov. 12, 1981, was withdrawn. Noise Emission Standards for Transportation Equipment: Interstate Rail Carriers, 47 Fed. Reg. 54107 (withdrawn Dec. 1 1982).

⁹³ Withdrawal, 47 Fed. Reg. 54,106 (proposed Nov. 22, 1982).

⁹⁴ *Id.* at 54,108.

⁹⁵ *Forest Guardians v. Babbitt*, 174 F.3d 1178, 1184 (10th Cir. 1998). "'Shall' means shall. The Supreme Court and this circuit have made clear that when a statute uses the word 'shall,' Congress has imposed a mandatory duty upon the subject of the command." *Id.* at 1187.

mandated to finalize such regulations. The D.C. Circuit has recently held that "[f]ederal agencies may not ignore statutory mandates simply because Congress has not yet appropriated all of the money necessary to complete a project."⁹⁶

B. EPA's mandatory duties include updating the national noise study.

To comply with its mandatory duties under the NCA, the Administrator must initiate a new national study on noise to better understand the current sources of noise, as well as its impact on public health and welfare. This study should update and replace the 1974 Levels Document, and set a more accurate noise exposure standard. Relying on science from the 1970's is insufficient; as EPA itself acknowledged, the number of products that could potentially be designated as "major sources of noise" has proliferated and continued research is necessary to protect the public and to evaluate advancing technologies.⁹⁷ A recent letter from a medical doctor to the Federal Trade Commission (FTC) asked that a label be added to headphone packaging and a disclaimer in advertisements be required warning of the hearing impact of noise levels above 85 dB.⁹⁸ The FTC responded that it did not have the authority to require labeling of noise warnings, and that there were insufficient data to support a required warning in any advertisements on headphones.⁹⁹ With an updated study, warning labels would also be based on a safer standard.¹⁰⁰

⁹⁶*In re Aiken Cty.* 725 F.3d 255, 259 (D.C. Cir. 2013).

⁹⁷ LEVELS DOCUMENT, *supra* note 19 at 22.

⁹⁸ Letter from Daniel Fink, M.D., to Carolyn Lee Hann, Attorney, Federal Trade Commission (April 5, 2016).

⁹⁹ Letter from Carolyn Lee Hann, Attorney, FTC to Daniel Fink, M.D. (May 5, 2016).

¹⁰⁰ See IV. EPA SHOULD UPDATE ITS PRODUCT NOISE EMISSION AND PROTECTION HEARING LABELING REGULATIONS TO PROTECT THE PUBLIC'S HEARING BASED ON CURRENT TECHNOLOGY AND TESTING STANDARDS, *infra*.

In the NCA, Congress instructed the Administrator that the criteria for establishing noise regulations would need to be updated "from time to time."¹⁰¹ While "time to time" is not a defined period, Petitioners submit that, after 40 years updating is long overdue.

Our understanding of the impact of noise on health has improved, the sources of noise have changed, the technical capability to design safer products has improved, and the number of Americans exposed to major sources of noise above safe levels has grown. Once a new national study is complete, EPA can then comply with its Section 5 mandatory duty of identifying products created since 1977 that are major sources of noise.

C. Section 6 requirements

Section 6 of the NCA requires the Administrator to publish proposed regulations for any product designated as a major source of noise under Section 5. The regulations "shall include a noise emission standard [that] set[s] limits on noise emissions from such product and shall be a standard which in the Administrator's judgment, based on criteria published under Section 5, is requisite to protect the public health and welfare."¹⁰² Petitioners submit that this duty is mandatory, as EPA acknowledged in its first Section 5 report in 1975,¹⁰³ particularly among the four categories Congress identified as initial major sources of noise.

IV. EPA SHOULD UPDATE ITS PRODUCT NOISE EMISSION AND PROTECTION HEARING LABELING REGULATIONS TO PROTECT THE PUBLIC'S HEARING BASED ON CURRENT TECHNOLOGY AND TESTING STANDARDS.

A. Labeling requirements under the NCA and the status of EPA labeling regulations

Section 8 of the NCA requires EPA to set two types of labeling standards. Similar to the structure of Sections 5 and 6, first "the Administrator shall by regulation designate any product

¹⁰¹ NCA § 5(c), 42 U.S.C. § 4904(c).

¹⁰² NCA § 6(c)(1), 42 U.S.C. § 4905(c)(1).

¹⁰³ Identification of Products as Major Source of Noise, 40 Fed. Reg. 23107 (May 28, 1975).

(or class thereof)— (1) which emits noise capable of adversely affecting the public health or welfare; or (2) which is sold wholly or in part on the basis of its effectiveness in reducing noise.”¹⁰⁴ Once a product is designated under one of these two categories, then “the Administrator shall by regulation require that notice be given to the prospective user of the level of the noise the product emits, or of its effectiveness in reducing noise.”¹⁰⁵ EPA must also specify the form of such labels, where they should be placed, and which methods and measurements were used.¹⁰⁶ Opportunity for public comment per the Administrative Procedure Act, 5 U.S.C. § 553(c), must also be allowed for any proposed labeling regulation.¹⁰⁷

By 1979, EPA did finalize general regulations as to the form, location, and methodology of noise emission labels,¹⁰⁸ as well as labeling regulations for hearing protection devices.¹⁰⁹ However, the only product designated as noise-emitting was portable air compressors; as a result, no other products in the U.S. currently require a noise emission label.¹¹⁰ Even under the voluntary Energy Star program, product noise emission is not a criterion.¹¹¹ Yet, other countries have mandatory noise emission and labeling standards that can interfere with the ability of U.S. manufacturers to compete globally.¹¹²

In addition, the labeling regulations for hearing protective devices are now so outdated that they impede public health improvements. The testing standards EPA relied on in 1979, the American National Standards Institute (ANSI) S3.19-1974,¹¹³ have since been withdrawn and

¹⁰⁴ NCA § 8(a), 42 U.S.C. § 4907(a).

¹⁰⁵ NCA § 8(b), 42 U.S.C. § 4907(b).

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ 40 C.F.R. § 211, Subpart A.

¹⁰⁹ 40 C.F.R. § 211, Subpart B.

¹¹⁰ NAT’L ACAD. OF SCIENCES, *supra* note 43 at 96.

¹¹¹ *Id.* at 97.

¹¹² *Id.* at 89.

¹¹³ 40 C.F.R. §§ 211.206-1(a), 211.206-2(a).

replaced with a more accurate standard.¹¹⁴ The older method is the basis of a device's noise reduction rating, or NRR, displayed on hearing protection devices as a single number of the optimum dB level the device may reduce.¹¹⁵ The NRR is so unreliable that OSHA applies a "safety factor" by subtracting 7 dB from the labeled NRR and reducing that number by 50% to get a more realistic measurement.¹¹⁶

Technology has also advanced in the succeeding decades, introducing new hearing protective devices, such as some that have electronic noise reduction, and others that combine a microphone with protective headsets for better communication.¹¹⁷ Unfortunately, none of these advanced devices can currently be sold as hearing protection devices, because the measuring and testing standards required in the regulations are too old to apply to the advanced electronics.¹¹⁸

In 2009, EPA published a proposed rule to update the 1979 labeling regulations for hearing protection devices.¹¹⁹ After receiving input from trade organizations, manufacturers, researchers, and other federal agencies, EPA recognized that "[a]ll interested parties generally agree that the existing regulation needs to be revised."¹²⁰ The proposal suggests five main updates: 1) broadening the scope of applicable products to include newer technology; 2) updating the testing methods to the current ANSI standards; 3) clarifying the NRR scheme and improving its accuracy; 4) improving the label format to be more user friendly and informative; and 5) updating criteria for manufacturers, including allowing electronic labeling for internet

¹¹⁴ 2009 Proposed Labeling, 74 Fed. Reg. 39149, 39152 (proposed Aug. 5, 2009).

¹¹⁵ See 40 C.F.R. § 211.204-4.

¹¹⁶ OSHA, TECHNICAL MANUAL: NOISE Appendix E-1. (Jan. 13, 2017). Available at https://www.osha.gov/dts/osta/otm/new_noise/index.html. As a given example, a worker exposed to 98 dBA and wearing hearing protectors with an NRR of 25 dBA would still be exposed to 89 dBA: $98 \text{ dBA} - [(25-7) \times 50\%] = 89 \text{ dBA}$. *Id.*

¹¹⁷ 2009 Proposed Labeling at 39151.

¹¹⁸ *Id.* at 39152.

¹¹⁹ *Id.* at 39150.

¹²⁰ *Id.* at 39151.

sales, and requiring recurrent testing.¹²¹ However, after the comment period closed in late 2009, and two subsequent hearings were held in 2010, no final decision was published, despite generally favorable feedback.¹²²]

B. EPA should complete and update its noise labeling regulations, 40 C.F.R. 211, *et seq.*

Because continued reliance on incomplete and grossly outdated labeling regulations poses substantial risks to public health, Petitioners contend: 1) EPA must designate products that emit noise capable of adversely affecting the public health or welfare and should therefore be labeled, as mandated in Section 8(a)(1) of the NCA, and 2) EPA must re-initiate notice and comment rulemaking for the 2009 Proposed Labeling, or a similar update for hearing protection device labels.

1. EPA has a non-discretionary duty to designate noise emitting products that require consumer notice.

First, the NCA imposes on the Administrator non-discretionary duties to designate products “which emit[] noise capable of adversely affecting the public health or welfare” and to require a user notice (label) describing “the level of the noise the product emits.”¹²³ Although EPA started fulfilling this duty in 1979 by publishing the general labeling format,¹²⁴ and determined that the label applies “to all products for which regulations are published under part 211,”¹²⁵ it has failed to designate any products that require such labels. Not only does this hurt American industries’ competitiveness in global markets as mentioned in part A above, but American consumers remain ill-informed and unwarned about the dangers of noisy devices.

¹²¹ *Id.* at 39,153–39,162. *See also id.* at 39,178–39,180 for examples of proposed improved labels.

¹²² *See* Regulations.gov, U.S. Environmental Protection Agency Labeling of Hearing Protection Devices. Available at <https://www.regulations.gov/docket?D=EPA-HQ-OAR-2003-0024>.

¹²³ NCA § 8(a), (b), 42 U.S.C. § 4907(a), (b).

¹²⁴ *See* 40 C.F.R. § 211 Subpart A.

¹²⁵ 40 C.F.R. § 211.101.

For example, 26 consolidated class action cases were recently settled against multiple Bluetooth manufacturers for failure to warn consumers that the headsets could cause noise-induced hearing loss after only a few minutes of use per day.¹²⁶ Part of the settlement agreement required the defendant companies to “post acoustic safety information” on their websites and on their products.¹²⁷ This agreement would have been superfluous—as, indeed, would have been the entire action—if such headsets had been appropriately labeled.

Petitioners recognize that, as a practical matter, products that might be designated for emission labels under 40 C.F.R. § 211 will likely overlap with products to be identified as major sources of noise under Section 5 of the NCA. Therefore, Petitioners ask that either simultaneously with or immediately following identification of major sources of noise, EPA also fulfill its non-discretionary duty to designate those products that require consumer notice labels for emitting “noise capable of adversely affecting the public health or welfare.”

2. *EPA should initiate rulemaking to update the hearing protection devices labeling regulations.*

Second, EPA should continue the progress it started in improving the hearing protection devices labeling regulations by either re-opening notice and comment on the 2009 Proposed Labeling, or by initiating a similar new rule. The current regulations in 40 C.F.R. § 211, Subsection B are based on such outdated products and testing methods that they are effectively blocking many beneficial products from being legally sold as hearing protection, and potentially even causing harm to those who rely on these regulations.

The 2009 Proposed Labeling was the product of over six years of research and informed input from a variety of perspectives. All industries, universities, trade organizations, and federal

¹²⁶ *Jones v. GN Netcom, Inc. (In re Bluetooth Headset Products Liab. Litig.)*, 654 F.3d 935, 939 (9th Cir. 2011).

¹²⁷ *Id.*

agencies involved agreed that the regulations needed to be updated.¹²⁸ EPA made great strides in proposing a new regulation that would allow innovators to lawfully market their products according to their actual hearing protection capabilities, that would inform consumers and employers to make safer purchases, and that would give American companies a more competitive edge in the globally-recognized field of noise protection.

As technology becomes ever more personal and ubiquitous—as we each carry electronic devices that stream music, videos, communication, news, and games to us at a beckon—so too does the noise around us compete more for our attention, and our need grows to retreat from the noise. The increasing ubiquity of specialized headphones is just one example of the American, and global, public’s desire to protect itself from noise. A 2015 report found that half of children as young as eight to twelve listened to music every day—yet many headphones marketed to parents as “volume limiting” expose children to harmful sound levels.¹²⁹ As such harmful products are marketed with deceptive assurances, and marketing of advanced protective products is impeded, the danger to the public from reliance on outdated labeling standards grows.

In addition, military personnel and veterans are suffering multiple millions of dollars’ worth of hearing damage each year from relying on “conventional” hearing protection devices (i.e. passive earplugs or muffs),¹³⁰ the only devices currently approved by EPA. Workers in other industries, government and private, must rely on OSHA standards that, in turn, rely on EPA’s old NRR method, despite OSHA guidance policies that openly recognize how little protection NRR-labeled devices provide.¹³¹

¹²⁸ See 2009 Proposed Labeling, 74 Fed. Reg. 39149, 39151 (proposed Aug. 5, 2009).

¹²⁹ Catherine Saint Louis, *Children’s Headphones May Carry Risk of Hearing Loss*, The New York Times (Dec. 6, 2016). Available at https://www.nytimes.com/2016/12/06/health/headphones-hearing-loss-kids.html?_r=0

¹³⁰ Yankaskas, *supra* note 7 at 3.

¹³¹ See OSHA, *supra* note 116 at Appendix E-1.

EPA is in a prime position to take steps now to improve public noise awareness and health in this arena. The NCA gives EPA authority to set labeling standards, and EPA need not start from scratch, but can simply build off the progress it made a decade ago. Whatever the reason the 2009 Proposed Labeling Regulation was abandoned, Petitioners ask EPA to revive it and update it with relevant technological advances made in the meantime and then release it for public comment. In the alternative, EPA should begin the rulemaking process anew.

V. EPA SHOULD REINVIGORATE THE QUIET COMMUNITIES PROGRAM TO FOSTER COOPERATION AMONG STATE, LOCAL, AND FEDERAL GOVERNMENTS.

A. The Quiet Communities Act of 1978

In order to provide vital support for state and local noise abatement efforts, Congress added the Quiet Communities Act of 1978 as Section 14 in the NCA.¹³² The Quiet Communities Act directs EPA “through the use of grants, contracts, and direct Federal actions” to perform seven enumerated tasks “[t]o promote the development of effective State and local noise control programs,”¹³³ specifically: 1) educating the public on noise effects on health; 2) conducting or financing an array of noise research; 3) establishing a Quiet Communities Program to assist states; 4) developing a national noise assessment program; 5) establishing regional assistance centers; 6) providing technical assistance to state and local governments; and 7) ensuring maximal use of noise programs by those protected under the Older Americans Act.¹³⁴

With this new authority, ONAC awarded some grants, but more important, provided technical support, training, and education, wrote a model ordinance, and instituted buy-quiet

¹³² NCA § 14, 42 U.S.C. § 4913 (1988); *as discussed in* Shapiro, *supra* note 8 at 17.

¹³³ NCA § 14, 42 U.S.C. § 4913.

¹³⁴ NCA § 14(a)–(g), 42 U.S.C. § 4913(a)–(g).

programs.¹³⁵ Many states incorporated EPA’s guidance into their own laws; for example, Washington State modeled its State Noise Control Act largely on the federal act and EPA’s model ordinance.¹³⁶ After ONAC was defunded in 1981, many local noise abatement efforts stagnated or died, which “strongly suggests that ONAC’s support activities were crucial to local noise abatement efforts.”¹³⁷

B. EPA has a non-discretionary duty to assist states in noise abatement, and should reinvigorate its partnership with states to promote public health and scientific research.

Petitioners are asking EPA to restore cooperation with state and local governments on noise abatement efforts pursuant to the QCA.¹³⁸ The harmful effects of noise on public health are not just a *federal* issue, but a *national* issue, and local governments are generally more attuned to the specific needs of their communities. As EPA itself recognized, communities usually know best how to address their specific needs, circumstances, and goals.¹³⁹

Petitioners suggest that EPA establish noise research partnerships with state and local universities through grants or other support. Research grants to states and municipalities to prepare detailed noise maps will facilitate informed decision-making at a local level.¹⁴⁰ EPA should also reestablish noise abatement training programs, such as ECHO (Each Community Helping Others), which encouraged cities to share their expertise on noise. Additionally, the 1974 Model Ordinance should be updated to reflect new research and technology.

¹³⁵ Shapiro, *supra* note 8 at 17–18; *see also* EPA, MODEL COMMUNITY NOISE CONTROL ORDINANCE 9-76-003 (Sept. 1975) [hereinafter EPA MODEL ORDINANCE].

¹³⁶ *See* WASH. REV. CODE § 70.107 (1974), WASH. ADMIN. CODE § 173-60 (1975).

¹³⁷ Shapiro, *supra* note 8 at 18.

¹³⁸ NCA § 14, 42 U.S.C. § 4913.

¹³⁹ EPA MODEL ORDINANCE, *supra* note 135 at 3.

¹⁴⁰ As an example of a citizen mapping project, *see* QUIET CITY MAPS, <https://www.quietcitymap.com/> (last visited Feb. 28, 2017).

States can help decrease the federal burden of controlling harmful noise, but they cannot supplant the federal role. States are unable to control the manufacture and flow of products outside their borders, and local noise ordinances have proven ineffective.¹⁴¹ The QCA's state-federal partnership is both necessary and well-conceived; it should be reinvigorated.

VI. CONCLUSION

Noise is more than an annoyance: It is a serious public health threat that puts millions of Americans at risk every day, and particularly affects certain vulnerable populations. Under the NCA, EPA has nearly exclusive federal authority to control noise, and has several non-discretionary duties it must take to protect the public health. First, EPA must identify products that are major sources of noise, then promulgate standards to control noise emissions in those products. Second, EPA must designate products that emit adverse levels of noise for which consumers should be given notice, and the Agency should update its hearing protection devices labeling standards to reflect current technology. Third, EPA must assist state and local governments in noise research and abatement, and should establish a cooperative partnership to help reinvigorate the States' roles in noise abatement. With these initial steps, EPA can reestablish its leadership role in reducing our country's noise-related medical costs, improving physical and mental health for vast numbers of Americans, and help American businesses maintain global competitiveness.

¹⁴¹ Hammer, *supra* note 30 at 118. *See also* EPA MODEL ORDINANCE, *supra* note 135 at 1.