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Noise Abatement and Control: An Overview of Federal Standards and Regulations

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Summary

Constant or repeated exposure to sounds of 90 decibels or higher can lead to hearing loss, and noise exposure is responsible for hearing impairment in about 10 million people in the United States. To limit the public's exposure to potentially harmful sound levels, the federal government sets and enforces uniform noise control standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium and heavy-duty trucks, motorcycles and mopeds, portable air compressors, and federally assisted housing projects located in noise exposed areas. State and local governments determine the extent to which other sources of noise are controlled, including sound levels generated by commercial, industrial, and residential activities, and regulations for such sources can vary widely among localities. In the 106th Congress, legislative interest in noise abatement and control has focused on reducing aircraft noise. Numerous bills would address noise from aircraft flights over national parks, the commercial operation of supersonic aircraft, and takeoffs and landings at airports in certain metropolitan areas. Federal funding to reduce airport noise also was an issue in the debate over the conference agreement on H.R. 1000 (H. Rept. 106-513). The President signed the bill into law (P.L. 106-181) on April 5, 2000. It reauthorizes the Federal Aviation Administration's Airport Improvement Program and increases the amount of funding set aside for noise mitigation grants from 31 to 34%. Under the new law, the current amount of funding reserved for such grants in FY2000 is nearly \$207 million. Additional legislation, H.R. 2702 as introduced, would reestablish the Environmental Protection Agency's Office of Noise Abatement and Control and increase the federal role in regulating noise. This report will be updated as legislative activity and other relevant developments occur.

Introduction

According to the National Institute on Deafness and Other Communication Disorders, exposure to loud sounds is responsible for hearing impairment in approximately 10 million of the nearly 30 million people with hearing loss in the United States, and an additional 30 million people are exposed to dangerous noise levels on a daily basis.¹ Several laws require the federal government to provide uniform noise control standards which limit the public's exposure to potentially harmful sound levels, and the responsibility for setting and enforcing them is divided among multiple federal agencies. In the past, the Environmental Protection Agency (EPA) coordinated all federal

noise control activities through its Office of Noise Abatement and Control. However, Congress phased out the office's funding in FY1983 as part of a shift in federal noise control policy to transfer the primary responsibility of regulating noise to state and local governments. While EPA no longer plays a prominent role in controlling noise, its past standards and regulations remain in effect, and other federal agencies continue to set and enforce noise control standards for sources within their regulatory jurisdiction.

This report explains how noise is measured, distinguishes annoying sound levels from those that can lead to hearing loss, identifies what sources of noise are currently regulated by the federal government, indicates which federal agencies are responsible for setting and enforcing noise standards, describes the extent to which the standards limit noise, explains the role of state and local governments, and discusses relevant legislative activity in the 106th Congress.

How Loud Is Too Loud?

Sound is measured in units of decibels (dbA), and an increase of 10 dbA represents sounds that are perceived to be twice as loud. While sound levels of 65 dbA are annoying to most individuals, constant or repeated exposure to levels of 90 dbA or higher can lead to hearing loss. The table below provides examples of various sound levels.

Sound Levels Generated by Various Sources of Noise

Sound Level	dbA
Quiet library, soft whispers	30
Living room, refrigerator	40
Light traffic, normal conversation, quiet office	50
Air conditioner at 20 feet, sewing machine	60
Vacuum cleaner, hair dryer, noisy restaurant	70
Average city traffic, garbage disposals, alarm clock at 2 feet	80
Constant exposure to the following sound levels can lead to hearing loss	
Subway, motorcycle, truck traffic, lawn mower	90
Garbage truck, chain saw, pneumatic drill	100
Rock band concert in front of speakers, thunderclap	120
Gunshot blast, jet plane	140
Rocket launching pad	180

Source: Deafness Research Foundation.

What Sources of Noise Are Regulated by the Federal Government?

The Noise Control Act of 1972 (P.L. 92-574) and several other laws require the federal government to set and enforce uniform noise control standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium and heavy-duty trucks, motorcycles and mopeds, portable air compressors, and federally assisted housing projects located in noise exposed areas. The Noise Control Act also requires federal agencies to comply with all federal, state, and local noise control laws and regulations. Most federal noise standards focus on preventing hearing loss by limiting the public's exposure to noise levels that approach 90 dbA and higher. However, some are more stringent and prohibit lower sound levels that are annoying and can diminish one's quality of life. The standards for each source of noise and the federal agencies responsible for setting and enforcing them are discussed below.

Aircraft and Airports.² The Aircraft Noise Abatement Act of 1968 (P.L. 90-411) requires the Federal Aviation Administration (FAA) to develop and enforce safe standards for noise generated by aircraft.³ In developing these standards, the FAA generally follows the restrictions on noise established by the International Civil Aviation Organization. Federal noise control regulations define aircraft according to three classes: Stage I, Stage 2, and Stage 3. Stage I aircraft are the loudest, and Stage 3 are the quietest. However, all Stage I aircraft have been phased out of commercial operation, and all unmodified Stage 2 aircraft over 75,000 pounds were phased out by December 31, 1999, as required by the Airport Noise and Capacity Act of 1990 (P.L. 101-58).⁴ All Stage 3 aircraft in current operation must meet separate standards for runway takeoffs, landings, and sidelines, which range from 89 to 106 dbA depending on the aircraft's weight and its number of engines.⁵ The Aviation Safety and Noise Abatement Act of 1979 (P.L. 96-193) authorizes the FAA to award grants under the Airport Improvement Program for noise mitigation projects. Airport operators applying for such grants must design noise exposure maps and develop noise mitigation programs that limit sound levels in affected areas to between 65 and 75 dbA.⁶ The population exposed to airport noise of 65 dbA or higher declined as Stage 2 aircraft were phased out, and EPA estimates that in 2000 less than 500,000 people will be exposed to such levels, down from 7.0 million people in 1975.⁷

Interstate Motor Carriers. The Noise Control Act required EPA to develop noise control standards for motor carriers engaged in interstate commerce, and it authorized the Federal Highway Administration to enforce them.⁸ All commercial vehicles over 10,000 pounds are subject to separate standards for highway travel and stationary operation, but the standards do not apply to sound levels generated by horns or sirens when operated as warning devices for safety purposes.⁹ For highway travel, the standards range from 81 to 93 dbA, depending on the speed of the vehicle and the distance from which the sound is measured. The standards for stationary operation are similar and range from 83 to 91 dbA, depending on the distance from the vehicle. The standards apply at any time or condition of highway grade, vehicle load, acceleration, or deceleration.

Interstate Railroads. The Noise Control Act also required EPA to establish noise control standards for trains and railway stations engaged in interstate commerce, and it authorized the Federal Railroad Administration to enforce them.¹⁰ The standards do not apply to sound levels generated by horns, whistles, or bells, when operated as warning devices for safety purposes. There are separate standards for locomotives, railway cars, and railway station activities such as car coupling.¹¹ For locomotives built before 1980, the level of noise is limited to 73 dbA in stationary operation and at idle speeds, and is limited to 96 dbA at cruising speeds. The standards for locomotives built after 1979 are more stringent and limit noise in stationary operation and at idle

speeds to 70 dbA and at cruising speeds to 90 dbA. Noise from railway cars must not exceed 88 dbA at speeds of 45 miles per hour (mph) or less and must not surpass 93 dbA at speeds greater than 45 mph. Noise from car coupling activities at railway stations is limited to 92 dbA.

Workplace Activities. The Occupational Safety and Health Act of 1970 (P.L. 91- 596) required the Occupational Safety and Health Administration (OSHA) to develop and enforce safety and health standards for workplace activities.¹² In fulfilling its requirement to protect workers, OSHA established standards which specify the duration of time that employees can be safely exposed to specific sound levels.¹³ At a minimum, constant noise exposure must not exceed 90 dbA over 8 hours. The highest allowable sound level to which workers can be constantly exposed is 115 dbA, and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dbA. If noise levels exceed these standards, employers are required to provide hearing protection equipment which will reduce sound levels to acceptable limits.

Other Regulated Sources of Noise. In addition to authorizing the regulation of noise from interstate motor carriers and railroads, the Noise Control Act directed EPA to set and enforce standards for safe levels of noise generated by products distributed through commerce, including transportation equipment, motors and engines, and construction equipment.¹⁴ Under this authority, EPA set noise control standards for motorcycles and mopeds, medium and heavy-duty trucks over 10,000 pounds, and portable air compressors. The standards for motorcycles only apply to those manufactured after 1982 and range from 80 to 86 dbA depending on the model year and whether the motorcycle is designed for street or off-road use.¹⁵ Mopeds are regulated more strictly with noise levels limited to 70 dbA. The standards for trucks over 10,000 pounds only apply to those manufactured after 1978 and range from 80 to 83 dbA depending on the model year.¹⁶ These standards are separate from those for interstate motor carriers. Noise from portable air compressors is limited to 76 dbA.¹⁷ The Noise Control Act also authorized EPA to require labels for products which reduce noise.¹⁸ Under this authority, EPA developed regulations for hearing protection devices, referred to as *Noise Reduction Ratings*, which require manufacturers to identify the level of sound from which the device protects the user.¹⁹ Under general regulatory authorities provided by the Housing and Urban Development Act of 1968 (P.L. 90-448), there also are standards for federally assisted housing projects located in noise exposed areas.²⁰ The standards are designed to protect occupants from annoying and potentially harmful sound levels by limiting interior noise to a daily average of 65 dbA.²¹

What Is the State and Local Role in Controlling Noise?

As discussed above, the federal role in regulating noise is predominately limited to transportation, workplace activities, and certain types of machinery. State and local governments determine the extent to which all other sources of noise are controlled, and regulations for such sources can vary widely among localities.²² Further, some states do not specifically regulate noise, but instead, allow local governments to play the primary role. For example, the State of California has not established any standards to restrict noise but does provide model ordinances to assist municipal governments in developing noise control programs. Sources of noise commonly regulated at the state and local level include commercial, industrial, and residential activities. Regulations for such sources typically control the public's exposure to irritating or potentially harmful noise levels by limiting the activity concerned to specific times of the day, such as the operation of domestic power tools or gasoline-powered lawn equipment in residential areas. In recent years, restricting the use of gasoline-powered leafblowers has been a controversial noise issue in many local communities.

Legislative Activity in the 106th Congress

In the 106th Congress, legislative interest in noise abatement and control has focused primarily on aircraft noise. While comprehensive legislation regarding aircraft noise has not been introduced to date, numerous bills would address three particular areas of concern. First, H.R. 482, S. 81, and S. 306, as introduced, and H.R. 717, as passed by the House, would mitigate noise levels from aircraft flights over national parks. Second, H.R. 661, as passed by the House, and S.405, as introduced, would prohibit the commercial operation of certain types of supersonic aircraft due to the high noise levels that such aircraft produce. Third, H.R. 129, H.R. 561, H.R. 620, H.R. 790, H.R. 1463, H.R. 1823, and S. 775, as introduced, would address noise resulting from takeoffs and landings at airports in metropolitan areas.

Airport noise also was an issue in the reauthorization of the FAA's Airport Improvement Program (AIP), which provides grants for noise mitigation and other airport development and planning activities.²³ The conference agreement on H.R. 1000 (H.Rept. 106-513), the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, proposed to increase the amount set aside under the AIP program for noise mitigation from 31% to 34%. The Senate passed the conference agreement on March 8, 2000, and the House passed it on March 15, 2000. The President signed H.R. 1000 into law (P.L. 106-181) on April 5, 2000. Under the new law, the current FY2000 funding level for AIP noise mitigation grants is nearly \$207 million. In addition to authorizing funding, the law also includes other provisions which direct the FAA to continue developing quieter Stage 4 standards for aircraft noise, to conduct a noise study of Sky Harbor Airport in Phoenix, Arizona, and to examine the effects of helicopter noise on individuals in densely populated areas. Additional language requires the FAA to work with the National Park Service to develop air tour management plans for national parks, which would minimize the effects of aircraft noise on the natural environment by controlling the number and duration of commercial air tours and would include incentives for the use of quiet aircraft technologies by commercial air tour operators. The law also prohibits commercial air tours over Rocky Mountain National Park to protect environmentally sensitive areas.

In addition to the above legislation regarding aircraft noise, one bill was introduced in the first session of the 106th Congress that would reestablish EPA's Office of Noise Abatement and Control. Representative Nita Lowey introduced the Quiet Communities Act of 1999 (H.R. 2702) on August 4, 1999. It would authorize \$21 million annually from FY2000 to FY2004 to support the activities of an Office of Noise Abatement and Control. The reestablished office would emphasize noise abatement approaches that rely on state and local involvement, market incentives, and coordination between the public and private sectors. The primary functions of the office would be to provide states with technical assistance and grants to develop noise control programs and to conduct research and disseminate information on the effects of noise on human health. The bill also includes a provision that would direct EPA to study the Federal Aviation Administration's selection of methodologies used to measure noise, the level at which airport noise affects human health, and the effectiveness of current noise control programs at airports across the nation. EPA would be required to complete this study within 24 months of enactment and recommend new measures that would reduce the impacts of such noise on surrounding communities.

Footnotes

1 For information on hearing loss attributed to noise exposure, refer to the National Institute on Deafness and Other Communication Disorders web site at [<http://www.nih.gov/nidcd>].

2 Refer to the FAA's web site at [<http://www.aee.faa.gov>] for more information on aircraft noise.

3 49 U.S.C. 44715

4 49 U.S.C. 47528

5 14 C.F.R. 36

6 49 U.S.C. 47501 et seq.

7 EPA. Office of Policy, Planning, and Evaluation. *Indicators of the Environmental Impacts of Transportation*. EPA 230-R-99-001. October 1999. p. 33.

8 42 U.S.C. 4917

9 49 C.F.R. 325

10 42 U.S.C. 4916

11 49 C.F.R. 210

12 29 U.S.C. 655

13 29 C.F.R. 1910.95

14 42 U.S.C. 4905

15 40 C.F.R. 205, Subparts D and E

16 40 C.F.R. 205, Subpart B

17 40 C.F.R. 204

18 42 U.S.C. 4907

19 40 C.F.R. 211

20 42 U.S.C. 3535(d)

21 24 C.F.R. 51, Subpart B

22 For a listing of state and local noise control regulations available online, refer to the Noise Pollution Clearinghouse home page at [<http://www.nonoise.org>].

23 For additional information about this program, refer to CRS Issue Brief IB10026, *Airport Improvement Program*, by Robert S. Kirk.