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

David M. Bearden
Environmental Policy Analyst
Resources, Science, and Industry Division

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 standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium and heavy-duty trucks, motorcycles and mopeds, portable air compressors, federal highway projects, and federal housing projects. State and local governments determine the extent to which other sources are regulated, including commercial, industrial, and residential activities. Numerous bills were introduced in the 107th Congress to address noise exposure. Aside from appropriations for airport noise mitigation grants in FY2002, none of them were enacted. The majority of this legislation focused on aircraft noise, including: H.R. 299, H.R. 1288, H.R. 1741, H.R. 2299, H.R. 2429, H.R. 2430, H.R. 2477, H.R. 2746, H.R. 3479, H.R. 3886, H.R. 4481, H.R. 4653, H.R. 5142, H.R. 5143, H.R. 5559, S. 633, S. 688, S. 1786, S. 2039, S. 2808, and S. 2966. Other bills addressed noise in national parks and on public lands: S. 365, S. 712, S. 1136, and S. 1151. Two bills addressed railway noise: H.R. 2811 and H.R. 4761. Other legislation, H.R. 1130, would have authorized grants to examine the effects of noise and other environmental aspects on student achievement in elementary and secondary schools. Another bill, H.R. 1116 would have reauthorized EPA's former Office of Noise Abatement and Control. Due to ongoing concerns about noise exposure in many affected communities, a similar body of legislation may be considered during the 108th Congress. This report will be updated as 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 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 daily. Several federal laws require the federal government to provide uniform standards for various sources of noise.

The responsibility for setting and enforcing these standards 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. Although EPA no longer plays a prominent role in regulating noise, its past standards and regulations remain in effect, and other federal agencies continue to set and enforce noise standards for sources within their regulatory jurisdiction.

This report explains how noise is measured, identifies the sources of noise that are currently regulated by the federal government, describes the extent to which the federal standards limit noise, explains the role of state and local governments, and discusses noise control legislation that was considered during the 107th 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.[1] 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
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 Subject to Federal Regulation?

The Noise Control Act of 1972 (P.L. 92-574) and several other federal laws require the federal government to set and enforce uniform noise standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium and heavy-

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[1] For more information, see the National Institutes of Health Web site [http://www.nidcd.nih.gov].

duty trucks, motorcycles and mopeds, portable air compressors, federal highway projects, and federal housing projects. The Noise Control Act also requires federal agencies to comply with all federal, state, and local noise requirements. Most federal noise standards focus on preventing hearing loss by limiting exposure to sounds of 90 dbA and higher. However, some are stricter and focus on limiting exposure to quieter levels that are annoying to most individuals and can diminish one's quality of life. Federal noise standards and the agencies that set and enforce 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 aircraft noise.[3] In developing these standards, the FAA generally follows the noise restrictions established by the International Civil Aviation Organization (ICAO). Federal noise regulations define aircraft according to three classes: Stage 1, Stage 2, and Stage 3. Stage 1 aircraft are the loudest, and Stage 3 are the quietest. All Stage 1 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. 101-508, Subtitle D).[4] Stage 3 aircraft must meet separate standards for runway takeoffs, landings, and sidelines, ranging from 89 to 106 dbA depending on the aircraft's weight and its number of engines.[5] The ICAO has adopted stricter Stage 4 (referred to as Chapter 4 in ICAO parlance) aircraft noise standards, which are quieter by 10 dbA than the current Stage 3 standards.[6] However, the Stage 4 standards must go through the federal rulemaking process before they could be applied in the United States, and the FAA has not proposed such standards to date. The Airport and Airway Improvement Act of 1982 (P.L. 97-248) established the Airport Improvement Program (AIP) to provide federal assistance for airport construction projects and award grants for noise mitigation. Airport operators applying for such grants must design noise exposure maps and develop mitigation programs to ensure that noise levels are compatible with relevant land uses.[7]

Interstate Motor Carriers. The Noise Control Act required EPA to develop noise 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 standards for highway travel and stationary operation, but the standards do not apply to sounds from 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

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[2] For more information on aircraft noise, see the FAA's Web site [http://www.aee.faa.gov].

[3] 49 U.S.C. 44715

[4] 49 U.S.C. 47528

[5] 14 C.F.R. 36

[6] For more information on the new standards, see the ICAO's Web site [http://www.icao.org].

[7] 14 C.F.R. 150

[8] 42 U.S.C. 4917

[9] 49 C.F.R. 325

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 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 sounds from 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, 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 stricter, 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] To protect workers, OSHA established standards which specify the duration of time that employees can safely be exposed to specific sound levels.[13] At a minimum, constant noise exposure must not exceed 90 dbA over 8 hours. The highest sound level to which workers can constantly be 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 that will reduce sound levels to acceptable limits.

Other Regulated Sources of Noise. The Noise Control Act directed EPA to set and enforce noise standards for transportation, construction, and electrical equipment, and motors or engines.[14] Under this authority, EPA established 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] Noise from mopeds is 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

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[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

to 76 dbA.[17] The Noise Control Act also authorized EPA to require labels for products which reduce noise.[18] Under this authority, EPA established *Noise Reduction Ratings* for hearing protection devices which require manufacturers to identify the level of sound from which the device protects the user.[19]

There also are noise standards for federal highway projects and federal housing projects. The Federal-Aid Highway Act of 1970 (P.L. 91-605) required the Federal Highway Administration to develop standards for highway noise levels that are compatible with different land uses.[20] The law prohibits the approval of federal funding for highway projects that do not incorporate measures to meet these standards, which range from 52 to 75 dbA depending on land use.[21] Under general authorities provided by the Housing and Urban Development Act of 1968 (P.L. 90-448), there also are standards for federal housing projects located in noise exposed areas.[22] The standards limit interior noise to a daily average of 65 dbA.[23]

What Is the State and Local Role in Controlling Noise?

As discussed above, the federal role in regulating noise is mostly limited to transportation, workplace activities, and certain types of machinery. State and local governments determine the extent to which other sources of noise are controlled, and regulations for such sources can vary widely among localities. Further, some states do not directly regulate noise, but allow local governments to play the primary role. 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.

Legislative Activity in the 107th Congress

Numerous bills were introduced in the 107th Congress to address noise exposure. Aside from appropriations for airport noise mitigation grants in FY2002, none of them were enacted. Due to ongoing concerns about noise exposure in many affected communities, a similar body of legislation may be considered during the 108th Congress. Noise control legislation in the 107th Congress focused mainly on aircraft noise. Five bills proposed operation restrictions. As introduced, H.R. 299 would have prohibited the operation of civil *subsonic* turbojets that exceeded Stage 3 noise levels to or from airports in heavily populated areas. As introduced, H.R. 1741 would have prohibited the operation of civil *supersonic* transport aircraft that exceed Stage 3 noise levels. H.R.

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[17] 40 C.F.R. 204

[18] 42 U.S.C. 4907

[19] 40 C.F.R. 211

[20] 23 U.S.C. 109(i)

[21] 23 C.F.R. 772

[22] 42 U.S.C. 3535(d)

[23] 24 C.F.R. 51, Subpart B

1288 and S. 688, as introduced, would have preserved local noise and access restrictions established prior to 1985. H.R. 2746, as introduced, would have formed a commission to recommend operating curfews for civilian aircraft over populated areas during "normal sleeping hours". Seven bills focused on noise at specific airports. As introduced, H.R. 2429, H.R. 2430, H.R. 5142, and H.R. 5143 would have addressed noise from Los Angeles International Airport. H.R. 3479 as passed, S. 2039 as reported, and S. 1786 as introduced, would have directed the FAA to facilitate the expansion of runway capacity at O'Hare International Airport, if the expansion would not cause noise to increase.

Other aircraft noise bills were broader in scope. As introduced, H.R. 2477 would have prohibited capacity expansion projects at airports in areas with a population of at least 9 million that serve at least 80 million passengers annually. Efforts to limit capacity might slow the rise in airline traffic and help to prevent noise from increasing. As introduced, H.R. 3886 would have required EPA to study the feasibility of collectively regulating sources of noise and other pollution around airports. As passed, H.R. 4481 would have addressed noise mitigation as part of efforts to streamline the environmental review process for airport expansion projects. As reported, S. 633 included similar streamlining provisions, and would have increased the amount of annual discretionary funding set aside under the AIP for noise mitigation grants. As introduced, H.R. 4653 and S. 2966 would have directed the National Aeronautics and Space Administration (NASA) to develop technologies to reduce noise and improve the performance of commercial aircraft and helicopters. As reported, H.R. 5559 and S. 2808 would have appropriated funding in FY2003 for airport noise mitigation grants, although in different amounts. Floor action was not taken on either bill. A continuing resolution (P.L. 108-2) provides funding through January 31, 2003, at the FY2002 funding level of $271 million, while the 108th Congress works on final appropriations for FY2003.

Four bills addressed noise in national parks and on public lands. As introduced, S. 365 would have required EPA to develop national emission standards for snowmobiles. Considering the noise reductions achieved as a result of these standards, the bill would have required the National Park Service to develop noise standards for the recreational use of snowmobiles on park lands. As introduced, S. 712 would have prohibited the operation of commercial air tours in the airspace over Yellowstone National Park and Grand Teton National Park. As introduced, S. 1136 would have authorized $65 million annually from FY2002 to FY2007 to establish a Federal Land Transit Program within the Department of Transportation to provide planning, research, and technical assistance to the federal land management agencies in developing cleaner and quieter modes of transportation for use in national parks and on public lands. As introduced, S. 1151 would have established alternatives to "quiet aircraft technologies" that could satisfy noise restrictions for commercial air tours over Grand Canyon National Park.

Four other bills also addressed noise exposure. As introduced, H.R. 2811 would have required new railroad noise regulations, and H.R. 4761 would have focused on reducing noise from high-speed railways that operate in excess of 150 miles per hour. As introduced, H.R. 1130 would have authorized $2 million annually from FY2002 to FY2004 to award competitive grants for examining the effects of noise and other aspects of the physical environment in elementary and secondary schools. As introduced, H.R. 1116 would have reauthorized EPA's former Office of Noise Abatement and Control at $21 million annually from FY2002 to FY2006. H.R. 1116 also would have directed EPA to study the FAA's airport noise regulations and recommend new measures that would reduce the impacts of such noise on surrounding communities.