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State & Local - Other
Supporting Materials

ENVIRONMENTAL PROTECTION AGENCY

IDENTIFICATION OF PRODUCTS AS MAJOR SOURCES OF NOISE

Report

The Noise Control Act of 1972 (Public Law 92-574, 86 Stat. 1234) established, by statutory mandate, a national policy "to promote an environment for all Americans free from noise that jeopardizes their health and welfare." The Act provides for a division of powers between the Federal and state and local governments in which the primary Federal responsibility is for noise source emission control. The states and other political subdivisions retain rights and authorities to establish and enforce controls on environmental noise through licensing, regulation, or restriction of the use, operation, or movement of noise sources and on the levels of noise permitted in their environments. As specified in the Noise Control Act of 1972, the first step toward promulgation of noise standards for new products is identification of those products that are major sources of noise. Section 5(b) of the Act provides as follows:

"The Administration shall, after consultation with appropriate Federal agencies, 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, and (2) giving information on techniques for control of noise from such products, including available data on the technology, costs, and alternate methods of noise control. The first such report shall be published not later than eighteen months after the

date of enactment of this Act."

Section 6(a)(1)(C) sets out four categories of products that must be considered by the Administrator for noise regulation.

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 a motor is an integral part).
4. Electrical or electronic equipment.

On June 21, 1974 (39 F.R. 22297) the Administrator published the first report under section 5(b) identifying two products as major sources of noise: medium and heavy duty trucks and portable air compressors. Proposed regulations have been published that would provide for the control of noise produced by these products. That report also listed a number of other candidates for possible future identification.

APPROACH USED TO ASSESS ENVIRONMENTAL IMPACT

To accomplish the broad intent of the Noise Control Act of 1972, the EPA has developed an overall framework for assessing the environmental impact of all the sources of environmental noise. The first step of this development was the Title IV report (Report to the President and Congress on Noise, Doc. No. 92-63, 92nd Congress 2nd Session, February 1972), which provided an initial data base on noise reduction technology appropriate to various product types, environmental noise levels, and criteria related to public health and welfare.

the second step was the publication of the "Criteria Document" (Public Health and Welfare Criteria for Noise, EPA, July 27, 1973) as required by section 5(a)(1) of the Noise Control Act of 1972. The third step was the publication of the "Levels Document" (Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, EPA, March 1974) as required by section 5(a)(2).

The levels identified in the "Levels Document" are baseline target goals based on the risks to public health and welfare from noise pollution without regard for cost or technical feasibility. To identify the levels, EPA selected two cumulative energy measures for quantifying noise exposures that can be related to human response.

1. Leq, the A-weighted equivalent sound level (the source level in dBA conveying the same sound energy as the actual time-varying sound during a given period) was selected as a descriptor of noise relative to long-term hazard to hearing.
2. Ldn, the day-night sound level (the 24 hour Leq with a 10 dBA penalty applied to the period from 10 p.m. to 7 a.m.) was selected as a descriptor of noise relative to interference with human activities, e.g., speech communication, sleep, and other factors that may lead to annoyance.

An abbreviated summary of the identified levels is given in Table 1.

TABLE 1

NOISE LEVELS PROTECTIVE OF HEALTH AND WELFARE

Human Response	Leq	Ldn
Hearing Loss (8 hours)	75	-
Hearing Loss (24 hours)	70	-
Outdoor Interference and Annoyance	-	55
Indoor Interference and Annoyance	-	45

ANALYTIC PROCEDURES

The impact of an environmental noise has two basic dimensions: extensity and intensity. Extensity of impact is measured in terms of the numbers of people impacted regardless of the severity of the impact. Intensity, or severity, of an individual's impact is measured in terms of the level of the environmental noise.

For analytic purposes, it is desirable to have a single number representing the magnitude of the total noise impact in terms of both extensity and intensity in a specific environmental situation. With a single noise impact scale, changes in impact can be evaluated in terms of simple percentage changes from the initial value. This need led to the use by EPA of the Equivalent Noise Impact Analysis Method. An example showing the nature and use of the method is EPA's Project Report, Noise Standards for Civil Subsonic Turbojet Engine-Powered Airplanes (Retrofit and Fleet Noise Level), 16 December 1974, obtainable from the Environmental Protection Agency, Office of Noise Abatement and Control, 1921 Jefferson Davis Highway, Arlington, Va., 20460. In this method, the intensity of an environmental noise impact at a

specific location is characterized by the Fractional Impact (FI).

The fractional impact of a noise environment on an individual as used by EPA is proportional to the amount (in decibels) that the noise level exceeds the appropriate level identified in the "Levels Document" as shown in Table 1. The fractional impact is zero when the noise level is at or below the identified level. The fractional impaxt rises to 1.0 at 20 decibels above the identified level and can exceed unity in situations in which the noise level exceeds 20 decibels above the identified level. The range from zero to 20 decibels above the criterion level represents the range between those noise levels that are totally acceptable and those noise levels that are totally unacceptable to the individual in terms of annoyance response and speech interference. The total Equivalent Noise Impact (ENI) is then determined by summing the individual fractional impacts for all people affected by the environment. In this counting, then, two people exposed to 10 decibels above the identified level (fractional impact = 0.5) would be equivalent to one person exposed to 20 decibels above the identified level (fractional impact = 1.0). The ENI can thus be considered as the equivalent number of people 100% impacted by the noise environment.

To determine which sources ought to be identified for regulation, EPA considers their fractionally weighted noise impact. This measure includes both the intensity (loudness) and extensity (population affected) of noise source impact. Nevertheless, it cannot completely supplant the Administrator's judgment as to an appropriate sequence of noise source regulation. In addition, other factors such as necessary

lead time for development of a regulation, voluntary industry noise standards, interrelationship of regulations, and relative availability of data can affect the sequence of identification.

CANDIDATES FOR MAJOR NOISE SOURCES

The noise impact method has been applied in analyses using available noise data on products and classes of products distributed in commerce, population exposure data in various locations, and "Levels Document" criteria to develop a list of product types for possible consideration for regulatory action. This list is reflected in Table 2. In applying judgment, as prescribed in section 5(b) of the Act, as to which of these product types warrant identification as major sources of noise, those candidates having cumulative noise levels in normal use contributing to environmental noise levels in excess of "Levels Document" criteria are considered major noise source candidates. Using the fractional noise impact technique and available data, further consideration is given to those candidates contributing the greatest impact. Both the contribution to outdoor environmental noise and the impact on passengers and operators are included in the analysis. The priority candidates are listed in Table 3.

TABLE 2

POSSIBLE CANDIDATES FOR NOISE SOURCES

Surface Transportation

Automobiles (including sports cars, compacts, and standard passenger cars)

Buses

Medium and Heavy Duty Trucks (already identified)

Light Trucks

Motorcycles

Railroad locomotives

Rapid Transit-rail

Special auxiliary equipment on trucks

Tires

Air Transportation (not candidates for section 6 regulation)

Business jet aircraft

Commercial subsonic jet aircraft

Commercial supersonic jet aircraft

Helicopters

Propeller driven small airplanes

Short haul aircraft.

Construction/Industrial Equipment

- Air compressors (already identified)
- Backhoes
- Chain saws
- Concrete vibrators
- Cranes, derrick
- Cranes, mobile
- Dozers (track and wheel)
- Engine driven industrial equipment
- Generators
- Graders
- Loaders (track and wheel)
- Mixers
- Pavement breakers
- Pavers
- Pile drivers
- Pneumatic and hydraulic tools
- Power saws
- Pumps
- Rock drills
- Rollers
- Scrapers
- Shovels

Recreational Vehicles

- Snowmobiles
- Motorboats
- Offroad motorcycles (including minicycles)
- Other off highway vehicles

Lawn Care

- Edgers
- Garden tractors
- Hedge clippers
- Home tractors
- Lawn mowers
- Snow and leaf blowers
- Tillers
- Trimmers

Household Appliances

Air conditioners
Clothes dryers
Clothes washers
Dehumidifiers
Dishwashers
Electric can openers
Electric heaters
Electric knives
Electric knife sharpeners
Electric shavers
Electric toothbrushes
Exhaust fans
Floor fans
Furnaces
Food blenders
Food disposals (grinders)
Food mixers
Freezers
Hair clippers
Hair dryers
Home shop tools
Humidifiers
Refrigerators
Sewing machines
Slide/movie projectors
Vacuum cleaners
Window fans

TABLE 3

PRIORITY CANDIDATES FOR MAJOR NOISE SOURCES

(in Alphabetical Order)

Automobiles (including sport cars, compacts and standard passenger cars)

Buses

Chain saws

Earth Moving Construction Equipment

Lawn Care Equipment

Light Trucks

Motorboats

Motorcycles (highway, off-road, and minicycle)

Pile Drivers

Pneumatic and Hydraulic Tools

Snowmobiles

Special Auxiliary Equipment on Trucks

Tires

IDENTIFICATION OF MAJOR NOISE SOURCES

EPA hereby identifies the following products as major sources of noise in accordance with section 5(b) of the Noise Control Act of 1972: motorcycles, buses, wheel and track loaders and wheel and track dozers (earth moving equipment), truck transport refrigeration units, and truck-mounted solid waste compactors (special auxiliary equipment on trucks). Additional information, as prescribed in section 5(b)(2) of the Act, will be published in advance of rulemaking. For the products identified, this will include information on techniques for control of noise, available data on technology, costs, and alternate methods of noise control.

Motorcycles, buses, wheel and track loaders and wheel and track dozers contribute significant impacts to outdoor environmental noise and on passengers/operators. Identification of special purpose truck equipment, such as transport refrigeration units and solid waste compactor units, provides for noise control standards consistent with standards already proposed for new medium and heavy duty trucks. It is recognized that the noise impact from such special purpose equipment alone is of a lower order of magnitude. However, in view of the actions already taken to control noise emissions from medium and heavy duty trucks, control of these sources is required to avoid reducing the effectiveness of those regulations.

In the development of regulations for those products identified as major sources of noise, possible labeling requirements will be examined as well as noise control standards.

There are other noise sources that are at or near the top of the list in terms of noise impact that EPA is not identifying as major sources of noise at this time. Such products will, it is anticipated, be the subject of future identification. However, due to the incompleteness of EPA data on those products, identification is deferred. Automobiles, which have the greatest fractional noise impact of all products not yet identified as major sources, are currently under study. The size and complexity of the automotive industry and the extensive effort necessary to adequately evaluate cost and available technology make immediate regulation of automobile noise impossible. The EPA judgment to temporarily defer identification of snowmobiles takes into account consideration of voluntary standards being developed by the snowmobile industry. Major progress has been made in that regard, and continuing action is underway. EPA is in the process of evaluating this voluntary industry effort. In so doing, EPA is taking into account the fact that much of the noise impact associated with snowmobiles affects operators and passengers in recreational and other voluntary activities. EPA also is developing information on the need for labeling of snowmobiles under section 8 of the Act, working in conjunction with the Consumer Product Safety Commission.

EPA also intends to study during Fiscal Year 1976 light trucks, motorboats, chain saws, tires, pneumatic and hydraulic tools, pile drivers, lawn care equipment, and other special auxiliary equipment on trucks for possible future identification.

This report is issued under the authority of the Noise Control Act of 1972, 5(b)(1), 86 Stat. 1236, 42 U.S.C. 4904(b)(1).

Date	Administrator