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Toward the Comprehensive Abatement of Noise Pollution: Recent Federal and New York City Noise Control Legislation

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Comment

TOWARD THE COMPREHENSIVE ABATEMENT OF NOISE POLLUTION: RECENT FEDERAL AND NEW YORK CITY NOISE CONTROL LEGISLATION

Noise—unwanted sound—is an unobtrusive form of environmental pollution. Unlike air or water pollution, there is no residue to accumulate in the environment; and people are able, to some extent, to adapt unconsciously to noise. These characteristics have obscured the fact that environmental noise is an increasingly serious source of physiological and psychological stress. While noise pollution is not at present as critical a problem as air and water pollution, there is evidence that if environmental noise is not controlled, today's children may become partially deaf adults. A number of legislative bodies, with commendable foresight, have recently enacted noise control statutes intended to prevent such a development. The author suggests that the Federal Noise Control Act of 1972, together with local ordinances loosely patterned after the New York City Noise Control Code, will provide a comprehensive statutory scheme for noise abatement. The interpretive, regulatory, and enforcement problems which will likely confront the Environmental Protection Agency and the New York City Bureau of Noise Abatement in the administration of this statutory scheme are also analyzed in this Comment.

A San Francisco businessman, disturbed by a noisy drill at the construction site of a Standard Oil building, devised a novel means of obtaining temporary relief from the drill's noise. In the middle of the night, he dropped a large drum of oil into the site excavation. The next morning the drill hit the oil, "causing confusion like you can't believe. Some of those guys even thought they'd struck oil at the Standard Oil building! Anyway, we got about three hours of peace and quiet till they cleaned up the mess." Approaches to urban noise abatement which promise to be more effective than such nocturnal sabotage are illustrated by the recent enactment of federal and local noise control legislation. In recent years urban noise has come to be recognized as a significant environmental pollutant. This recognition generated enactment of both the Federal Noise Control Act of 1972 and many state and local statutes, the most sophisticated of which is

the New York City Noise Control Code. This Comment briefly considers the health and environmental effects of noise pollution and the need for noise control legislation. It then examines at length the responses of the federal government and of New York City to the problem of urban noise, since their legislation represents the most significant attempts at noise abatement to date.

I

PROBLEMS OF URBAN NOISE

A. Health and Environmental Effects

The increasing intensity and pervasiveness of urban noise is becoming a serious source of stress to those who live or work in urban areas. As with other forms of environmental pollution, the long term effects of excessive noise on man are difficult, if not impossible, to determine with scientific precision. Numerous studies have, however, established as casual relationship between noise and various physiological and psychological effects such as hearing loss and impairment, interference with speech communication, sleep disturbance, general anxiety, and irritability and annoyance. Other less well

4. The term "noise" is generally defined as "unwanted sound." Comment, A Model Ordinance to Control Urban Noise through Zoning Performance Standards, 8 Harv. J. Legis. 608, 610 (1970-71). Certain amounts and kinds of urban sound are inevitable and even desirable; many city residents and workers probably feel that the daily sounds of the city are an integral part of the character of urban existence. But many urban sounds are objectionable [see notes 17 and 18 infra], and as the text will show, much urban sound is physically damaging. Aesthetically and physically injurious urban sounds—urban noise—are the intended objects of regulation.
5. Since noise is endemic to the technologically advanced nations which conduct acoustical research, scientists are unable to obtain a control group of citizens who have not suffered from noise pollution. A cross-cultural comparison involves the Mabaans in Sudanese Africa, a people who have the quietest communities yet monitored. Because of the silence of their environment, the Mabaans have the best hearing of all tested groups. At age 75 they hear as well as the ordinary American of 25. 3 Environmental Crisis Bull., No. 26 at 1 (1972).
6. Rudmose, Hearing Loss Resulting from Noise Exposure, in Handbook of Noise Control § 7-1 et seq. (C. Harris ed. 1957) [hereinafter cited as Handbook of Noise Control].
7. Hawley and Kryter, Effects of Noise on Speech, in Handbook of Noise Control, supra note 6, at § 9-1 et seq. Noise can reduce the accuracy, frequency, and quality of verbal communication. Speech reception by elderly persons seems to be especially affected by noise.
8. U.S. Environmental Protection Agency, Effects of Noise on People 58 (1971) [hereinafter cited as Effects of Noise on People]. Brief sounds of sufficient intensity, as well as more general fluctuations in the environmental noise level, will affect adversely the normal sleep patterns of many people.
9. Id. at 123. Nausea, headaches, changes in mood, and general anxiety have been associated with exposure to noise.
10. In one community survey, it was found that those who are irritated by and
established effects include physical fatigue, unsociability, and inefficiency in the performance of complicated tasks. These studies differ slightly as to the precise decibel levels at which harmful effects occur, but the association of these harmful effects with the different decibel levels set out in Figure 1 are fairly representative findings. It should be noted that these adverse effects are likely to occur only after frequent and extended exposure.

complain about aircraft noise—the subject of the survey—do not have unusual psychological or sociological characteristics, nor are they unusually sensitive to noise. Id. at 79-116. As an illustration of the kind of psychological stress which urban residents can suffer as a result of exposure to excessive noise, consider the following excerpts from a letter of a New York City resident to her congressman:

At six o'clock you wake to the [construction] sounds of men and machines arriving and you begin to anticipate the moment when the generator is turned on and the drills begin tearing at the brick and concrete and clanking against the steel girders with piercing shrieks. With all the windows closed the sound penetrates the walls and batters the eardrums and body.

This continues all day until six o'clock in the evening when the infernal machines are at last shut off and residents of nearby buildings can relax for the first time since six o'clock in the morning. Their peace is marred by the knowledge that they can only look forward to the same torment tomorrow.

Pollution of the air attacks the respiratory system, but noise pollution attacks the nerves and ultimately the mind.

EPA Public Hearings on Noise Abatement and Control 30-31 (1971) [hereinafter cited as EPA Hearings].

For an extensive survey of studies on the adverse effects of noise see Effects of Noise on People; supra note 8. For a brief overview of this subject see Hildebrand, Noise Pollution: An Introduction to the Problem and an Outline for Future Legal Research, 70 Colum. L. Rev. 652, 656 (1970).

The "dB(A)" or "decibel" is the most frequently used measure of sound levels. Two other components of sound measurement are the Hertz (cycle per second), the measure of a sound's pitch or wave length, and time, the measure of a sound's duration. Since people are more sensitive to a high-pitched sound, such as a siren, than to a low-pitched sound, such as drums, the A-scale of the "dB(A)" is devised to give greater weight to the more annoying high-pitched sounds. Since such units are logarithmic an increase of 10dB(A) would be an increase of 100 percent.

The instruments for measuring the dB(A) level of a sound source are easy to operate, portable, and relatively inexpensive. They basically consist of a microphone, amplifier, rectifier, and indicator. The microphone may be placed either at a specified distance from the sound source (such as 50 feet) or close to the source. In the absence of a reference to a distance, it may be assumed that the microphone is placed adjacent to the sound source. The indicator will then be compared with the appropriate statutory standard. For a further discussion of acoustics see Hildebrand, supra note 11.

It is not surprising that studies of the harmful effects of noise vary in their results. Although accurate instruments exist for the measurement of noise, such instruments cannot take into account the different individual reactions to a noise. A certain amount of noise does not produce the same effect on different individuals since each has different physical reception sensitivity. Furthermore, the type of noise source may irritate one person more than another (e.g., rock music).

See, e.g., A Report of the Mayor's Task Force on Noise Control, New York City, Toward a Quieter City 20 (1970) [hereinafter cited as Toward a Quieter City]; Cohen, Effects of Noise on Psychological State, in Noise as a Pub-
FIGURE 1: NOISE LEVELS AT WHICH HARMFUL EFFECTS OCCUR\textsuperscript{14}

<table>
<thead>
<tr>
<th>Harmful Effects</th>
<th>Noise Levels (dB(A))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing Loss</td>
<td>75-85 dB(A)</td>
</tr>
<tr>
<td>Extra-auditory Physiological Effects</td>
<td>65-75 dB(A)</td>
</tr>
<tr>
<td>Speech Interference</td>
<td>50-60 dB(A)</td>
</tr>
<tr>
<td>Interruption of Sleep</td>
<td>35-45 dB(A)</td>
</tr>
</tbody>
</table>

As Figure 2 illustrates, many everyday occurrences in cities produce noise levels within the range of the Figure 1 noise levels at which hearing loss and other physiological effects occur.

FIGURE 2: TYPICAL NOISES: THEIR NOISE LEVELS AND HUMAN REACTIONS\textsuperscript{15}

<table>
<thead>
<tr>
<th>Subjective Impression</th>
<th>Noise Level (dB(A))</th>
<th>Typical Noises (distances and decibel levels given for some)</th>
<th>Hearing Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deafening</td>
<td>130</td>
<td>Machine gun; pneumatic riveter; air raid siren</td>
<td>Threshold of pain</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>Siren (100 ft.); sonic boom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>Jet take-off (200 ft.); rock band (108 ft.); auto horn (3 ft.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>Jet take-off (2000 ft.); loud street noise</td>
<td></td>
</tr>
<tr>
<td>Very loud (Shouting at 2 ft.)</td>
<td>90</td>
<td>Heavy city traffic; unmuffled truck; kitchen blender</td>
<td>Hearing damage if prolonged</td>
</tr>
<tr>
<td>Loud (Very loud conversation at 2 ft.)</td>
<td>70</td>
<td>Average street noise; vacuum cleaner; electric typewriter; freight train (100 ft.)</td>
<td>Contribution to hearing impairment begins; Speech interference begins</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Window air conditioner (20 ft.); normal conversation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>Quiet street</td>
<td></td>
</tr>
<tr>
<td>Moderate Faint</td>
<td>30</td>
<td>Quiet conversation</td>
<td>Annoyance, sleep interference</td>
</tr>
</tbody>
</table>


\textsuperscript{15} BOLT, BERANEK & NEWMAN, INC., CHICAGO URBAN NOISE STUDY, PHASE I: ACOUSTICS AND HEALTH, 12 ARCHITECTURE & ENGINEERING NEWS 20 (Feb. 1970); Hildebrand, supra note 11; EPA, NOISE POLLUTION (1972).
Since many people are exposed to the louder sources of noise in Figure 2 for extended periods, it is likely that they suffer from the harmful effects listed in Figure 1, as well as from other harmful effects such as anxiety and irritability. As Figure 3 indicates, it is almost impossible for city residents to completely avoid exposure to excessive noise.

**Figure 3:** Average noise levels in six cities: Duseldorf, New Orleans, Ottawa, Seattle, Tokyo, and Vienna

<table>
<thead>
<tr>
<th>Zone</th>
<th>Day (dB(A))</th>
<th>Night (dB(A))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet Residential</td>
<td>40-50</td>
<td>35-45</td>
</tr>
<tr>
<td>Average Residential</td>
<td>50-60</td>
<td>40-50</td>
</tr>
<tr>
<td>Residential, Semi-Commercial</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td>Commercial</td>
<td>55-65</td>
<td>45-55</td>
</tr>
<tr>
<td>Industrial</td>
<td>60-70</td>
<td>50-60</td>
</tr>
</tbody>
</table>

Figure 3 represents the measured level of an urban area’s accumulated background noises, which are comprised of all ongoing activities in the area, especially the use of technological products. It should be noted that the average nighttime noise levels of residential areas in many cities are above the noise levels associated with sleep interference. For some areas of these cities, the average daytime level is above that associated with speech interference.

The urban population’s exposure to these harmful noise levels has become greater each year, as indicated by the increasing frequency of citizen complaints and the growing number of citizen groups organized against urban noise. More extensive use of technological products and growing population densities can be expected to increase urban noise levels even further. In the absence of private or governmental noise control measures, the level of urban noise could double within ten years and could become deafening within thirty years. There is already evidence of significant hearing loss.

17. A poll administered by the New York City Mayor’s Council on the Environment found that 70 percent of those polled were “strongly irritated” by urban noise, 29 percent were “irritated,” and only one percent “slightly irritated.” 6 EPA Hearings, supra note 10, at 164. San Francisco has been receiving hundreds of citizen complaints every month for the past few years. Interview with Diane Feinstein, Member of the San Francisco Bd. of Supervisors, San Francisco, Nov. 16, 1972.
18. In 1970, exclusive of other civic and environmental organizations, there existed in New York City: the Upper Sixth Avenue Noise Abatement Association; the Thruway Noise Abatement Committee of Westchester; Citizens for a Quieter City, Inc.; The Queens Borough President’s Committee on Aviation Problems; the Central Brooklyn Citizens Union; the Emergency Committee Opposing the Pan Am Heliport. Toward a Quieter City, supra note 13, at 13.
20. 3 Environmental Crisis Bull., No. 26 at 1 (1972).
by persons under twenty-one years of age.\textsuperscript{21} The current population of young people may have serious hearing problems by middle-age.

\textbf{B. Common Law Remedies}

In light of the adverse effects of noise and the increasing seriousness of the problem, it is a disservice both to the public welfare and to the individual's right to privacy to regard noise merely as a benign nuisance. Urban noise must be abated, and it is apparent that sufficient abatement will not occur through private action, but only through the enforcement of effective federal and local legislation. Private action in the form of suits against specific noise sources as public nuisances is generally ineffective in reducing environmental noise, since such action depends on individual initiative and expensive litigation. Nuisance suits are not even possible where a separate noise source cannot be specified as the offending nuisance, the usual case in urban areas, where many noise sources contribute to the cumulative noise level. Moreover, plaintiffs in public nuisance suits must show that their injury is not the same kind as that being suffered by the public generally.\textsuperscript{22} Even if the suit eventually is heard on the merits, an injunction may issue only after a finding that the social utility of the noise source is outweighed by the acoustic harm. This determination requires a showing by the plaintiff, perhaps an inadequately financed individual, against a defendant who may be a wealthy industrial corporation.\textsuperscript{23} A court may award damages rather than issue a permanent injunction.\textsuperscript{24} But where the social utility of the activity outweighs the harm, an accurate determination of the nature and extent of plaintiff's injury is, as a practical matter, impossible unless plaintiff has suffered a serious hearing loss.

\textsuperscript{21} Data obtained during a four-year research study showed a high frequency of hearing loss in young persons, many years before such losses should be expected. Much of this reduction was attributed to loud music. EPA, \textit{The Social Impact of Noise} 7 (1971).

\textsuperscript{22} \textit{Restatement (Second) of Torts} § 826, comment c, at 31 (Tent. Draft No. 17, 1971). For further discussion of the difficulties of obtaining redress for environmental grievances through public nuisance actions see Bryson & Macbeth, \textit{Public Nuisance, the Restatement (Second) of Torts, and Environmental Law}, 2 \textit{Ecology L.Q.} 241 (1972).

\textsuperscript{23} It should be noted that the balancing of social benefits and costs by courts focusing on particular fact situations is unlikely to result in uniform results or criteria. For a critical analysis of these and other limitations on the competence of courts to make technical and policy decisions in the environmental area see Cramton & Boyer, \textit{Citizen Suits in the Environmental Field: Peril or Promise?}, 2 \textit{Ecology L.Q.} 407 (1972).

\textsuperscript{24} \textit{E.g.}, Boomer v. Atlantic Cement, Inc., 26 N.Y.2d 219, 257 N.E.2d 870, 309 N.Y.S.2d 312, 1 ERC 1175 (1970) (request for injunction denied, but damages awarded for injury to plaintiffs' property from the dust, smoke, and vibrations caused by defendant's cement plant).
Thus, significant noise abatement will depend on governmental action. Many European nations have long had comprehensive noise control regulations, in contrast to the sporadic and generally ineffective federal and noise control efforts of the United States. The federal Noise Control Act of 1972 will go far to reduce this regulatory lapse by reducing the noise levels of many technological noise sources. When the Noise Control Act is considered together with the New York City Noise Control Code and Building Code, a framework for comprehensive noise abatement in New York City emerges. This framework can be extended nationwide if other American communities use New York’s code as a model in drafting their own local noise control legislation.

II

THE FEDERAL RESPONSE: THE NOISE CONTROL ACT OF 1972

A. Previous Federal Noise Control Efforts

Prior to the passage of the Noise Control Act, the federal government had not assumed a major role in the reduction of noise pollution as it had in the reduction of air and water pollution. The invisibility of noise, the absence of residue accumulating in the environment, and the subtle symptoms which occur in the process of diminishing hearing capacity have made urban noise a less obvious problem than air and water pollution.

During the 1960's, federal noise control activities were conducted on an ad hoc basis by a number of federal departments and agencies. The Department of Transportation, for example, engaged in research relating to transportation noise, especially aircraft and highway noise. Much of the federal effort focused on encouraging or demanding that noise reduction considerations be a part of federally funded programs. For example, the National Environmental Policy Act of

25. EPA, AN ASSESSMENT OF NOISE CONCERN IN OTHER NATIONS (1971). The U.S.S.R., for example, in seeking to prevent hearing loss and to further labor productivity, has had comprehensive noise control standards and regulations since the 1950’s. EPA, REPORT TO THE PRESIDENT AND CONGRESS ON NOISE 6-10 (1972).


27. NEW YORK CITY, ADMIN. CODE ch. 57, §§ 1403.3-1.01 et seq. (1972).


29. Other federal agencies with significant involvement included the Departments of Defense, Transportation, Labor, Housing and Urban Development (HUD), and Health, Education and Welfare (HEW), and the National Aeronautics and Space Administration (NASA). For an extensive survey of noise control activities conducted by federal agencies see EPA OFFICE OF NOISE ABATEMENT AND CONTROL, SUMMARY OF NOISE PROGRAMS IN THE FEDERAL GOVERNMENT (1971).

30. For example, to receive federal funds under the Federal Aid Highways Act, 23 U.S.C. §§ 101-44 (1970), a state must include appropriate noise reduction considerations in its highway plan. The Federal Aviation Act of 1958, 49 U.S.C. §§ 1301-
1969 (NEPA) requires a detailed discussion (an Environmental Impact Statement) of the environmental effects, including noise problems, of all major federal actions significantly affecting the quality of the human environment.

Federal awareness of the health and safety problems related to occupational noise was expressed in the Walsh-Healey Health and Safety Regulations of 1969, incorporated the following year in the Occupational Safety and Health Act of 1970 (OSHA). Between six million and sixteen million workers presently are exposed to noise levels clearly detrimental to their hearing. Noise levels above 90 dB(A), the maximum eight-hour decibel level under OSHA, exist

1542 (1973), requires that national airport facilities, and state and local airport facilities built with federal funds, take into consideration environmental effects, including noise. The Act also authorizes the Federal Aviation Administration (FAA) to establish standards and regulations for the measurement and abatement of aircraft noise, including sonic booms. Id., § 1431. See also FAA, Noise Type Certification Standards and Procedures, 14 C.F.R. §§ 36.1 et seq. (1971). Under the National Housing Act, 12 U.S.C. §§ 1701-50g (1970), the Department of Housing and Urban Development has authority to adopt standards—including acoustical requirements—for housing and other facilities serving as security for federally guaranteed loans. The Federal Housing Administration (FHA) was one of the first governmental agencies—federal, state, or local—to recognize the noise transmission problems in buildings. Ten years ago, the FHA set impact noise ratings in its minimum property standards. HUD & FHA REP. No. 2600, MINIMUM PROPERTY STANDARDS FOR MULTIFAMILY HOUSING (1963).

32. Id. § 4332. The EPA has suggested that the information which is needed to evaluate the noise impact of a proposed federal action includes the following: the existing and anticipated land uses near the project which have a sensitivity to noise (e.g., residences, hospitals, schools, parks); the existing noise levels adjacent to the project and the anticipated increase in the noise levels as a result of the project; and the efforts which will be made to abate noise from the project. EPA, GUIDELINES FOR PREPARATION OF ENVIRONMENTAL STATEMENTS 28 (1973).
33. Labor Dep't Reg., 41 C.F.R. § 50-204.10 (1971). These standards are based on the duration of exposure to a specified level of noise. The limit for eight hours of exposure is 90 dB(A); 95 dB(A) is the limit for four hours of exposure; and a maximum of 15 minutes exposure is allowed at 115 dB(A).
34. 29 U.S.C. §§ 651-78 (1970). The enactment of OSHA amounts to Congressional recognition that economic self-interest has not been sufficient to cause adequate reductions in plant noise levels. At least some reduction is in the employers’ pecuniary interest. The annual cost to American industry as a result of compensation payments, accidents, inefficiency, and absenteeism related to noise has been estimated at $4 billion. Mecklin, It’s Time to Turn Down All That Noise, FORTUNE, Oct. 1969, at 133. Other business advantages to be gained by compliance with noise reduction regulations include better employee and community relations, higher production levels, and reduced legal liability. These considerations counterbalance the cost burden which employers will bear in reducing the noise of their businesses.
36. See note 33 supra. The regulations which were originally proposed set a noise level of 85 dB(A) for an eight hour exposure duration, but industry pressure effected a maximum of 90 dB(A).
in many industrial plants.\textsuperscript{37} Since OSHA extends the federal authority

to regulate industrial safety to all businesses affecting interstate commerce,\textsuperscript{38} its standards can have a notable impact if they are enforced.

However, workers covered by OSHA may be exposed to dangerously high noise levels despite such enforcement. OSHA standards permit long-term exposure to noise levels above 75 dB(A), well above the level at which hearing loss and other harmful effects occur.\textsuperscript{39} In addition, federal regulation does not reach workers in intrastate businesses who are likely to suffer noise levels as deplorable as those of regulated businesses.\textsuperscript{40}

By 1970, it had become apparent to Congress that a comprehensive federal noise control program was necessary.\textsuperscript{41} The Noise Pollution and Abatement Act of 1970\textsuperscript{42} was the first product of this awareness. The Act created the Office of Noise Abatement and Control in the EPA to conduct noise pollution studies and hearings and to prepare a preliminary draft of a federal statute which would implement the findings and recommendations of those studies.\textsuperscript{43} As required by the Act, the EPA in 1972 submitted to the President and Congress a comprehensive report of its findings, conclusions, and recommendations.\textsuperscript{44} The EPA’s recommendations were incorporated into an Administration-sponsored bill,\textsuperscript{45} enacted as the Noise Control Act of 1972.\textsuperscript{46}

\textbf{B. The Noise Control Act}

The major regulatory thrust of this legislation is to require the EPA to establish noise emission standards for new products which are major noise sources, such as motor vehicles, construction equipment,

\begin{itemize}
  \item \textsuperscript{37} Mecklin, \textit{supra} note 34.
  \item \textsuperscript{38} 29 U.S.C. § 651(b)(3) (1973).
  \item \textsuperscript{39} See text accompanying note 14 \textit{supra}.
  \item \textsuperscript{40} Since OSHA excludes from its benefits those businesses not affecting interstate commerce, it is important for each state to close this regulatory gap by enacting state occupational noise regulations. OSHA allows the states to enact such regulations and provides funds for state research programs in this area so long as they are not inconsistent with OSHA’s provisions. 29 U.S.C. §§ 651(a), (b)(11) (1973).
  \item \textsuperscript{42} 42 U.S.C. §§ 1858, 1858a (1970).
  \item \textsuperscript{43} The Act also authorized the EPA to determine whether the noise associated with federal agency activities or agency-sponsored activities is a public nuisance or otherwise objectionable; the agencies involved are required to consult with the EPA to consider possible noise abatement measures. \textit{id.}
  \item \textsuperscript{44} EPA, \textit{REPORT TO THE PRESIDENT AND CONGRESS ON NOISE} (1972) [hereinafter cited as EPA \textit{REPORT}]. The report includes information concerning the physiological and psychological effects of noise, the causes and sources of noise, and the extent of abatement which can be expected from the application of noise control technology.
  \item \textsuperscript{45} S. 1016, 92d Cong., 1st Sess. (1972).
  \item \textsuperscript{46} 42 U.S.C. §§ 4901-18 (1973).
\end{itemize}
and other kinds of motors and engines. The standards will be applicable to new products, including imports, manufactured after the effective date of the standards. The Act also contains the following provisions: incentives for application of noise reduction technology through federal purchases of low-noise-emission products and the rough labeling requirements for manufacturers of certain products; amendments to the Federal Aviation Act of 1958 regarding aircraft noise standards; enforcement procedures, including citizen suits; and EPA research and research grants for the development of noise reduction techniques. These provisions of the Act will be considered in detail below. Since the EPA has not yet established regulations under the Act, the following section will discuss the desirability of likely EPA action under the Act and will suggest appropriate EPA action.

1. Standard Setting

a. criteria and limitations

Within nine months after passage of the Act, the EPA is required to establish noise criteria which reflect all the identifiable effects of different quantities and qualities of noise on the public health and welfare. These criteria are to be the basis for the EPA's determination of what noise levels under various conditions are requisite for the public's protection. After identifying the "major sources of noise," the

48. Id. §§ 4902(5), 4908.
49. Id. § 4902(5). This approach of setting mandatory standards reducing the allowable noise emission levels of certain noisy products can be contrasted to an alternative approach advocated by certain commentators, i.e., imposing a special "environmental" tax on noisy products as an incentive for the manufacturers of such products to "voluntarily" reduce noise emission levels. For an analysis of such a tax and its problems see Reitze, Tax Incentives Don't Stop Pollution, 57 A.B.A.J. 127 (1971).
51. Id. § 4902.
52. Id. § 1431.
53. Id. §§ 4911-12.
54. Id. § 4913.
55. Id. § 4904(a)(1). The EPA met this deadline by publishing a noise criteria document in July 1973. 4 ENV. RPTR.—CURR. DEV. 568 (1973). The EPA also has hired additional staff for the formulation of noise standards under the Noise Control Act and is expected to meet the other deadlines of the Act. 3 ENV. RPTR.—CURR. DEV. 1162 (1973).
56. 42 U.S.C. § 4904(a)(2) (1973). The EPA has published a document setting forth such noise levels. This document considers neither the economic and technological feasibility of achieving the recommended noise levels nor attitudes concerning the desirability of undertaking an activity which produces harmful noise levels. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, in 4 ENV. RPTR.—CURR. DEV. 2029 (1974).
EPA may publish methods of controlling the noise of such products.\textsuperscript{57} If construction equipment, transportation equipment, motors, or electrical equipment is identified as a major source of noise, then the EPA must set noise emission standards for that source if "feasible."\textsuperscript{58} Noise emission standards may be set for any other product if feasible and necessary for the public welfare.\textsuperscript{59} After the EPA proposes its noise emission standards, but before they become final, "interested persons" will have an opportunity to be heard regarding the proposed standards.\textsuperscript{60} After the required hearings have been held, the EPA will set an effective date for the application of the standards, which is to be no later than two years unless a shorter period permits the application of the necessary technology.\textsuperscript{61}

This standard-setting procedure requires a balancing of health, technological, and economic factors. Although the EPA, in setting the standards, is to refer to the noise criteria, the agency also must take into account both the "cost of compliance" with the new standards and "the degree of noise reduction achievable through the application of the best available technology."\textsuperscript{62} Two critical issues to be considered are (1) when does particular noise reduction technology qualify as "available" under the Act, and (2) what standard did Congress intend to adopt by requiring that the "cost of compliance" be taken into account? The interpretation given to this statutory language will be crucial to the pace of noise abatement under the Act. Even though the congressional objective in requiring the setting of noise emission standards is protection of public health and welfare, a narrow interpretation of the "best available technology" and "cost

\textsuperscript{57} Id. § 4904(b). The only guideline in the Act for the EPA Administrator's determination of which products are major sources of noise is that he consult with other "appropriate Federal agencies." The Administrator's almost unlimited discretion with regard to such an important determination can be contrasted with the analogous provisions of the Clean Air Act Amendments of 1970, 42 U.S.C. § 1857 (1973). Under these Amendments, the determination of the air pollutants for which the Administrator must propose primary and secondary air quality standards is not left to the Administrator's discretion, but is dependent on the Amendments' air quality criteria (§ 1857c-5). Under the Noise Control Act, however, the Administrator's determination of which products are major sources of noise does not depend on the Act's noise criteria, although the noise criteria are to be considered in the setting of noise emission standards. There is no reason why the Act should not require that the noise criteria, reflecting the harmful effects of noise at various levels, at least be considered along with the Administrator's consultations with other federal agencies in determining which products are major sources of noise.

\textsuperscript{58} Id. § 4905(a)(1). The noise emission standard for each source will presumably be a certain dB(A) [see note 12 supra]—the measurement adopted by OSHA.

\textsuperscript{59} Id. § 4905(b).

\textsuperscript{60} Id. § 4905(c)(2).

\textsuperscript{61} Id. § 4905(a)(3).

\textsuperscript{62} Id. § 4905(c)(1).
of compliance" qualifications will significantly delay the realization of that goal.

It is logical to assume that the determination of "availability" will be made at the time the noise emission standard is proposed. This determination will depend on which definition of "unavailability" the EPA applies. Professor Katz has formulated the following definitions which aid in understanding EPA's options: (1) "the current operational capacity of an industry;" (2) "new scientific and technical knowledge already available in the laboratories and design rooms, but not yet generally available in practice," or (3) "the potentialities of new research." Professor Katz cites a decision using the second definition. In Marsh Wood Products Co. v. Babcock & Wilcox Co., the Wisconsin Supreme Court based the standard of care in a negligence action on technology known only to experts and not used by manufacturers. Senator Muskie, referring to "availability" language in the Federal Water Pollution Control Act Amendments of 1972, suggested that available technology includes "capabilities . . . which can be applied as a result of public and private research efforts." This standard is similar to Professor Katz's third definition of availability.

Another approach to the issue of availability was taken by the Court of Appeals for the District of Columbia in International Harvester Co. v. Ruckelshaus. The court rejected the argument of the automobile industry that the EPA Administrator's determination of "available" technology within the meaning of the Clean Air Act Amendments of 1970 depends solely on existing technology, deciding that development of technology need not necessarily be completed before preparation for production begins. It held, however, that the Administrator in that case failed to support with "reasoned presentation" his conclusion that technology would be available to meet the standards he proposed. The court emphasized that the Administrator's discretion was limited by reasonableness, reliability, and consideration for production schedules.

The references to negligence standards, to the Federal Water Pollution Control Act Amendments of 1972, suggested that available technology includes "capabilities . . . which can be applied as a result of public and private research efforts." This standard is similar to Professor Katz's third definition of availability.
Pollution Control Act Amendments of 1972, and to the Clean Air Act Amendments of 1970, of course, are not dispositive of the issue of "availability" for the Noise Control Act. However, these references do at least indicate that it is not necessary for the Administrator to consider only fully-developed technology. Nor should he, considering the congressional mandate to protect the public health and welfare.

But even if "available technology" were interpreted to include technological capabilities known to researchers and other experts—Professor Katz' second definition—the problem of who will develop new technological capabilities, i.e., who will pay for the research, remains. Other than the low-noise-emission product provision discussed below, the Act provides no incentives for the regulated industries to conduct such research. Indeed, the Act itself may be seen as a disincentive for the private development of new noise control technology. As noise standards are revised on the basis of new technological developments, as required by the Act, manufacturers will be burdened by further production changes and additional costs in order to comply with the revised standards. Since the development of new technology will be patently against the economic interest of the regulated industries, the expense of noise reduction research and development—the necessary element for the Act's future success—must be borne by the federal government.

Even if technology is "available," the EPA must consider the cost of employing that technology. The Act provides no standard for determining what cost is too burdensome. A standard such as "reasonableness" does not go far in resolving the issue. A cost-benefit analysis, while theoretically attractive, is difficult to apply in practice: what level of decrease in demand resulting from the costs of available noise reduction technology outweighs a five-decibel decrease in the product's noise?

The welfare economist might respond by arguing that EPA regulations should achieve that level of noise abatement and that level of production of noisy products which would obtain if manufacturers and consumers of such products were forced to compensate all those harmed by the use of noisy products. Such a standard is impossible.

69. See notes 117-19 and accompanying text infra.

70. It could be argued that, in the absence of any evidence of contrary congressional intent, industry should be expected to spend as much in additional costs for noise reduction as the federal government is willing to spend in the purchase of "low-noise-emission products," i.e., 25 percent more than the product's normal cost. For a discussion of "low-noise-emission products" see text accompanying notes 117-19 infra.

71. Alternatively, one could attempt to find the level of noise suppression which would result in a costless market system where members of the public could bribe noise producers to reduce their emissions. See generally Coase, The Problem of Social Cost, 3 J. LAW & ECON. 1 (1960). Distribution of wealth effects, possibilities for extortion, and transaction costs may not make the Coase alternative the theoretical equivalent.
to implement in the absence of sufficient evidence of the costs of noise pollution. But the welfare economist's standard does suggest that since the cost of noise pollution is substantial, it should be the federal policy to impose significant costs upon manufacturers and consumers of noisy products. This policy is justified by Congress' concern that noise presents a "growing danger to the health and welfare of the Nation's population."  

If substantial costs are acceptable under the Act, there will remain the question of the EPA's authority to require these expenditures by firms which cannot afford them. Congressional debate on the Clean Air Act Amendments of 1970 recognized the power of the EPA under the Amendments to force the automobile industry to discontinue production. No such authority is granted to the EPA in the Noise Control Act, and industry can be expected to attribute the disappearance of marginal firms and curtailment of production to unauthorized EPA-imposed noise abatement costs. This claim will be difficult for the EPA to rebut. It may be impossible to segregate the effect of noise control costs from ordinary competitive pressures, even though federal studies have shown that the survival of firms has not been threatened merely by the imposition of pollution controls.

Whatever may be the ultimate power of the EPA to force extensive production shutdowns, it is important that the manufacturers of noisy products such as automobiles not be forced to discontinue production completely, since these products provide important social benefits. It is suggested here that only where an EPA requirement of certain noise reduction technology threatens such a result does the "cost of compliance" criterion become relevant. The "cost of compliance" criterion should be interpreted in terms which reflect the higher priority of the public health and welfare; thus, the EPA should consider only whether

of the formulation in the text (Cf. Calabresi, Transaction Costs, Resource Allocation and Liability Rules—A Comment, 11 J. LAW & ECON. 67 (1968)); but, irrespective of such theoretical quibbles, the welfare economics model requires either an efficient market or near omniscient government regulator—neither of which is readily available.

73. Id. § 1857.
74. 116 CONG. REC. 32905 (1970). Senator Muskie, the principal sponsor of the bill, stated that he envisioned Congress preventing such a shutdown. Id.
75. During the EPA hearings on noise abatement, a representative of General Motors contended that G.M. could not meet the California automobile noise emission standards and stay competitive. However, the cost of noise control equipment required by California's standards has been estimated to be only $30 to $50 per automobile. EPA, REPORT, supra note 44, at 3-15.
76. COUNCIL ON ENVIRONMENTAL QUALITY, DEPARTMENT OF COMMERCE AND EPA, THE ECONOMIC IMPACT OF POLLUTION CONTROL: A SUMMARY OF RECENT STUDIES 9 (1972). The industries studied included the automobile, steel making, petroleum refinery, and electric generator industries. Id. at 6.
the cost of compliance threatens the continued production of the affected product. As a practical matter, however, the acceptable degree of economic loss is likely to be determined more by the political process than by statutory interpretation.

At least one industry may not object strongly to the costs of noise reduction. Quiet construction equipment already has been developed and is on the market. But even though the use of noisy construction equipment reduces the efficiency of construction workers and provokes complaints from the surrounding neighborhood, and even though equipment costs represent only a small percentage of construction activity costs, construction companies so far have not been inclined to purchase this more expensive equipment. Industry-wide governmental regulation requiring the quiet construction equipment might be welcome, since the competitive position of each company would be preserved.

b. Standards for particular noise sources

i. automobiles

Noise from transportation vehicles—passenger cars, motorcycles, and trucks—is responsible for much of the current concern with the noise levels of urban areas. At speeds below 35 mph, engine-generated noise is dominant; tire noise is most noticeable above 50 mph. Passenger car noise emission levels measured 50 feet from the car, at speeds below 35 mph, range from 64 dB(A) to 76 dB(A).

As noted above, the EPA’s standard-setting procedure under the Noise Control Act takes into account the technological potential for vehicle noise reduction. In its determination of the extent to which passenger car noise levels can be reduced by available technology, the EPA can be expected to refer to its own 1970 study estimating the long-term potential for decreasing car noise. For speeds under 35 mph, it was estimated that automobile noise could be “reduced” to approximately 73 to 75 dB(A). Since this figure is also the present noise level of passenger cars, it can be inferred that the EPA does not expect that

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77. See note 95 infra.
78. See note 96 infra.
79. There is substantial evidence that traffic noise is one of the most disliked aspects of urban environments. See W. BURNS, NOISE AND MAN, 102-05, 265 (1968). The EPA has estimated that as many as 44 million people are adversely affected by noise from traffic and aircraft. H.R. REP. No. 92-842, 92d Cong., 2d Sess. 6 (1972).
80. EPA REPORT, supra note 44, at 2-77. Automobile noise emission levels at speeds above 50 mph are difficult to measure, since noise levels from tires increase with vehicle speed and with variables such as the road surface, tread design, and tire-wear. 2 EPA HEARINGS, supra note 10, at 107, 109.
81. EPA REPORT, supra note 44, at 3-17.
significant noise reduction technology will be developed in the future. The significance of this inference is that the EPA's vehicle noise emission standards under the Act may reflect this apparent skepticism toward technological development and merely sanction the status quo. Sanctioning the status quo is the effect of vehicle noise emission standards which are now required by a few state and local governments. But endorsing present noise emission levels is incompatible with the Noise Control Act's purpose of protecting the public welfare, since present levels may cause hearing loss and other adverse effects. Skepticism towards technological development also conflicts with the recent experience of automobile manufacturers and with a recent European study which concluded that feasible design changes in the structure of the internal combustion engine could produce a 10 dB(A) reduction. Assuming that the EPA will change its attitude toward technological development as reflected in its 1970 study and that engine-generated noise will eventually be reduced, tires will become the major source of noise. The reduction of tire noise presents even greater engineering problems than does the reduction of engine-generated noise. At the present time manufacturers have little incentive to develop anything but an economical, long-life tire. The EPA is constrained by the Noise Control Act's “best available technology” qualification to await the develop-

82. California, for example, has established a maximum permissible noise level of 84dB(A) for cars. CAL. VEH. CODE § 27160 (West 1970). That this standard is unnecessarily lax is indicated by studies conducted by the California Highway Patrol, which concluded that the great majority of the small percentage of cars which exceeded the maximum permissible noise level did so only because they were equipped with modified or defective exhaust mufflers and not because of engine design. 1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 294. Most states currently have regulations prohibiting defective mufflers, but these regulations are vague and do not require mufflers designed to meet rigorous performance standards. W. BURNS, NOISE AND MAN 126 (1968).

An advisory committee on noise authorized by the California legislature recommended that gradually decreasing maximum permissible noise levels be established for future years as an incentive for the development of vehicle noise reduction technology. This procedure would be a commendable one for the EPA to follow; however, since the Noise Control Act requires that the best available technology be considered in the establishment of noise standards, it is doubtful that the EPA has the authority to set future standards as incentives to develop technology since the Act makes availability of technology a precondition for standard setting. See generally notes 63-68 and accompanying text supra.

83. See text accompanying note 14 supra.

84. Automobile manufacturers, in their efforts to reduce noise levels inside cars, also reduced the exterior noise levels. The noise levels of cars manufactured after 1969 are 2 to 3 dB(A) lower than the noise levels of pre-1969 cars. EPA REPORT, supra note 44, at 3-14. The Wankel engine, employing a rotor in a casing rather than a piston in a cylinder, significantly reduces a car's noise level and also qualifies as technology which is “available;” but the cost of such an EPA-imposed design change almost certainly would prohibit its application under the Act.

85. 2 EPA HEARINGS, supra note 10, at 107.

86. Id.
ment of new approaches to tire noise reduction. However, since the amount of tire noise produced depends to some extent on the type of road surface, highway programs can be funded by the Federal Highway Administration to develop and build road surfaces which will reduce tire noise.\textsuperscript{87}

\textbf{ii. trucks}

The noise emission levels of trucks are even higher than those of automobiles. At speeds below 35 mph, truck engine noise ranges from 80 to 95 dB(A).\textsuperscript{88} Since these noise levels are sufficient to cause hearing loss with prolonged exposure, the EPA has recommended that truck drivers wear ear protection.\textsuperscript{89} Perhaps because trucks are a primary offender, the EPA has decided to make control of interstate motor carriers its first priority under the Noise Control Act.\textsuperscript{90} The agency already has proposed noise emission standards for motorcarriers over 10,000 pounds, most of which are diesel trucks. The maximum noise levels recommended are 90 dB(A) for speeds greater than 35 mph and 86 dB(A) for speeds of 35 mph or less. Equipment which might be necessary to meet these requirements includes mufflers, quieter fans, and "pocket retread" tires. The cost of compliance for each vehicle is estimated to be $50 to $200.\textsuperscript{91} It should be noted that this cost is low compared with the total cost of purchasing a truck over 10,000 pounds.

\textbf{iii. construction equipment}

People residing or working near construction sites\textsuperscript{92} are usually exposed to very high levels of noise, ranging from 65 to 85 dB(A).\textsuperscript{93}

\textsuperscript{87} The Federal Highway Administration's authority for such a requirement is the Federal Aid Highways Act, 23 U.S.C. §§ 101, 109(i) (1970). It has been suggested that interstate highways and other major thoroughfares will eventually be built 15 to 20 feet below surface level where they pass through densely populated areas in order to reduce their traffic noise. Extensive building of mass transportation systems will also abate traffic noise by reducing traffic. See Hildebrand, supra note 11.

\textsuperscript{88} EPA REPORT, supra note 44, at 2-77.

\textsuperscript{89} Id. at 2-80.

\textsuperscript{90} Statement of Alvin Meyer, Director of the Office of Noise Abatement and Control, 3 ENV. RPTR.—CURR. DEV. 1162 (1973).

\textsuperscript{91} 4 ENV. RPTR.—CURR. DEV. 560 (1973). During the EPA hearings on its proposed interstate motor carrier noise control regulations, representatives of the truck manufacturers testified that while the regulations were achievable, they were economically "impractical," especially for the small operator. 4 ENV. RPTR.—CURR. DEV. 1981 (1974). It seems likely that the EPA will be confronted with such claims during the hearings on regulations for other noisy products.

\textsuperscript{92} The EPA estimates the number of people annually exposed to noise from construction activity at approximately 21 million. EPA REPORT, supra note 44, at 2-132.

\textsuperscript{93} Id. at 2-108.
Much of this noise is generated by diesel engines, which are used to drive compressors (94 dB(A)), bulldozers (105 dB(A)), scrapers (117 dB(A)), and rock drills (92 dB(A)). Air compressors (86 dB(A)), riveting operations (110 dB(A)), and pneumatic pavement breakers (94 dB(A)) are also common. Technology is presently available to reduce significantly the noise levels of most construction equipment. This equipment is not widely used, however, because it is more expensive than noisier equipment. Since quieter equipment is available, and since equipment costs represent only a small percentage of construction activity costs, the EPA can in this case easily protect the public health and welfare while obeying the Act's requirement that the best available technology and the cost of compliance be taken into account.

iv. aircraft

Noise from aircraft became a significant problem in the late 1950's with the introduction of jet aircraft. The problem was compounded by the post-war construction of homes on vacant land surrounding airports, the rapid growth of the commercial fleet, and the construction of more airports which introduced commercial air operations to smaller cities and towns. In the absence of effective governmental noise control regulation, the future growth of air traffic can be expected to increase the problem of aircraft noise.

The Noise Control Act's amendment to the Federal Aviation Act


95. "With a few exceptions, we believe that in general, adequate basic technology already exists to effectively implement a program to reduce construction equipment noises to acceptable levels." EPA Hearings, supra note 10, at 30 (statement of Frank H. Walk, professional engineer).

96. 8 EPA Hearings, supra note 10, at 455. Equipment costs for highway construction are, however, significantly higher. Id.

97. For more extensive discussions of the general legal and technological implications of aircraft noise control see Berger, Nobody Loves an Airport, 43 So. Cal. L. Rev. 631 (1970); Berger, You Know I Can't Hear You When the Planes Are Flying, 4 Urban Lawyer 1 (1972); Larsen, Improving the Airport Environment: Effect of the 1969 FAA Regulations on Noise, 55 Iowa L. Rev. 808 (1970).

98. The EPA estimates that approximately 16 million people are presently exposed to the effects of aircraft noise. 4 Env. Rptr.—Curr. Dev. 561 (1973).

99. The federal government is beginning to propose aircraft noise control regulations. For example, in a recent report to the Congress, the Aviation Advisory Commission recommended that commercial jet engines be acoustically modified by January 1, 1977. The estimated cost for this program would be approximately $600 million. Report of the Aviation Advisory Commission, The Long Range Needs of Aviation 20, 24 (1973).
of 1958\footnote{100} authorizes the EPA to identify levels of aircraft noise emission which in its judgment are adequate to protect the public health and welfare. Emission standards are to be proposed then jointly by the EPA and the FAA. Standards will be established only after the FAA determines that they are consistent with "the highest degree of safety in air commerce," and are "economically reasonable, technologically practicable and appropriate for the particular type of aircraft."\footnote{101} If the EPA believes that an FAA regulation does not adequately protect the public from aircraft noise, taking into account the above factors of available technology, cost, and air safety, the EPA may request the FAA to review and report on the advisability of revising its regulation. An FAA report must then be published, accompanied by a detailed statement of the FAA's findings, the reasons for its conclusions, and any environmental impact statement filed under NEPA which relates to the activity at issue.\footnote{102}

During hearings on the noise control bill, both the Senate and House committees considered whether the EPA, rather than the FAA, should be granted final authority over aircraft noise emission standards.\footnote{103} The absence of aircraft design expertise within the EPA was contrasted with the FAA's experience under the Federal Aviation Act with both aircraft noise control regulations and aircraft noise reduction technology. Another important issue was flight safety, which is largely a function of the safety of the engine system, the source of aircraft noise emission standards. It was decided that the FAA—an agency responsible for flight safety\footnote{104}—should be vested with the ultimate power over noise control in order to ensure the primacy of safety considerations. The Act thus retains the FAA's authority under the Federal Aviation Act to establish aircraft noise emission standards, limiting the EPA's role to that of little more than a consulting agency.

The Act's continuation of FAA control is unfortunate, since the FAA has long been dilatory in regulating aircraft noise,\footnote{105} and there is no reason to assume that the Noise Control Act will catalyze the FAA. The EPA's unfamiliarity with aircraft design, which was emphasized during the committee hearings, should not be determinative. The Noise Control Act evinces Congress' trust that the EPA can develop sufficient expertise concerning automobile design, trucks, con-

\begin{itemize}
\item \footnote{100} 49 U.S.C. §§ 1301-1542 (1970).
\item \footnote{101} 42 U.S.C. §§ 1431(d)(3), (4) (1973).
\item \footnote{102} Id. § 1431(c)(2).
\item \footnote{103} See, e.g., 1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 331.
\item \footnote{104} 49 U.S.C. § 1655(c)(1) (1973). The Civil Aeronautics Board is also responsible for flight safety. \textit{Id}.
\item \footnote{105} The EPA reached this conclusion in a report to be submitted to the FAA. 4 \textit{Env. Rptr.—Curr. Dev.} 561 (1973).
\end{itemize}
struction equipment, and electrical equipment to propose noise emission standards for these sources. It seems that the EPA also is capable of developing expertise about aircraft design, especially with the technical assistance of the FAA. Nor does the importance of flight safety require that the FAA have final authority in setting aircraft noise emission standards. The Act should have granted the FAA authority only to require that the necessary safety considerations be incorporated in EPA-proposed standards.

The emphasis on safety considerations by the Senate and House committees may retard the progress of aircraft noise reduction since safety, like availability of technology and compliance cost, is another competing interest in noise reduction efforts. However, the FAA can reduce aircraft noise without affecting flight safety by requiring modifications in airport operations. An FAA-imposed "cumulative noise limit" is perhaps the most effective way to force such modifications. A "cumulative noise limit" can be defined as a decibel noise level for each airport above which the health and welfare of neighboring residents would be adversely affected. An airport's noise level would logically be measured at its boundaries. One airport's cumulative noise limit might be higher or lower than another's, depending on the noise generated by its normal operations and the proximity of nearby residents. To meet its noise limit, an airport might be forced to decrease the frequency of flights, alter landing, take-off, and other operational patterns,\textsuperscript{106} limit the hours of use, or develop a land use program.\textsuperscript{107} Given the FAA's past achievements in noise control, it is unfortunate that the Senate committee limited the scope of EPA activity in airport control as severely as it did in aircraft design. The committee rejected without explanation a provision which would have required the EPA to identify those airports with noise levels above

\textsuperscript{106} Noise abatement flight procedures presently are being used in certain areas. Such procedures include maximum angle climbouts, power cutback climbouts, reduced thrust take-offs, flap management approaches, and higher minimum altitudes. \textit{Id.}

\textsuperscript{107} Cumulative noise limits for the protection of nearby residents would not be necessary if appropriate local authorities inhibited, through zoning, noncompatible uses of property adjoining airports. Compatible uses of adjacent land would include industry, businesses functionally related to airport activity, and soundproofed indoor recreational facilities, such as bowling alleys. Since local zoning jurisdictions surrounding airports often overlap and conflict, the federal government could draft a model airport zoning ordinance for local consideration and implementation.

Furthermore, new airports can be located so as to be physically separate from the community. Dulles Airport in the Washington, D.C. area was so located. However, the presence of the airport has led to industrial activity nearby, with the attendant creation of new jobs. Construction companies are pressing for zoning changes to enable the construction of homes in these areas, although noise from the airport is known to preclude a satisfactory environment. Chicago, New Orleans, Los Angeles, and Boston presently are studying the feasibility of off-shore airports. See generally Comment, \textit{Aircraft Noise and the Selection of Airport Sites}, 4 \textit{Urban Lawyer} 548 (1972).
a certain cumulative noise limit to be set by the EPA. The Act contains only a much weaker provision requiring the EPA to study the feasibility of cumulative noise limits.

2. Incentives for Private Development of Noise Reduction Technology

a. Consumer information

It is one of the incongruities of the marketplace that those products which contribute significantly to environmental noise are often advertised for their quietness. The advertisements of the automobile industry, for example, typically emphasize the interior quiet of new cars, even though interior noise levels usually are above the threshold at which harmful effects may occur. The Noise Control Act authorizes the EPA to counteract such misleading advertising. The EPA may designate any product which emits noise capable of adversely affecting the public health or welfare, or which is sold in part on the basis of its effectiveness in reducing noise, and require that notice of its noise level, or its effectiveness in reducing noise, be affixed to the product, or to its container, or to both. EPA authority is not limited to products for which noise emission standards have been set; products such as home appliances are also subject to regulation in this manner.

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110. For example, the Ford Motor Company advertises:
    Studies show that excessive noise can bring on anxiety, bizarre bodily sensations, and personality disintegration. Outside, it's getting noisier and noisier.
    Inside a 1971 Ford LTD, it's another world . . . . This year take a quiet break . . . .
    Newsweek, Oct. 12, 1970, at 52-53. And, with an unintended cause and effect implication:
    In the last 5 years, the noise level in American cities has risen over 20%.
    In the last 5 years, sales of the very quiet Ford LTD have risen over 160%.
111. See C. Bragdon, Noise Pollution 34 (1970) and text accompanying note 14 supra.
114. The noise level from vacuum cleaners, measured three feet from the source, averages 70 dB(A); for clothes washers the average is approximately 62 dB(A). Air conditioning units, which average approximately 58 dB(A), are especially pernicious, since neighbors, as well as the user, are directly exposed to the noise of this appliance. EPA Report, supra note 44, at 2-118.
Notification is likely to be most effective for home appliances since the consumer himself is the one directly exposed to the noise and may therefore be more likely to purchase appliances on the basis of their noise levels. However, if the EPA-required label merely states the decibel level of the product, notification will have little impact on most consumers. The average person is unfamiliar with decibel measurements and has little awareness even of his vulnerability to hearing loss from noisy products, much less to the more subtle effects of noise, such as irritation and fatigue. Rather than relying on the technical terms “decibel” and “dB(A),” it would be more effective to affix to the product a warning of the harmful effects of its noise level. Such a notice would be a real incentive to manufacturers to develop and apply noise reduction technology.

To assure compliance by manufacturers whose products are subject to EPA regulation, the Act requires each manufacturer to provide a warranty to the purchaser that the product is “designed, built and equipped so as to conform at the time of sale” with the applicable noise emission standard.

b. Government purchases

Another incentive for private development and application of noise reduction technology is government purchase of low-noise-emission products. The Noise Control Act authorizes the EPA to designate as nonconformal any product manufactured after the date of enactment of the Act which is not designed, built, and equipped so as to conform to any applicable standard. 42 U.S.C. § 4905(d)(1) (1973). Properly informed, industry may further pursue its substantial self-interest in noise reduction. See note 34 supra.

115. A factor which complicates public awareness of the adverse health effects of noise is the public’s equation of noise with power and efficiency. The small number of consumer purchases of the Hoover Company’s quiet vacuum cleaner has been attributed to the popular misconception that a vacuum cleaner will not clean properly unless it is noisy. See N.Y. Times, Apr. 30, 1969, at 31, cols. 4-8. There is also a familiar phenomenon among youth which one psychiatrist has labelled the “motorcycle syndrome”: noisy vehicles provide a feeling of power. Nicholi, The Motorcycle Syndrome, 126 AM. J. PSYCHIATRY 1588, 1591 (1970).

However, the public impact of consumer and environmental movements may have increased the sensitivity of consumers and the public in general to the noise level of products—at least the public may be willing to learn if given sufficient opportunity. The Noise Control Act authorizes the EPA to disseminate to the public information concerning acceptable noise levels. 42 U.S.C. § 4913(3) (1973). Accordingly, the EPA has recently made “public interest” statements in the media to increase public awareness of noise pollution. “Woodsy Owl,” noise pollution’s counterpart to “Smokey the Bear,” urges listeners to “Give a hoot, don’t pollute.” As a minor but helpful measure, radio and television stations could remind their listeners to make sure the volume of their radios and televisions is not high enough to annoy their neighbors. But “educational” programs should not be directed only at consumers. The principal sources of noise pollution are technological products, such as cars and construction equipment, which are designed and manufactured without sufficient regard for their noise levels. Industry awareness of noise pollution should be an objective of “educational” programs. Properly informed, industry may further pursue its substantial self-interest in noise reduction. See note 34 supra.

117. Id. § 4914.
nate as a "low-noise-emission product" any commodity which "emits
noise in amounts significantly below the level specified in noise emis-
sion standards" for its class.\textsuperscript{118} If any such designated product is suit-
able as a substitute for an article needed by a federal agency and its
cost is less that 125 percent of the retail price of the least expensive
commodity for which it would be substituted, then the agency is re-
quired to purchase the designated low-noise-emission product.\textsuperscript{119}

Besides accelerating the development of noise reduction tech-
ology, this provision can also serve to reduce the din associated with
federal activities, often a major source of noise.\textsuperscript{120} One such federal
noise source—military aircraft—is exempted under the Act from noise
control regulation by the FAA or the EPA.\textsuperscript{121} Since military planes
comprise approximately 20 percent of all American aircraft,\textsuperscript{122} the Act
should be amended to allow the EPA to designate military aircraft
as "low-noise-emission" products. The development of noise reduc-
tion technology which might result from such a designation would sub-
sequently be available to commercial aircraft as well.

3. Enforcement

Violations of the Noise Control Act include: the distribution in
commerce of a new product not conforming with a noise emission
standard; the removal or rendering inoperative of a device incorporated
in any product under the Act; the use thereafter of any such product;
the removal prior to sale of any notice required to be attached to a
new product; and the failure to maintain records and provide required
information about new products.\textsuperscript{123} Criminal sanctions for willful or
knowing infringements may include fines up to $25,000 for each day
of violation and one year in prison for first offenses, and $50,000 for
each day of violation and two years in prison for subsequent off-
fenses.\textsuperscript{124} The EPA may also order such other relief as it deems neces-
sary to protect the public health and welfare.\textsuperscript{125} Appropriate relief

\textsuperscript{118} Id. § 4914(a)(3).
\textsuperscript{119} Id. § 4914(c)(1).
\textsuperscript{120} An additional means of controlling the noise created by federal activities—
citizen suits—is discussed at text accompanying note 126 infra.
\textsuperscript{121} 42 U.S.C. § 4902(3) (1973). The Department of Defense has issued Mili-
tary Standards as part of its recent policy to reduce the noise impact of military equip-
levels that must be achieved in aircraft cabin spaces for all military aircraft. Air Force
Manual (AFM) 86-5, 1 Oct. 1964, directs that efforts be made by the Air Force to
encourage compatible land uses by communities adjacent to military airfields.
\textsuperscript{122} See Comment, Sounding Brass: Military Aircraft Noise Pollution, 2 Ecology
L.Q. 159 (1972).
\textsuperscript{123} 42 U.S.C. § 4909(a) (1973).
\textsuperscript{124} Id. § 4910(a).
\textsuperscript{125} Id. § 4910(d).
in some cases might include notice to the public that the noise emissions of certain products present a threat to the public welfare, or even a recall of such products. The Act does not specifically provide the EPA with such authority, but the permissive language is broad.

Citizen suits may be brought against any person, agency of the federal government, or agency of a state government violating the Act, or against the EPA for failing to perform its duties under the Act. This provision is similar to the citizen suit provisions of other environmental statutes, such as the Clean Air Amendments of 1970 and the Federal Water Pollution Control Act Amendments of 1972. As a practical matter, the federal government is not likely to commit the necessary resources for adequate enforcement of these laws, but if citizens or environmental groups are willing to commit their own resources of time and energy, adequate enforcement is possible. Like the Clean Air Act Amendments of 1970 and the Federal Water Pollution Control Act Amendments of 1972, the Noise Control Act provides the courts with the discretion to award the costs of citizen suits to the plaintiffs. These statutes provide no guidelines to aid a court in reaching a discretionary decision to award fees. Factors which should be considered by the court in deciding to award litigation costs to plaintiffs include the advancement of the Act’s policies of protecting the environment and the public health and welfare, of deterring violations, and of punishing defendants for their bad faith violations.

4. Federal Preemption

The Noise Control Act expressly limits the authority of state and local governments over noise abatement in only one respect: They are preempted from prescribing noise emission standards which in effect regulate the manufacture of new products, unless their standards are identical to the EPA standards. The authority of state and local governments to regulate the use, operation, or movement of products

132. Id. § 4905(e). The burden of federal regulation under the Act falls on manufacturers, and state and local governments are preempted from directly imposing on manufacturers additional or different burdens. Thus, the Act does not allow the states or localities to ban the sale of federally-regulated products on the ground that their noise emission levels are unacceptable.
is not expressly limited by the language of the Act; however, as discussed below, such authority is probably preempted as to EPA-regulated products. With the exception of federal regulation of airports, local governments are not restricted in the use of their powers to engage in zoning, land-use planning, curfew laws, and similar regulations.\footnote{133. In Burbank v. Lockheed Air Terminal, 411 U.S. 624, 5 ERC 1321 (1973), the Court held that the Federal Aviation Act as Amended by the Noise Control Act, 49 U.S.C. §§ 1301-542 (1970), preempted the City of Burbank’s ordinance prohibiting takeoffs from the municipal airport between 11 p.m. and 7 a.m. The Court’s holding was based on the pervasiveness of federal regulation in air commerce, the intensity of the national interest in uniform regulation, and the nature of air commerce. Federal preemption over airport noise control regulations is, as a practical matter, unlimited. For a critical view of this preemption see Berger, supra note 97.}

Federal preemption insures that the manufacture of products such as motor vehicles and construction equipment need comply only with a single set of criteria; otherwise, conflicting local regulations on manufacturing would create havoc. Setting noise emission standards is a complex process since these standards must reflect technical feasibility as well as the demands of the public welfare. The determination of an appropriate balance can be made more efficiently and accurately by the EPA, which possesses the resources to finance and consider the necessary studies and hearings.\footnote{134. Furthermore, state and local governments may hesitate to impose appropriate standards as a result of political pressure from local industries. For example, an intensive campaign against the New York City Noise Control Code by the local construction industry delayed and threatened to prevent passage of the ordinance. N.Y. Times, Sept. 13, 1972, at 1, col. 4.}

Despite these benefits of federal preemption over noise emission standards, during the congressional hearings on the Noise Control Act some lawmakers expressed concern that federal preemption would result in more lenient standards than those which might be adopted by states with the most serious noise problems, such as New York and California.\footnote{135. In a letter to Sen. Tunney, Robert Moretti, the Speaker of the California Assembly, suggested that the bill be amended to allow California to set stricter noise emission standards for new products than the federal standards. The amendment would be justified, according to Moretti, on the ground that just as “California became the technological and environmental laboratory for the nation in regard to the fight against air pollution, so too it can become the laboratory for the fight against noise pollution.” Letter from Assemblyman Robert Moretti and Frank Lanterman, to John V. Tunney, April 7, 1972, in 1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 108.}

This concern was eventually allayed, since it was felt that local governments retain their authority to enact noise control regulations, licensing requirements, and restrictions on the use, operation, and movement of products.\footnote{136. For examples of new approaches to local noise control regulation see notes 156-57 and accompanying text infra.} However, the Senate and House committees
failed to consider adequately the possibility that through the imaginative use of its authority, a local government effectively could preclude use of any product it found too noisy, including a product for which the EPA had set a noise emission standard. For example, a city could enact an ambient noise zone level\textsuperscript{137} which is below the decibel level of the EPA noise emission standard for automobiles. Such a local regulation would in effect prohibit the use of automobiles in that zone, even though automobiles might comply with EPA standards. The Noise Control Act does not expressly prohibit this incongruous result. Senator Tunney of California recognized this problem during the Senate hearings:

\begin{quote}
[As I understand the bill, you can buy a car in California, and if it does not meet the California ambient noise level standards, it couldn't be used. Maybe the distinction between federal and local regulation is a distinction without a difference.\textsuperscript{138}
\end{quote}

There are two possible approaches to the problem of local noise control regulations indirectly preempting EPA noise emission standards. It can be argued that such regulations are consistent with the Act and should be allowed. The congressional purpose of the Noise Control Act is to protect the public health and welfare while leaving the primary responsibility for noise control with local governments,\textsuperscript{139} and local regulations indirectly preempting EPA noise emission standards serve further to protect the public health and welfare. Under this argument, the EPA's noise emission standards would be considered the minimum noise control regulations necessary for the public's protection. Citizens of communities without a noise control program could rely on EPA standards, while those communities which are more concerned about noise pollution, or which have more serious noise problems, could enact further noise control measures.

On the other hand, to allow further noise control measures which indirectly preempt an emission standard is inconsistent with the implicit assumption of the Act: that the EPA will set standards adequate to protect the public from the harmful noise levels of products covered by the Act. Thus, local regulation of those products, however indirect, is unnecessary and contrary to the Act's policy. Allowing local regulations is also inconsistent with the Act's purpose of protecting producers, by means of a realistic, uniform standard with which manufacturers in interstate commerce can comply without being subject to the conflicting regulations of different jurisdictions.

\begin{footnotes}
\item[137] An "ambient noise zone level" is the maximum decibel level allowed for any activity conducted in a specific area (zone) of a local jurisdiction.
\item[138] 1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 174.
\end{footnotes}
A reasonable compromise between these competing views of preemption under the Act is to allow the creation and local enforcement of special purpose noise zones even where they effectively ban the use of products meeting applicable federal standards in small areas or during certain hours. School and hospital areas and pedestrian malls are probable examples of such permissible zones; surely Congress did not intend to prohibit this traditionally local zoning activity. At some point such zoning becomes too generalized for meaningful coexistence with federal regulation over the same sources. For example, an ambient level for a whole community could require quieter cars or construction equipment than those manufactured under federal standards. This Comment cannot predict the level of local comprehensiveness which will result in prohibited preemption over federally regulated products; this problem should be resolved, when it arises, with reference to the facts of the case.

Whatever may be the states' power in the noise zoning area, local governments still retain the authority and the responsibility for regulating noise from sources not subject to EPA emission standards. New York City's exercise of this authority is the subject of the remainder of this Comment.

III

NEW APPROACHES TO LOCAL CONTROL OF URBAN NOISE

A. Local vs. State Control of Noise

Cities, rather than the states or federal government, traditionally have been involved in noise control efforts. Owing to the local character of noise sources not preempted by the federal Act, city governments are likely to continue as the principal agents of noise control. Thus, municipal noise regulation is the focus of the remainder of this Comment. It

140. See note 157 and accompanying text infra for an example of how New York City may well be able to coordinate local, unpreempted zones with more general zoning for sources not regulated under the Act.

141. During consideration of the House version of the bill (H.R. 11021) which later became the Noise Control Act of 1972, the Subcommittee on Public Health and Environment of the House Committee on Interstate and Foreign Commerce, considered establishing federal ambient noise levels for existing local zones. H.R. REP. No. 92-842, 92d Cong., 2d Sess. 9 (1972). The idea was rejected on the ground that this was a function of state and local governments.

142. The EPA is to work closely with state and local governments in the development and enforcement of both federal and local noise control regulations, providing technical assistance through its regional offices. 3 ENV. RPTR.—CURR. DEV. 1162 (1973). In addition, the EPA is authorized under the Act to grant $22.5 million over the next three years to state and local noise control agencies. 3 U.S. CODE CONG. & AD. NEWS 4663 (1972).
should be noted, however, that some sources of urban noise are more effectively controlled at the state level. For example, muffler regulations designed to reduce noise from used cars are practical only if established by a uniform state law. The setting of occupational noise standards for businesses not covered by OSHA is another appropriate area for state action.

It can be argued that state noise control regulation is appropriate for all noise sources not preempted by the Act, even though these sources are confined to a local area. Some communities in a state might not yet have a serious noise problem and so would not enact noise controls, or they might refuse to enact adequate regulations for other reasons. Faced with this situation, state legislators might conclude that the absence of a serious noise problem in a community does not justify the state's failure to protect its citizens in that community from whatever noise sources do exist and from future increases in the overall noise level. In cases where state legislatures feel compelled to enact statewide noise regulations, the New York City Noise Control Code and Building Code are appropriate—though imperfect—models for state as well as local legislation.

B. The New York City Noise Control Code

Based on community surveys of attitudes about noise levels of New York City, the City of New York Task Force on Noise Control made its recommendations in January 1970. The City's Environmental Protection Administration incorporated the Task Force's recommendations into a comprehensive noise control code which was enacted by the city council in August 1972. The Code incorporates four approaches to the problem of urban noise: retaining the traditional prohibitions against "unnecessary" noise; establishing specific decibel standards for a wide variety of noise sources, including automobiles, trucks, and construction equipment; mandating the forma-

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143. Noise emission standards under the Noise Control Act will apply only to new products. See text accompanying note 48 supra.

144. See note 40 supra.

145. NEW YORK CITY ADMIN. CODE ch. 57 §§ 1403.3-1.01 et seq. (1972). References to the Code will hereinafter be cited by section number.

146. NEW YORK CITY BLDG. CODE §§ C26-1208.1 et seq. (1969).

147. Chicago (CHICAGO MUNICIPAL CODE ch. 17, § 17-1.6-.31 (1972)) and San Francisco (SAN FRANCISCO MUNICIPAL POLICE CODE art. 29, ch. 8 (1972)) presently have comprehensive noise ordinances which are in many respects similar to the New York City Noise Control Code, but since they are not as extensive they will not be discussed.

148. TOWARD A QUIETER CITY, supra note 13. The Task Force had been created by the mayor at the urging of citizen groups.

149. Since the EPA noise emission standards will preempt the Code's standards for these products, this approach of the Code will not be discussed.
tion of "ambient noise quality zones" for the entire city; and creating an "environmental court" to remove noise regulation from the criminal courts.

I. Prohibited Noises

The Code retains the city's prior blanket prohibition against any unnecessary noise\textsuperscript{150} and contains several more specific prohibitions. Sound reproduction devices, among the more obnoxious sources of urban noise, cannot be used in any manner which creates an unnecessary noise and are not permitted at all for a commercial or advertising purpose.\textsuperscript{151} An automobile horn can be used only to warn of "imminent danger,"\textsuperscript{152} and an emergency siren is limited to a period no longer than strictly necessary to respond to the emergency.\textsuperscript{153} Unfortunately, these prohibitions against specific noise sources are almost as vague as the traditional prohibition against "unnecessary" noises. They require a personal judgment on the part of the enforcing officer, which he or she might be unwilling to make. Thus, New York's prohibitions may not be fully enforced, even though "noise inspectors" in the Bureau of Noise Abatement, rather than the police, will be responsible for enforcement.\textsuperscript{154} The Code also contains a "curfew law" which allows construction activity only between the hours of 7:00 a.m.

\textsuperscript{150} § 1403.3-3.0. New York City did not enact its first anti-noise law until 1936. NEW YORK CITY ADMIN. CODE ch. 18, § 435-5.0 (1963) (repealed by L.L. 1972, No. 57, Oct. 4, 1972). The 1936 ordinance contained a general prohibition against "the creation of any unreasonably loud, disturbing and unnecessary noise."

\textsuperscript{151} § 1403.3-4.03. Sound reproduction devices include musical instruments, stereo systems, and sound amplifying systems. § 1403.3-1.05 (tt). Ordinances regulating the use of sound trucks and sound reproduction devices in public places have been the subject of substantial litigation concerning the right of freedom of speech guaranteed under the first amendment of the United States Constitution. In Kovacs v. Cooper, 336 U.S. 77 (1949), however, the Court upheld a municipal ordinance which prohibited the use of sound trucks which emitted "loud or raucous noises."

\textsuperscript{152} § 1403.3-4.05.

\textsuperscript{153} § 1403.3-4.07. Although emergency sirens already approach the threshold of pain, automobile drivers with radios, stereo cassettes, and air conditioning often do not hear the sirens. It could become necessary for the federal government to require that cars be manufactured with warning devices, which would be activated by a radio signal issuing from the emergency vehicle, notifying drivers of oncoming fire trucks, police cars, and ambulances.

\textsuperscript{154} The noise inspectors, like the police, prefer not to be "in the role of God" in deciding what is an "unnecessary" noise; they prefer firm guidelines on which to base their decisions. N.Y. Times, Oct. 19, 1972, at 32, col. 1. There are, however, disadvantages to guidelines which preclude discretion, as illustrated by the reaction of the people of a small Illinois town when the whistle of the town's industrial plant was silenced in order to comply with a state noise control regulation. Half the town's population signed a petition protesting the action because they depended on the whistle to wake them in the morning and to alert them for meals and other daily activities. The whistle was turned back on. TIME, Jan. 24, 1974, at 10.
and 6:00 p.m., these hours correspond approximately to the conventional hours of construction activity.

2. Zoning for Noise Performance Standards

As noted above, the Code’s prohibited noise provisions may confront enforcement problems, and Code provisions directing the Bureau of Noise Abatement to establish noise emission standards for products such as cars, trucks, and construction equipment will be preempted by EPA standards. The Code’s success, therefore, may depend largely on the effectiveness of the Code’s provision for various geographic ambient noise quality zones. Under this provision, ambient noise levels will be set for the city’s residential, commercial, and industrial zones. The maximum permissible decibel level for each zone will reflect the public’s health and comfort needs, the population density of the zone, and the availability of noise reduction technology for those activities normally conducted within the zone. The Code’s ambient noise zoning provision is an ambitious attempt to regulate the totality of sound in a given environment, rather than concentrating on the control of individual sound sources as a means of reducing the city’s noise. The

155. § 1403.3-4.11.
156. § 1403.3-6.01. Ambient noise is defined by the Code as the level of the total environmental noise of an area: “the all-encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far.” § 1403.3-1.05(i). Since the purpose of an ambient noise zone would be to prohibit noise sources from emitting noise above the maximum permissible decibel level for the zone, a suspected source’s noise level would be measured against the maximum permissible level. As discussed in the preemption section above, the maximum permissible level in such a comprehensive system of noise zoning may be inapplicable to sources regulated by the EPA under the Noise Control Act. See notes 135-42 and accompanying text supra. Any such preemption could result only if the zoning system effectively banned Federally regulated sources in wide areas where they ordinarily would be used.
157. § 1403.3-4.21. For analysis of the proper approach to availability of technology in this context see notes 62-69 and accompanying text supra.

Another Code provision authorizes the Board of Health to designate any area as a “noise sensitive zone,” and to prohibit noise activities within such a zone. § 1403.3-4.21. This provision probably will be applied only to areas with special characteristics, such as the presence of schools, courtrooms, churches, or hospitals. Traffic and construction noise outside hospitals has been shown to retard the recuperation of hospital patients. U.S. PUBLIC HEALTH SERVICE, NOISE IN HOSPITALS: AN ACCOUSTICAL STUDY OF NOISES AFFECTING THE PATIENT (1963). To increase the effectiveness of this provision, the City could consider routing truck traffic away from noise sensitive zones, as has been done in other cities. TOWARD A QUIETER CITY, supra note 13, at 15.

It is unlikely that these special, localized zones will be preempted by Federal regulations even where use of federally regulated noise sources is effectively prohibited in small areas. See note 140 and accompanying text supra.
158. Approaching noise control through land use controls may eventually raise a whole series of issues beyond the scope of this comment; what is the proper role of
requirements for residential and commercial areas will be more stringent than would be practical in industrial areas.

The Code authorizes the Bureau of Noise Abatement, an agency of the city's Environmental Control Board, to determine the appropriate ambient noise level for each type of zone. The New York Mayor's Task Force on Noise Control has recommended noise limits for residential areas of 40 dB(A) during the daytime, and 30 dB(A) at night. These figures correspond to data on people's preferences regarding noise levels. The figures are set low enough so that if the ambient noise level is actually 5 dB(A) above the Task Force's recommendations, people will be able to tolerate the additional noise.

Indirect noise controls focusing on activities rather than sound itself, what role will land use controls play in coordinating efforts to control water, air, and noise pollution. For an excellent discussion of these and other issues in an area where federal involvement is further developed and the federal-state interplay more explicitly defined by statute see Mandelker & Rothschild, The Role of Land Use Controls in Combating Air Pollution Under the Clean Air Act of 1970, 3 ECOLOGY L.Q. 235 (1973).

159. § 1403.3-6.01.
160. TOWARD A QUIETER CITY, supra note 13, at 7.
161. On the basis of studies of citizens' reactions to noise, California has proposed ambient noise levels which reflect its citizens' preferences. These ambient noise levels can be expected to correspond to the preferences of New York City's citizens as well:

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<tr>
<th>AMBIENT NOISE LEVELS WHICH PEOPLE WOULD PREFER</th>
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<tr>
<td>Zone</td>
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<tr>
<td>Rural Residential</td>
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<td>Suburban Residential</td>
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<td>Urban Residential</td>
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<td>Commercial</td>
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<tr>
<td>Industrial</td>
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<td>Wilderness Area</td>
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1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 314. People will accept higher ambient noise levels than they would prefer, and considering the present level of urban noise, the limits of noise reduction technology, and local economic considerations of retaining existing industry and attracting new industry, they probably will have no choice. Due to the variation in individual reactions to noise, ambient noise levels which are acceptable to all people under all circumstances, as contrasted with people's preferences are more difficult to establish. See note 12 supra. However, dB(A) ranges which are acceptable to most of those Californians surveyed are set forth as follows:

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<tr>
<th>AMBIENT NOISE LEVELS PEOPLE WILL ACCEPT WITHOUT UNDUE COMPLAINT</th>
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<tbody>
<tr>
<td>Zone</td>
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<tr>
<td>Rural Residential</td>
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<td>Urban Residential</td>
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<td>Commercial</td>
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<td>Industrial</td>
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1972 Hearings Before the Senate Subcomm. on Air and Water Pollution, supra note 14, at 315.
The legal validity of ambient noise zoning has not yet been established by the courts. Judicial approval of other modern trends in zoning indicates that the courts are not adverse to new zoning techniques, although they might respond unfavorably to the retroactive application of an ambient noise level to noncomplying existing activities and land uses. If nonconforming existing uses are held exempt from compliance with the ambient noise standards, the effect of the Code's zoning provision will be realized very gradually since the measure will be applicable only to new activities and new land uses. The courts have, however, been willing to terminate nonconforming existing uses when sufficient time for compliance is allowed and when there is a direct relationship between the elimination of the nonconforming use and the public health, safety, or general welfare. Such a relationship can be established by referring to scientific evidence of the harmful effects of noise above the ambient noise levels. Another factor which may make the retroactive effect of noise performance standards more judicially attractive is the ease with which a nonconforming use often can meet the ambient noise level through the application of noise reduction technology.

3. Ensuring Compliance with the Code

Local governments traditionally have attempted to control excessive noise through municipal ordinances which prohibit "unreasonable" or "excessive" noise. Enforcement of these ordinances is a police function, but since the police are forced to rely on their own judgment of what is an "unreasonable" noise and since the police must give higher priority to matters of crime and safety, these ordinances have rarely been enforced. Within the past few years, several local governments have realized that different approaches are required to control the increasingly noisy urban environment. The current trend is toward the establishment of municipal offices of noise abatement which are given full jurisdiction over comprehensive noise regulation.

The New York City Bureau of Noise Abatement is responsible for enforcement of the Code, thus providing the city with a focus for enforcement which has been absent in local noise abatement efforts. The Code continues to rely on police enforcement to some extent.

163. Id. at 619-20.
164. See text accompany note 14, supra.
165. See note 150 supra.
166. Along with the Bureau of Noise Abatement's noise officers, the police will also be expected to enforce the prohibited noise provisions of the Code, since prohibited noises often occur during the night, and since there will be noisy situations which
but also provides for noise inspectors in the Bureau.\textsuperscript{167} After the noise inspectors find Code violations, the Environmental Control Board may impose a civil penalty, ranging from $50 for the unnecessary use of an automobile horn to $1,000 for unauthorized construction activities.\textsuperscript{168}

One of the more controversial innovations of the Code is its provision for citizen suits. A citizen may file a complaint and then if the Administrator of the City's Environmental Protection Administration fails to act on it within 30 days, the citizen may prosecute it before the Board. This right is limited to certain enumerated situations, such as advertising with sound reproduction devices and after-hours construction work.\textsuperscript{169} A complainant may be awarded a maximum of 25 percent of any civil fine imposed in a proceeding brought by the Administrator or 50 percent of such fine where the complainant himself prosecutes the action.\textsuperscript{170} This provision gives the private citizen an opportunity to abate noise as well as to ensure that the City's noise control agencies will be responsive to his initiative.\textsuperscript{171} Budget constraints also suggest that citizen complaints be encouraged. The alternative to relying on citizen complaints is the employment of additional noise inspectors, necessitating the appropriation of additional funds. Participation by citizens also should reduce the opportunities for bribes to enforcement officials.\textsuperscript{172}

The Code also uses the considerable purchasing power of the City of New York as an incentive for noise reduction in the private sector by requiring Code compliance as a condition for City contract awards. Any technological developments applicable to the activities under con-

\begin{itemize}
  \item \textsuperscript{167} As of April 1973 the Bureau employed nine noise inspectors and approximately 18 technical staff members. The Bureau's budget for the 1973 fiscal year was approximately $1 million. \textit{Id.}
  \item \textsuperscript{168} § 1403.3-8.01(b)(5).
  \item \textsuperscript{169} § 1403.3-8.09(a).
  \item \textsuperscript{170} § 1403.3-8.09(d), (e).
  \item \textsuperscript{171} It has been argued that environmental pollution regulations benefit the middle and high income communities more than low income communities, since scarce funds are diverted from social service programs primarily benefitting low income people. \textit{Krieger, Six Propositions on the Poor and Pollution}, 1970 POLICY SCIENCES 1. However, low income communities are exposed to levels of noise pollution at least as high as those in other communities. If people in the low income areas of New York were to use the Code's complaint procedure, the Code's environmental benefits, as well as the financial benefits of awards, could be distributed across the income ranges.
  \item \textsuperscript{172} As New York City Councilman Theodore S. Weiss, Chairman of the City Council's Environmental Protection Committee, stated: "While it might be possible to corrupt a policeman or even a whole precinct, it is nigh unto impossible to corrupt a whole neighborhood." \textit{N.Y. Times}, Sept. 13, 1972, at 54, col. 1.
\end{itemize}
tract must be used by the contracting parties as well.\textsuperscript{173} Enforcement of this provision often will raise contract prices significantly, and the Code does not supply funds for the additional expense. Thus, the extent to which the City's contracting agencies will comply with this measure is uncertain.

Ensuring that the City itself will comply with the Code poses a serious problem, since some of the City's activities, especially the subway system, constitute a major source of noise. The Code requires the Bureau of Noise Abatement to propose noise emission standards for new and existing subways.\textsuperscript{174} Considering the appropriations which would be necessary to reduce the noise from hundreds of subway cars, stations, and miles of track, it is probable that only new cars and repaired track will be made quieter. Another major source of noise from City activity is street repair. To avoid traffic congestion, much of the City's repair of the streets presently is conducted at night. New York's Mayor Lindsay believed that the Code should be amended to allow night work on all public construction.\textsuperscript{175}

In cases where serious traffic congestion would result from the daytime repair of the streets, nighttime repair may be a reasonable trade-off with the community's right to nighttime quiet. However, allowing night construction work for public buildings is an unreasonable trade-off, since the community's right to quiet outweighs the City's interest in the completion of its buildings by a certain date.

4. Noise Relief Through Building Code Performance Standards

The EPA has estimated that 22 to 44 million people have lost some of the "utility" of their dwellings as a result of traffic and aircraft noise invading their homes.\textsuperscript{176} This is in part due to the fact that municipal building codes usually have no provisions regulating the noise transmission characteristics of buildings. Furthermore, the lighter and less expensive materials used in modern structures and enclosures allow greater noise transmission than did older construction materials.\textsuperscript{177} European countries, on the other hand, have devoted

\textsuperscript{173} § 1403.3-2.25.
\textsuperscript{174} § 1403.3-5.07.
\textsuperscript{175} N.Y. Times, Sept. 13, 1972, at 54, col. 4. The Code was passed by the City Council on September 12, 1972, but a delay of several weeks ensued before the Mayor signed it. During this interval, the local construction industry argued for an amendment of the nighttime ban on construction. N.Y. Times, Sept. 28, 1972, at 46, col. 1.
\textsuperscript{176} EPA, REPORT TO THE PRESIDENT AND CONGRESS ON NOISE, S. Doc. No. 92-63, 92d Cong., 2d Sess. 2-132 (1972).
\textsuperscript{177} Acoustical research by the Owens-Corning Fiberglass Corporation has recently developed a number of practical wall noise insulation techniques. See Owens-Corning Fiberglass, Solutions to Noise Control Problems (undated).
substantial attention to the reduction of noise transmission in buildings.\textsuperscript{178}

New York City was the first American municipality to incorporate noise performance standards in a building code.\textsuperscript{179} The Code requires sound transmission limits for walls, noise emission standards for air conditioning, heating, and mechanical equipment, and impact noise levels for floors and ceilings.\textsuperscript{180} Despite these provisions, surveys indicate that 75 percent of the tenants in buildings subject to the Code are dissatisfied with the results.\textsuperscript{181} That the Code's noise performance standards are significantly below the European standards may explain this dissatisfaction.\textsuperscript{182} Another inadequacy of the Code is its exemption of single and double occupancy buildings. This exemption is no more justifiable than an exemption of such buildings from the Building Code's safety requirements. Most people who purchase single or double occupancy dwellings buy them from developers, and noise usually is not a significant factor in their decisions to buy. Developers at least should be required to call to the attention of prospective purchasers the environmental noise characteristic of the surrounding area and the sound insulation properties of the house, at risk of recission of the contract or restitutionary damages. Such measures are the minimum necessary protection in the absence of Building Code noise standards. But building code noise standards themselves are necessary in order not to make the emission standards of the Noise Control Act and the provisions of local noise control codes bear the entire burden of noise reduction. Comprehensive building code standards and emission regulation of noise sources should be coordinated to achieve adequate protection from urban noise at minimum cost.

**CONCLUSION**

Federal and local governments are beginning to attend to yet another significant form of environmental pollution—urban noise. The elimination of unwanted noise is a utopian concept; even the reduction of noise adequate for the protection of the public welfare will be a gradual process at best, extending over decades. But in the absence of effective governmental regulation, the noise levels of American cities will reach a stage critical for the public's health. To prevent this result, the Noise Control Act must be interpreted not as permitting maintenance of the status quo, but as a mandate to improve the

\textsuperscript{178} See EPA, \textit{An Assessment of Noise Concern in Other Nations} (1971).
\textsuperscript{180} \textit{Id}.
\textsuperscript{182} See EPA, \textit{An Assessment of Noise Concern in Other Nations} (1971).
present acoustical environment. Criticism within the EPA has charac-
terized the EPA’s efforts to fulfill this congressional mandate as “de-
ficient.” The EPA must be pressured by state and local govern-
ments, by Congress, by environmentally concerned citizen groups, and
by the courts to establish and enforce meaningful goals and regulations
under the Noise Control Act.

But even a successful EPA program under the Act will only make
the problem of urban noise more manageable for local governments;
the Noise Control Act will not alone solve the problem of urban noise.
Unlike the present regulatory scheme for air and water pollution, the
primary responsibility for noise pollution will rest with the cities, rather
than with the federal government. The New York City Noise Control
Code, by adopting certain novel approaches to noise control, and by
providing a focus for comparison and criticism, serves as an imperfect
model for other large cities and for the states to follow in enacting their
own noise control schemes. New York’s and the EPA’s experience
with their statutory schemes will deserve attention during the next few
years.

Gregory F. Houle

183. EPA internal memorandum, quoted in 4 ENV. RPRTR.—CURR. DEV. 17 (1974).
184. Some of the most recent criticism of the EPA comes from Congress. For
example, the Subcommittee on Environmental Pollution of the Senate Committee on
Public Works has announced that it will conduct hearings concerning the control of
airport noise by the EPA and the FAA under the Act. In announcing the hearings,
Senator Muskie noted that “unacceptable levels of noise in airport environments per-