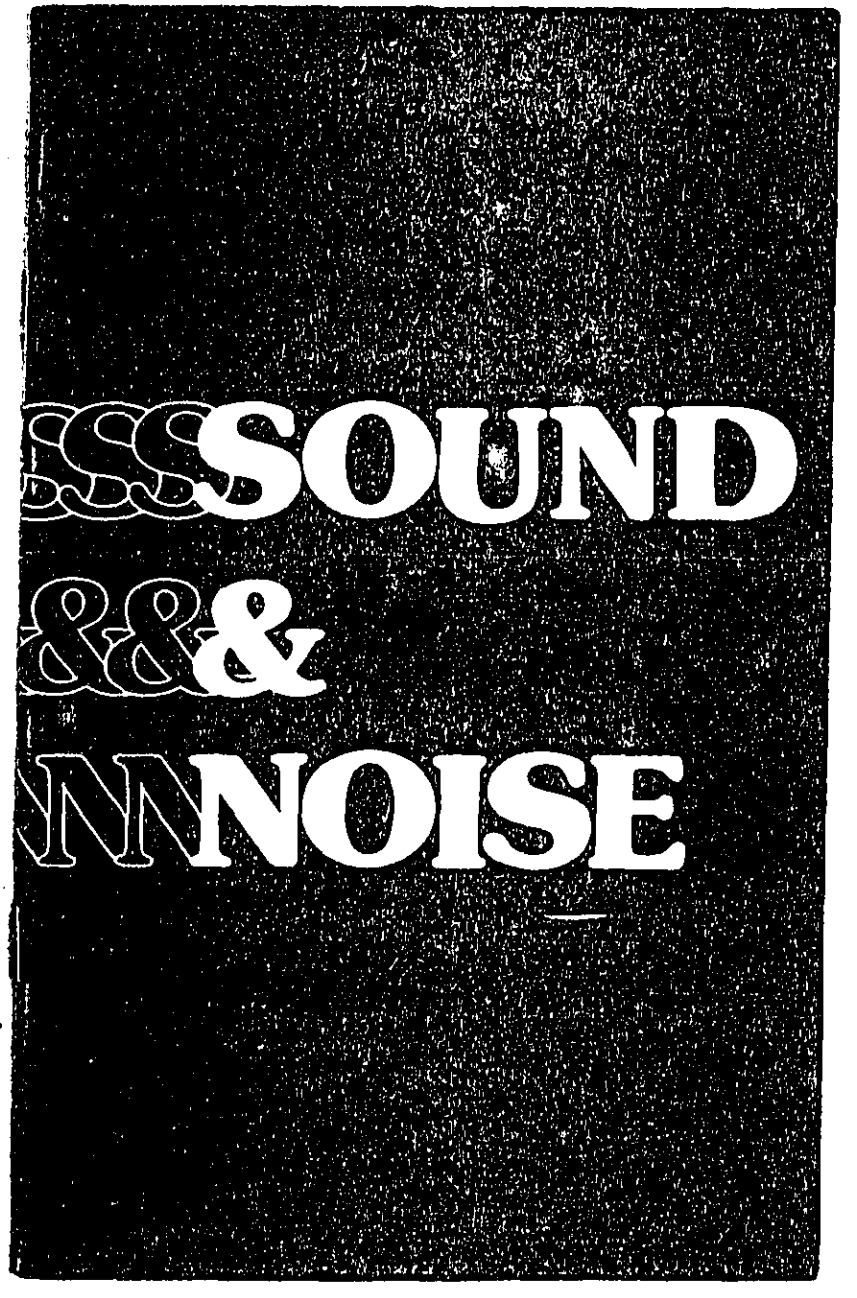
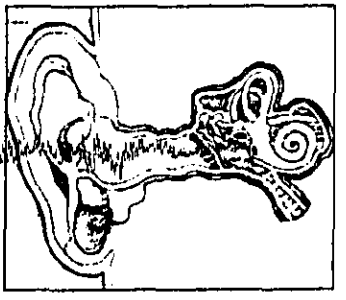


SOUND & NOISE

Introduction



Concern over community noise is not really new. Even during Shakespeare's time, there was an awareness of the negative aspects of noise. "The isle is full of noises, sounds and sweet airs that give delight and hurt not," he wrote to describe the setting of "The Tempest."

Urban and suburban areas today also are full of noises — and many give no delight. The roar of a jet plane on a landing approach, the racket of power lawn mowers, noise from heavy traffic, motorcycles, factories and businesses are all elements of community noise.

Noise may be defined as unpleasant, annoying or unwanted sound. While noise is easy to categorize in these terms, it is difficult to fully understand. Acoustics, the science of sound, is a highly specialized area with its own terminology and rules. And to add to the difficulty, the effects of noise can vary depending on the differences in perception existing from person to person, or upon the time of day during which the sound occurs.

The increasing number of legislative proposals being advanced at all levels of government reflect today's widespread desire for a better environment. Noise is an important part of the environment, and many proposals are directed toward reducing noise resulting from motor vehicles.

Motor vehicle manufacturers support efforts to control noise, but believe noise control should be based on an understanding of the characteristics of sound, meet a demonstrated need and be attainable at reasonable cost.

The purpose of this booklet is to examine some of the basic facts relating to the science of sound, and to discuss various approaches toward controlling noise.

Additional Copies Available

Write:
Communications Division
Motor Vehicle
Manufacturers Association
300 New Center Building
Detroit, Michigan 48202

Sound As Noise

"Unpleasant," "annoying," and "unwanted" are terms which underscore the fact that "sound" becomes "noise" because of a subjective judgment by the listener. This labeling of sound as noise is an individual response influenced by the type, duration and loudness of the sound and even by the personality factors of the listener.

One person's "beautiful sound" is another's "noise." Rock music from the family stereo may provide teenagers with a high level of enjoyment, but can drive their parents to high levels of annoyance. The "revving" engine of a car stopped at a traffic light may be music to the ears of its racing-buff owner, but can be an irritant to the passenger in the next car.

Obviously, if noise is to be regulated, some sort of objective measuring system must be used.

Noise may be defined as unpleasant, annoying, or unwanted sound. The effects of noise can vary, depending on the differences in perception existing from person to person, or upon the time of day during which the sound is produced.

Understanding And Measuring Noise

To develop practical noise controls, the physical characteristics of sound must be understood and the subjective human judgment of noise levels must be replaced with objective measurements made by scientific instruments.

Airborne sound is a form of energy consisting of pressure variations. The quantity normally measured is the sound pressure level. The human ear can hear, without damage, pressure levels that are about 10 million times stronger than the lowest pressure level that it can detect.

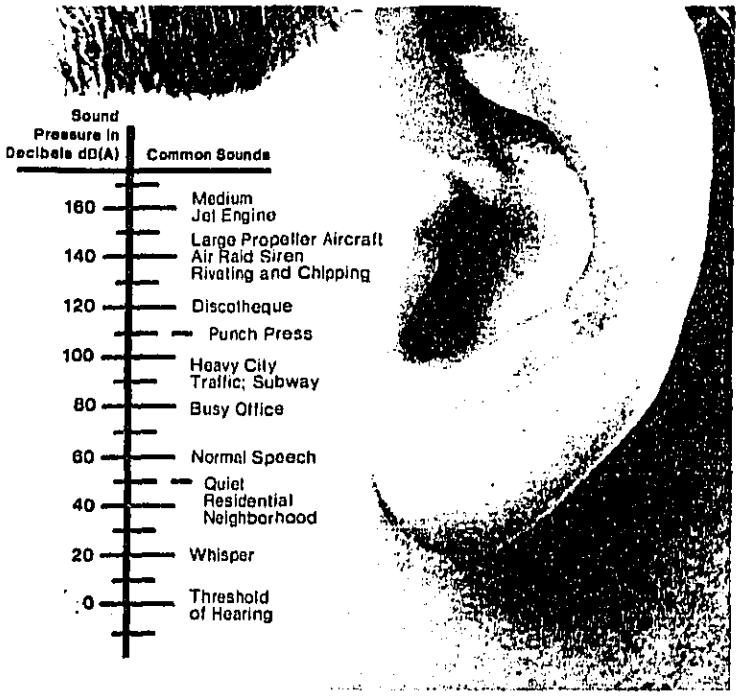
Sound pressure measured in a linear scale would be a huge range of numbers with a scale of 1 to 10 million. By compressing the whole range of audible sound pressure in a special scale based on logarithms and ratios, a scale of 0 to 160 decibels has been developed.

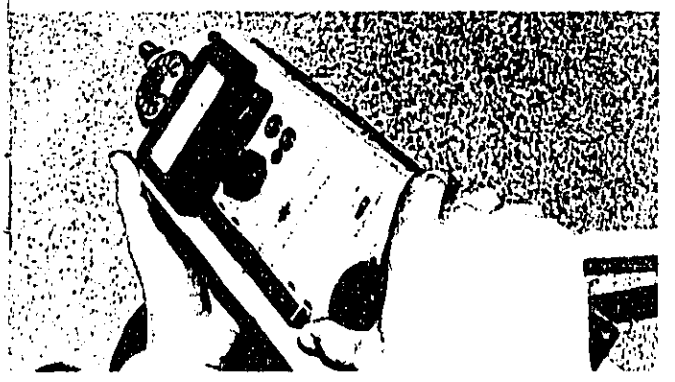
A decibel (dB) is a technical term which represents a relative quantity of sound pressure. The threshold of hearing, or the lowest possible sound pressure level at which the ear can detect sound, is 0 dB. At the opposite end of the scale, 130-160 dB is the threshold of pain where the sound level causes physical distress. The louder the sound, the higher the decibel reading.

Research has shown that the human ear is more sensitive to sounds at certain frequencies, or pitches, than at others. The ear will perceive a sound level as being louder at one frequency than at another even though both sounds are identical in pressure levels.

To measure sound levels in a way that corresponds to human hearing, electronic "sound weighting" systems have been developed. The weighting system that simulates human hearing is known as the A-scale and is the measurement most often used in studies of human noise response. Sound pressure levels are still expressed in decibels (dB) but with the indication that an A-weighting filter has been used: dB(A). The scale at the right lists decibel readings for common sounds.

The most common instrument used to measure sound is the sound level meter. It includes a microphone, amplifier, output meter and the A-scale sound weighting filter system. The microphone can be directed toward a sound source and the sound level read from the meter.





A sound level meter measures the intensity of sound. The meter's microphone detects the sound being measured and the level is displayed in decibels. Typical sound levels are shown on the above scale.

Increasing And Decreasing dB(A)

If controls of noise levels are to be successful, the adding and subtracting of decibels must be understood. Simple rules of addition and subtraction do not work because sound levels are based on a logarithmic scale rather than an arithmetic one.

For example, let's assume a vehicle produces 80 dB(A) of sound. Adding a second identical vehicle does not result in a 160 dB(A) reading, but rather, 83 dB(A). In other words, doubling the sound energy does not double the reading on the dB(A) scale, but increases it by 3dB(A). On the other hand, cutting the noise energy in half only reduces the sound level by 3 dB(A), an important factor to consider when noise control plans are designed.

Increasing the distance between the noise source and the listener will also reduce the dB(A) level. Doubling the distance, for example, will reduce the noise level by 6 dB(A).

There are several ways of adding and subtracting dB(A) to determine the result of various combinations of noise sources. (For a more detailed explanation, see page 19.) But two simple rules of thumb are useful: cutting noise energy in half results in 3 dB(A) reduction, while doubling the distance between noise source and listener results in a 6 dB(A) reduction.

SOUND ENERGY
DOUBLE ENERGY
+ 3 dB(A)
HALF ENERGY
- 3 dB(A)

DISTANCE FROM SOUND
DOUBLE DISTANCE
- 6 dB(A)
HALF DISTANCE
+ 6 dB(A)

The Motor Vehicle As A Noise Source

Noise from cars and trucks comes from four major areas: tires, exhaust, the cooling fan and the engine. Manufacturers and parts suppliers independently conduct research and develop hardware to help reduce noise in these areas.

Vehicle manufacturers have been engaged in various noise control programs since the early 1930's. While initial efforts were directed primarily at lowering exhaust noise levels through muffler development, the growth of traffic in the 1950's made it apparent that more sophisticated approaches to noise control were needed.

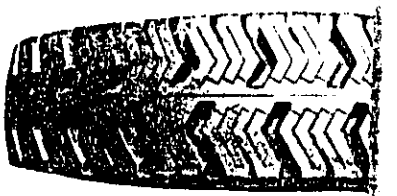
Subsequent efforts by manufacturers working with the Society of Automotive Engineers have resulted in test procedures for measurement of car noise, truck exterior noise, truck cab interior noise and construction equipment noise. Specifications for noise measurement equipment have also been developed.

Motor vehicle engineers have developed standards and test procedures for car, truck and construction equipment noise.

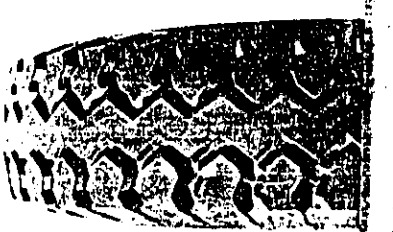
Tire Noise

At normal highway driving speeds, vehicle noise results primarily from tires. It is, however, more severe with large trucks because of widespread use of "aggressive" tire tread designs and the number of tires on a tractor and trailer. At the present time, even the quietest tires effectively establish the lower limit of noise from trucks at speeds of about 45 mph and higher. Tire manufacturers are now experimenting with new designs that hold the promise of quieter operation while maintaining the same level of safety.

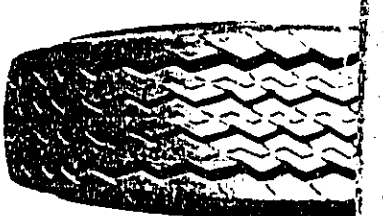
Truck tires are manufactured in two basic tread patterns, rib or lug, and are of bias-ply or radial design. Research has shown that bias-ply lugs are significantly noisier than bias-ply ribs. It has also shown that the noise level of radial tires is generally lower than bias-ply tires.



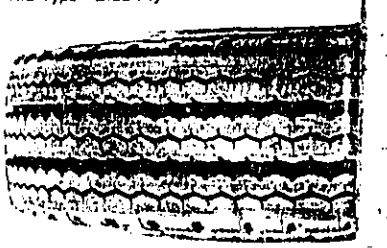
Lug Type - Bias Ply



Lug Type - Radial



Rib Type - Bias Ply



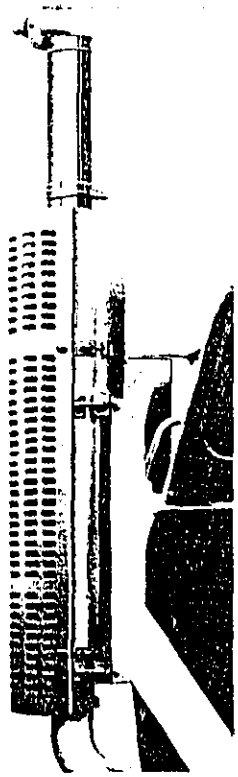
Rib Type - Radial

Exhaust Noise

Great progress has been made through the years in controlling noise from vehicle exhaust. Of course, as exhaust noise has been silenced, noises from other components have become more noticeable.

Excessive exhaust noise from cars is generally caused by poor maintenance or from modification by owners which result in increased noise levels.

Some large trucks continue to have exhaust noise problems. While it is technically possible to provide additional exhaust silencing for large trucks, significant weight, cost, power and space penalties may be incurred in the process.

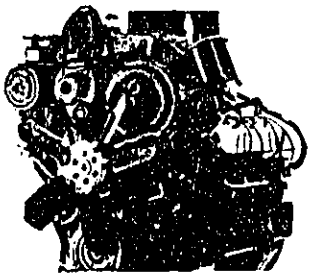


Larger mufflers and acoustical treatment of exhaust system sections with better sealed joints reduce truck exhaust noise.

Engine And Cooling Fan Noise

Diesel engines generate more noise than gasoline engines. The diesel cycle depends on rapid pressure rise during the combustion process to achieve its power and economy. Unfortunately, this is generally accompanied by a higher level of noise than gasoline engines. Extensive research has indicated that minor reductions in noise may be achieved, but only with major penalties in engine complexity, performance, weight, cost and serviceability.

A noise technician installs an engine enclosure panel beneath an experimental truck. The full enclosure method resulted in a 10 dB(A) reduction in overall noise.



Fan noise is a challenge to vehicle manufacturers. Variable-drive fans reduce the amount of time a fan operates, reducing overall noise levels.

With trends to higher power-to-weight ratios—especially in trucks—and with wide-spread use of air conditioning and power accessories, engine cooling requirements have risen considerably. Large, deep-pitched fans turning at high speeds generate more noise. The result is that fan noise may constitute a very significant portion of overall vehicle noise.

Although research in this area has been carried on for a number of years, only minor gains have been made in silencing noise from this source. While other vehicular components can be acoustically shielded to intercept noise going into the atmosphere, this cannot be done to the fan, since it must operate in the outside air.

However, some vehicles are equipped with variable-drive fans which operate only when the coolant temperature exceeds a certain level. Since the fan operates only occasionally, there is less overall noise.

Truck Noise Sources And Solutions

Trucks have many of the same noise sources as any other vehicle. But the specialized usage of some trucks can require additional equipment, like refrigeration units, cargo hold-down systems and generators. Special techniques such as acoustical absorption material are sometimes needed to control noise from these sources.

TIRE-ROAD NOISE - related to tread configuration and highway surface; may vary with tread wear, speed and load. Radial tires generally reduce this type of noise. Also, certain types of highway surface reduce the interface noise.

FAN NOISE - related to fan blade speed and pitch; controlled by design and enclosure.

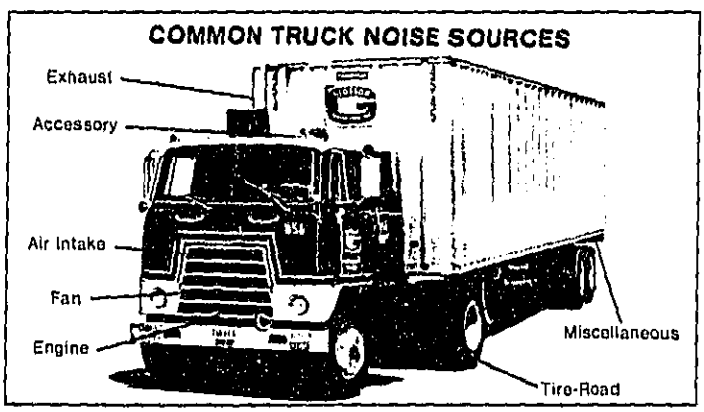
ENGINE NOISE - a variety of sounds, controlled primarily by design, mounting, enclosure and insulation.

EXHAUST NOISE - the result of combustion process; controlled by properly maintained muffler and exhaust systems.

AIR INTAKE NOISE - depends on engine size, speed and power; reduced by acoustical treatment of the intake air path.

ACCESSORY NOISE - from blowers, generators, air conditioning, etc.; requires special control techniques when noise levels are offensive.

NOISE FROM MISCELLANEOUS EQUIPMENT - such as stake racks, tie-down chains, tailgates; reduced by proper tie-down and fastening.



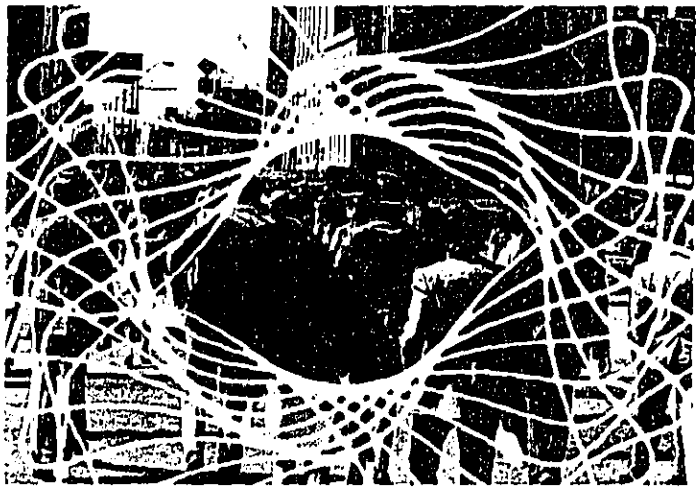
Community and Vehicular Noise Research

As efforts to control noise move forward, a difficult problem is determining exactly which noises are annoying to people.

Most people find that a fingernail scratching a blackboard is a most annoying noise to them. But this noise may have a low reading on a sound meter even though it rates extremely high in annoyance.

In 1969, the Motor Vehicle Manufacturers Association examined people's reactions to vehicle noise as they encountered it in the course of daily living. The independent research firm of Bolt, Beranek and Newman was commissioned to survey 1,200 persons at 60 separate sites in Boston, Detroit and Los Angeles.

The study revealed that it is the noise from "hot rodding," squealing of tires and brakes, and the exhaust roar from faulty or intentionally altered mufflers that people find most objectionable. These are the products of driver action, reaction or just



Sound generally becomes annoying when a particular noise is greater than the background level, is close to the person or occurs in a home environment

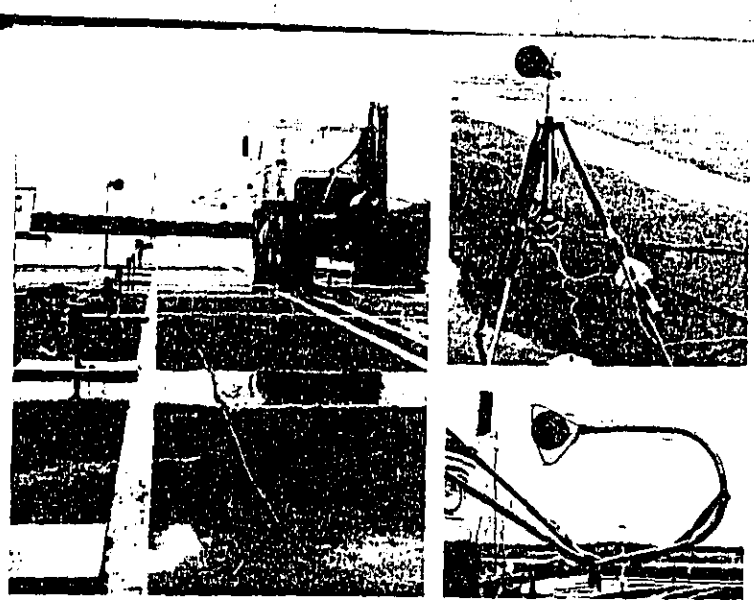
Noise is a multi-faceted, national problem. Motor vehicle noise is being reduced by new materials and engineering methodology. Modern technology in highway design helps reduce roadway noise.

plain neglect or inconsideration. It was the extra harsh sounds that brought on complaints, since a modest level of background noise seems acceptable to society.

A large number of public complaints were directed at heavy-duty trucks, motorcycles and high performance sports cars. People had no problems "living with" cars which were properly operated and maintained.

The major findings in their report, "Motor Vehicle Noise Identification and Analysis of Situations Contributing to Annoyance," were:

1. Motor vehicle noise is not a health problem, but one of annoyance.
2. Vehicle noise levels that rise above background noise levels should be reduced for it is the occasional, particularly loud noise that produces most complaints.
3. Persons expressing annoyance at a specific noise usually felt that it was a situation that the driver could control, such as tire *squeal, hot rodding, etc.*
4. Annoying noise sources are usually relatively close to the person hearing them.
5. Most people who expressed annoyance indicated that they were at home when it occurred and that it was generally in the evening.



Motor vehicle manufacturers believe noise controls should be consistent with the principles of acoustics, based upon demonstrated need and within the limits of attainable technology at reasonable costs.

Vehicular Noise Research

Each motor vehicle manufacturer carries out its own extensive research and engineering programs to reduce the noise emissions from its products. In addition, independent research organizations are conducting special basic studies for MVMA.

Among the subjects studied are the effects of environmental factors such as temperature, humidity and wind turbulence on the generation and measurement of motor vehicle related noise, the physical characteristics of sound test sites which may cause variations in sound level readings, the effects of accumulated mileage on vehicle sound levels and the safety considerations involved in reducing truck tire noise.

Community Noise Research

MVMA's broad study of community noise defines all noise sources within an urban community, places each noise source in proper perspective and develops alternatives for reducing community noise. The Association's study includes an examination of motor vehicle noise and its relative impact on the community.

The ongoing multi-phase study is looking at land-use controls, highway design, building construction and other techniques that may be utilized in the development of the most effective overall strategy for controlling community noise.

Noise Legislation And Regulation

Noise Control Act of 1972

Nationally, the Noise Control Act of 1972 gives the Environmental Protection Agency (EPA) authority to establish and enforce noise emission standards with respect to virtually all new manufactured products and to issue regulations controlling noise from th new and existing equipme.. used in interstate commerce, such as trains, trucks and buses. With limited exceptions, EPA standards for noise emissions preempt applicable state and local noise standards.

In accordance with Section 18 of the Noise Control Act, EPA has published noise standards for interstate motor carriers for vehicles weighing 10,000 pounds gross vehicle weight or more. The regulations apply to vehicles engaged in interstate commerce after October, 1975.

The standards restrict maximum sound levels to 90 dB(A) as measured 50 feet from the vehicle at speeds greater than 35 mph, 86 dB(A) at speeds of 35 mph or less, and 88 dB(A) with the vehicle at rest.

EPA has regulated all new trucks over 10,000 pounds gross vehicle weight for noise emissions in accordance with Section 6 of the Noise Control Act. The regulations specified

Manufacturer Regulations

Federal heavy truck noise regulations pertaining to manufacturers are now in effect. As of January 1, 1978, the EPA's Office of Noise Abatement and Control set standards of 83 dB(A) for all new medium and heavy-duty trucks over 10,000 pounds gross vehicle weight.

Dealers are also subject to these manufacturer regulations. Therefore, performing unprescribed alterations or deviating from specifications can constitute a violation.

Owner Regulations

Heavy truck noise laws affect owners and operators in some major cities and states.

The regulations are separated into two categories, over 35 mph and under 35 mph.

Because inherent tire noise becomes a predominant noise factor at speeds above 35 mph, a noise level of 90 dB(A) has been set for the higher range. The limit for speeds under 35 mph is 86 dB(A).

The owner or operator may be required to meet the 86 dB(A) requirement even if the vehicle was manufactured prior to 1973 when the 88 dB(A) level was in effect.

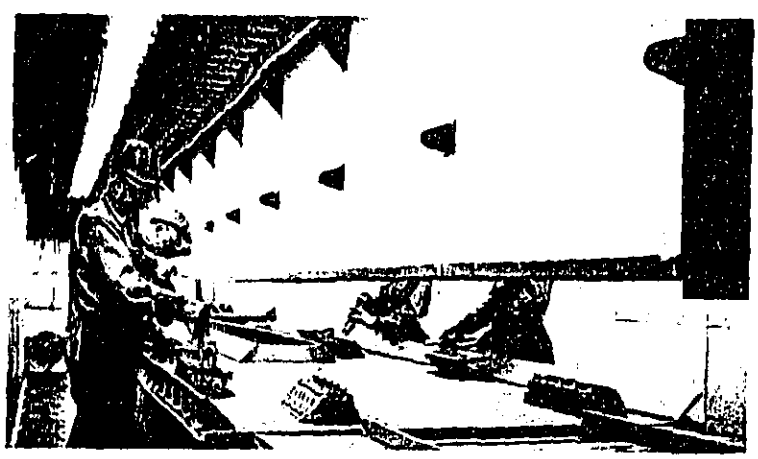
Permissible Noise Exposures

Duration per day, hours	Sound Level dB(A)
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

that new vehicles, whether or not they are used in interstate commerce, had to meet an 83 dB(A) standard as of January 1, 1978. Additionally, EPA has set a regulatory standard of 80 dB(A) for all medium and heavy-duty trucks over 10,000 pounds gross vehicle weight beginning January 1, 1982. EPA also intends to lower the sound level even further beginning January 1, 1985. The January 1, 1985, level has not yet been set because it is not known what would be technically feasible in 1985 and what the economic consequences might be.

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Act of 1970 set permissible noise exposure durations for workers in factory operations. The table above illustrates these regulations.



Acoustical walls and ceilings with directional sound barriers help make this foundry shakeout operation quiet.

Community Noise – What Approaches Should Be Taken?

Community noise is a complex problem which is made up of many interrelated factors. Because of this, MVMA feels that all community noise sources should be considered and treated equitably in any program of noise reduction.

Public policy on noise abatement should take into account all possible countermeasures, such as source reduction, barriers, berms, land-use changes, structural insulation for buildings and vehicle-in-use inspections. Communities should evaluate the possibility of zoning land under development to protect residential users who may be subjected to excessive noise.

MVMA opposes transportation noise reduction regulation unless such regulation is supported by an adequate analysis of the costs and benefits of the alternatives.

Factors which should be considered include energy conservation, national economic development, environmental quality and health.

In-use vehicle noise regulations should consider the accountability of the owner for vehicle operation and noise levels. An effective integrated

MVMA Feels Any Vehicle Noise Regulations Should:

be based on clearly established requirements in terms of public health and welfare

■

take into account all possible countermeasures

■

be cost-effective and consider trade-offs and uncertainties

■

consider the accountability of the driver/owner

■

provide adequate procedures for measuring vehicle sound levels which relate to the noise impact upon the community in normal operations

■

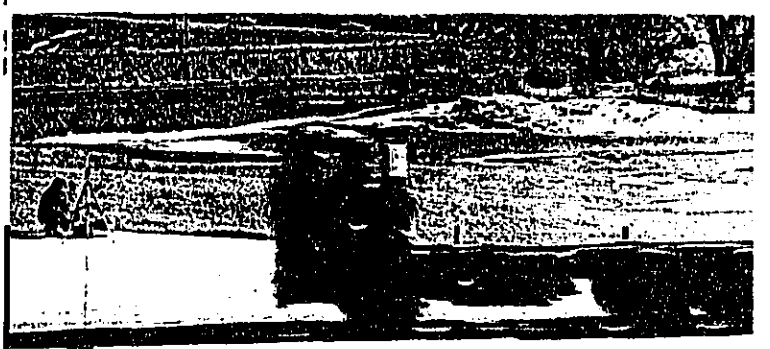
assure inspection and proper maintenance to avoid degradation of the sound levels

■

assure that any future tire noise regulation properly considers new vehicle handling and safety requirements

program of community noise control should include maintenance and inspection of the vehicle throughout the vehicle life to insure proper maintenance and to prevent modifications that increase noise levels.

MVMA also feels that new vehicle compliance test procedures must have a relationship to the actual vehicle noise impact upon the urban community when the vehicle is operated in a normal manner, not in maximum noise or any unusual operating conditions.



COMMON TEST SITE ERRORS

- ☐ Grassy surface
- ☐ Buildings, walls
- ☐ Unsealed black top road
- ☐ Depression in ground near meter
- ☐ Weather conditions

The Society of Automotive Engineers has developed test specifications for measuring noise from motor vehicles. Above is a typical setup for a pass-by test. Here, the microphone is located 50 feet from the center of the lane on which the vehicle is traveling and measures sound levels in decibels as the vehicle passes by. This is the most common test for measuring car and truck sound levels.

Adding And Subtracting dB(A)

Combining noise levels from different sources, while complicated, can be accomplished using the reference table at the right.

The table is used to determine the cumulative noise level produced by two or more sources. In combining more than two sound pressure levels (stated in decibels), the two highest sound pressure levels should first be combined. The total thus determined is then combined with the highest remaining level, with the method being followed until all levels are combined.

EXAMPLE: To determine the overall sound pressure level of a motor vehicle with an exhaust noise level of 85 dB(A), fan noise level of 84 dB(A) and tire noise level of 74 dB(A):

Start with the two highest sound levels, 85 dB(A) for exhaust and 84 dB(A) for fan. The difference between them is one dB(A). Looking at the chart, we learn that in the case of a one dB(A) difference, 2.6 dB(A) should be added to the higher level.

85 dB(A) + 2.6 dB(A) = 87.6 dB(A) for exhaust and fan noise.

Difference between levels dB(A)	Number of dB(A) to be added or subtracted from higher level
0	3.0
1	2.6
2	2.1
3	1.8
4	1.5
5	1.2
6	1.0
7	0.8
8	0.6
9	0.5
10	0.4
12	0.3
14	0.2
16	0.1

Finally, tire noise, at 74 dB(A), must be added to our new total of 87.6 dB(A). The difference between 87.6 and 74 dB(A) is 13.6 dB(A). The chart shows that to combine them we must add roughly 0.2 dB(A) to the higher level.

87.6 dB(A) + 0.2 dB(A) = 87.8 dB(A) for total vehicle noise.

The same chart can be used to determine what happens when a noise source is eliminated. Suppose we want to theoretically completely eliminate tire noise, 74 dB(A), from a vehicle with a total noise level of 88 dB(A).

The difference between 88 dB(A) and 74 dB(A) is 14 dB(A). The chart shows that 0.2 dB(A) must be subtracted from the higher level.

88 dB(A) - 0.2 dB(A) = 87.8 dB(A) for total vehicle noise if tire noise could be completely eliminated.

Glossary Of Sound Terms

A-Weighting
Sound filtering system contained in a sound level meter which adjusts (weights) the incoming sound energy to approximate human hearing.

Acoustics
The branch of physics that deals with sound and sound waves.

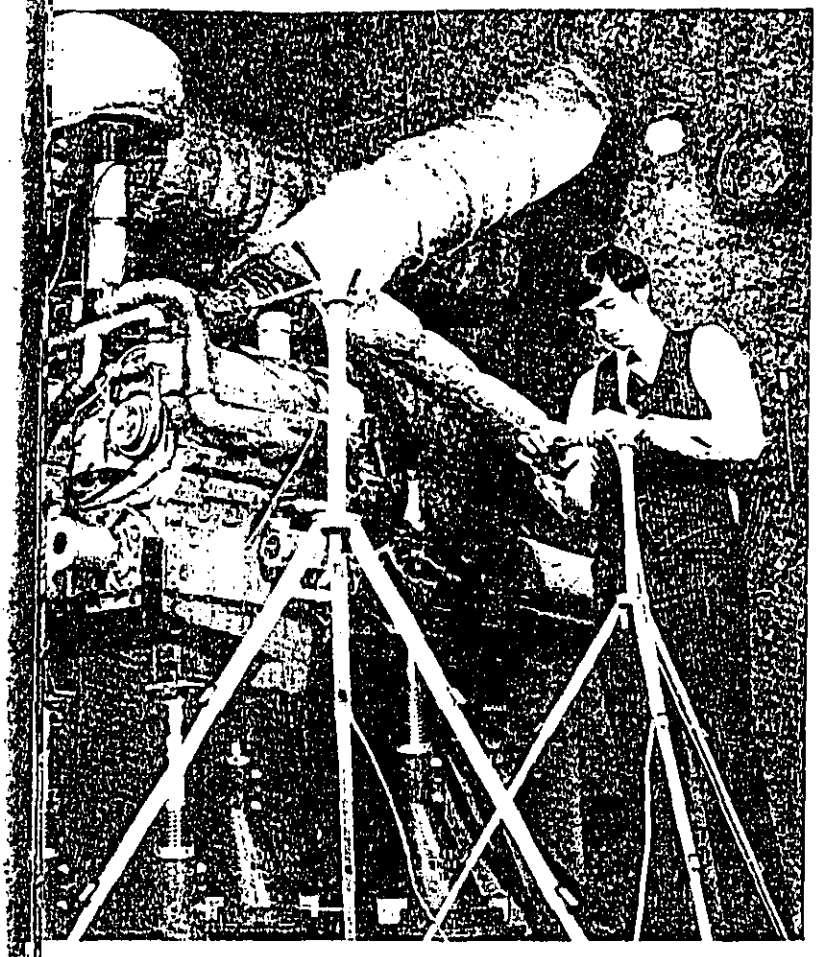
Amplitude
The magnitude of vibrations caused by a sound in the atmosphere. Corresponds to volume or loudness.

Decibel (dB)
A measuring unit used to express the intensity or level of a sound. The higher the decibel reading, the more intense or "loud" the sound will be.

Frequency
The rate of vibration expressed in number of cycles per second (Hertz or Hz) of a given second. Frequency corresponds roughly to pitch in human terms.

Noise
An unpleasant, annoying, excessive or startling sound. Noise is described as unwanted sound.

Sound Level Meter
An instrument which includes a microphone, amplifier, output meter and frequency weighting networks such as the "A-Scale" for measuring sound levels.



Sound Pressure
The quantity measured when dealing with sound. This pressure is the force produced by the sound wave and is usually measured in decibels.

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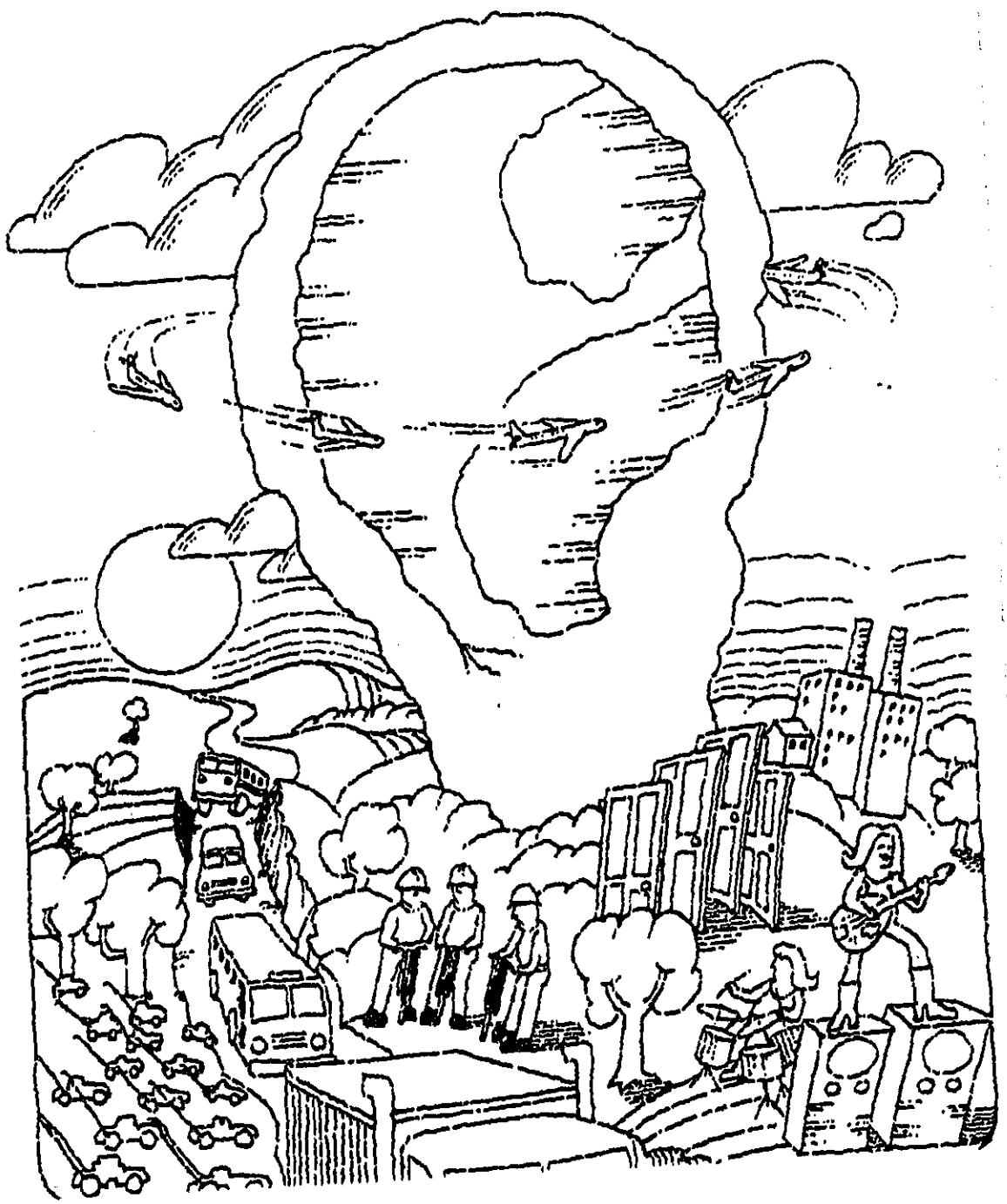
HEAR HERE!



Dear Parent:

We're concerned about environmental noise pollution and your child's hearing health. There are over 20 million Americans working, playing, and living around environmental noise that is dangerously loud.

Noise-induced hearing impairment is **permanent.** It is also hard to recognize, since it is painless and develops slowly. A person suffering from noise-induced hearing impairment often has difficulty understanding what others say, making communication difficult. With special training, a hearing aid may help some people communicate a little better, but it can't bring back what is already damaged or destroyed. Medicine or surgery will not cure noise-induced hearing impairment.

Hearing-impaired children may have problems learning in school. It may be hard for them to talk, play, and establish relationships with other children, which are essential for growth into healthy, stable adults.

Many things we find necessary or convenient or even enjoyable add to today's growing noise problems. These products include dishwashers, air conditioners, power tools, trucks, airplanes, hair dryers, construction, loud music, snowmobiles, motorcycles, and toys.

Congress has passed legislation that will require manufacturers to label equipment and toys that may harm your hearing. But this alone is not enough. **Everyone** can help. Make hearing protection and reducing noise a family affair. Ask your child what noises bother him or her at home. Tell your child what noises bother you. Discuss this brochure together. We think you'll learn much about your hearing and how to protect it.

Think quiet!

American Speech-Language and
Hearing Association

U.S. Environmental Protection Agency
Office of Noise Abatement
and Control

Whether you enjoy it or not . . .
. . . TOO MUCH noise can cause PERMANENT hearing impairment!

The louder the sound is, and the longer you listen to it, the more likely damage will occur.

For example:
A rock musician who is around loud music every night is likely to get a hearing impairment from too much loud music much sooner than a band student who is around the same loud music for only one hour during the day.

If...

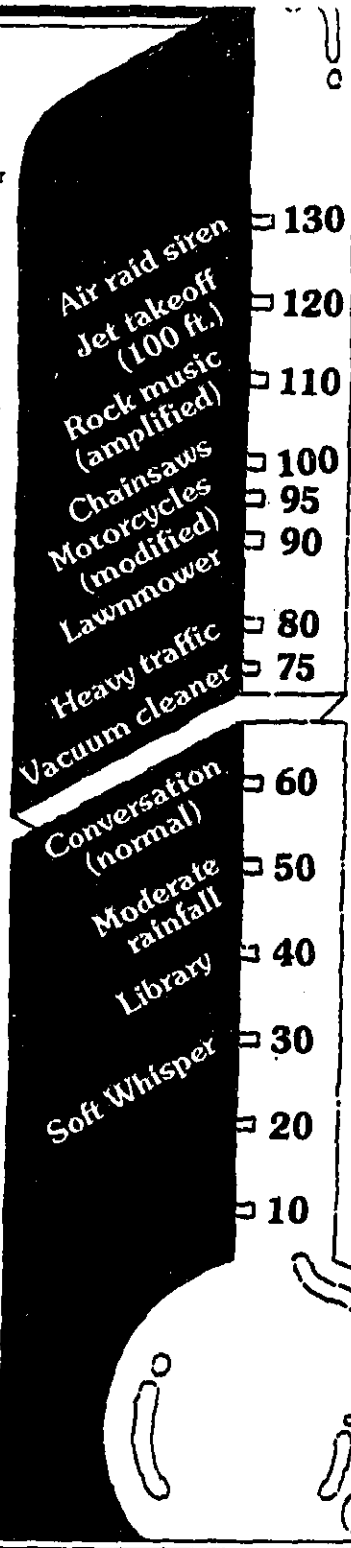
You have had difficulty hearing or understanding what someone said

You have had ringing in your ears after being in a noisy place

You have been unable to hear very well after listening to loud music or other sounds for a long time

Then...

You may have been exposed to a loud sound that is hazardous to your hearing health.



Decibels

Noise is measured in units called decibels (**dB**). The greater the number of decibels, the louder the noise. This thermometer can give you an idea of how loud some sounds are. Noise levels (in decibels) indicated on the thermometer are approximate as measured at typical listener's distance. If you're exposed to sounds above 70 dB for a long time, they may harm your hearing, sooner or later.

HARMFUL TO HEARING

Hearing conservation programs are recommended for all employees in workplaces where noise levels are 85dB or greater.

What happens inside the Ear when we hear sounds?

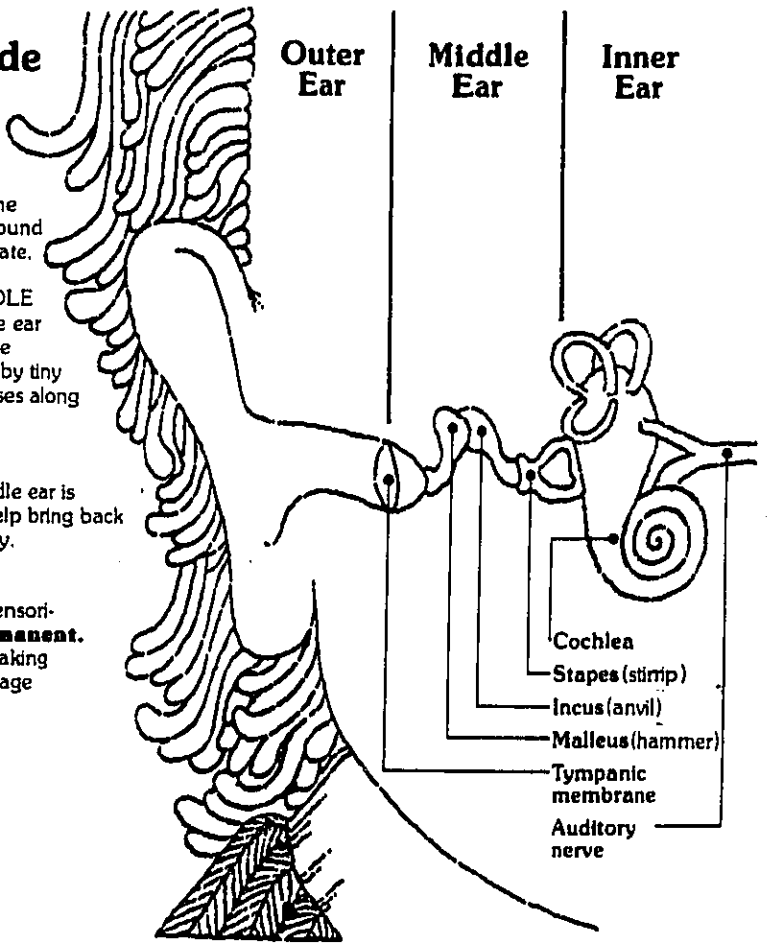
The OUTER EAR acts like a funnel to direct **sound waves** from the air to the **tympanic membrane** (eardrum). Sound causes the tympanic membrane to vibrate. These vibrations cause the three bones (malleus, incus, and stapes) in the MIDDLE EAR to move mechanically. The middle ear sends these mechanical vibrations to the INNER EAR where they are picked up by tiny **hair cells** and sent as electrical impulses along the **auditory nerve** to the **brain.**

Conductive Loss

A problem involving your outer or middle ear is conductive. Usually, your doctor can help bring back normal hearing with medicine or surgery.

Sensori-Neural Loss

A problem involving your inner ear is sensori-neural. Damage to the inner ear is **permanent.** Sometimes a hearing aid will help by making sounds louder, but it cannot repair damage already done.

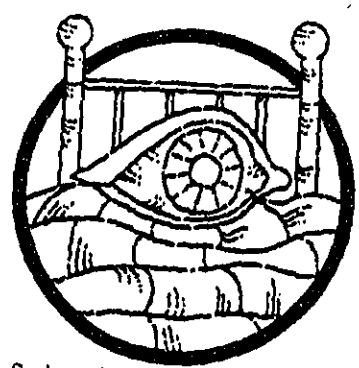


When you listen to sounds that are too loud for a long time they may damage the hair cells in the inner ear.

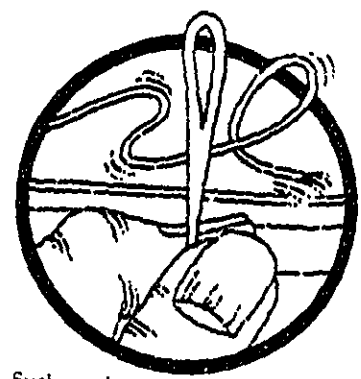
It's sort of like walking on grass over and over again. At first, the blades of grass just bend and then spring back. But . . .

. . . if walked on constantly, the blades of grass no longer spring back. They turn yellow and die.

All noise doesn't have to be too loud. Some noise can just be ANNOYING enough to produce such bad effects as STRESS, TENSION, and ANXIETY.

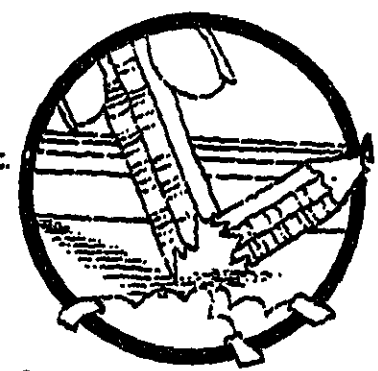


Such as when we have a restless sleep or can't sleep at all.



Such as when we can't concentrate on what we're doing.

Such as when we end up with a headache.



Such as when we become impatient and frustrated.

Of course many other things could cause these problems, but . . . *the reason could be NOISE!*

Sometimes our ears give us *hints* they've been overworked by too much sound . . .

Such as when we can't hear very well after exposure to loud sound.

Such as when we have ringing in our ears after being around loud sound.

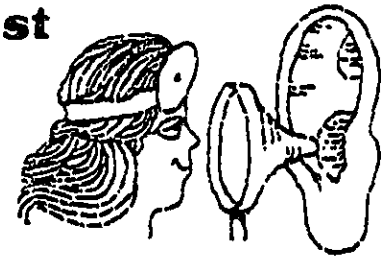
Who can help? Many people are interested in protecting your hearing.

The School Nurse

The school nurse may give you a hearing screening test to see if you need a complete hearing test.

The Otolaryngologist

The otolaryngologist is a medical doctor who may look in your ear, nose and throat, and give you medicine or recommend surgery for your hearing impairment. The otolaryngologist may send you to an audiologist for a complete hearing evaluation or rehabilitation (special training).

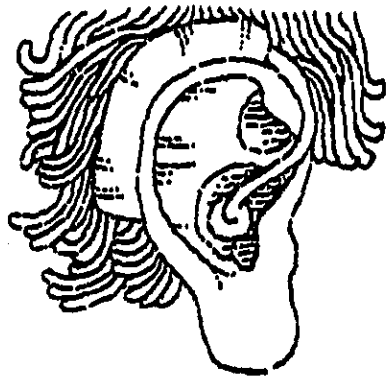


The Audiologist

The audiologist, a certified or licensed professional, may give you a complete hearing evaluation to measure your hearing abilities. If you have a hearing impairment, the audiologist will tell you how bad it is, what type it is, and what can be done to help you get along despite a hearing impairment. If you need it, the audiologist may recommend a hearing aid and help you select one.

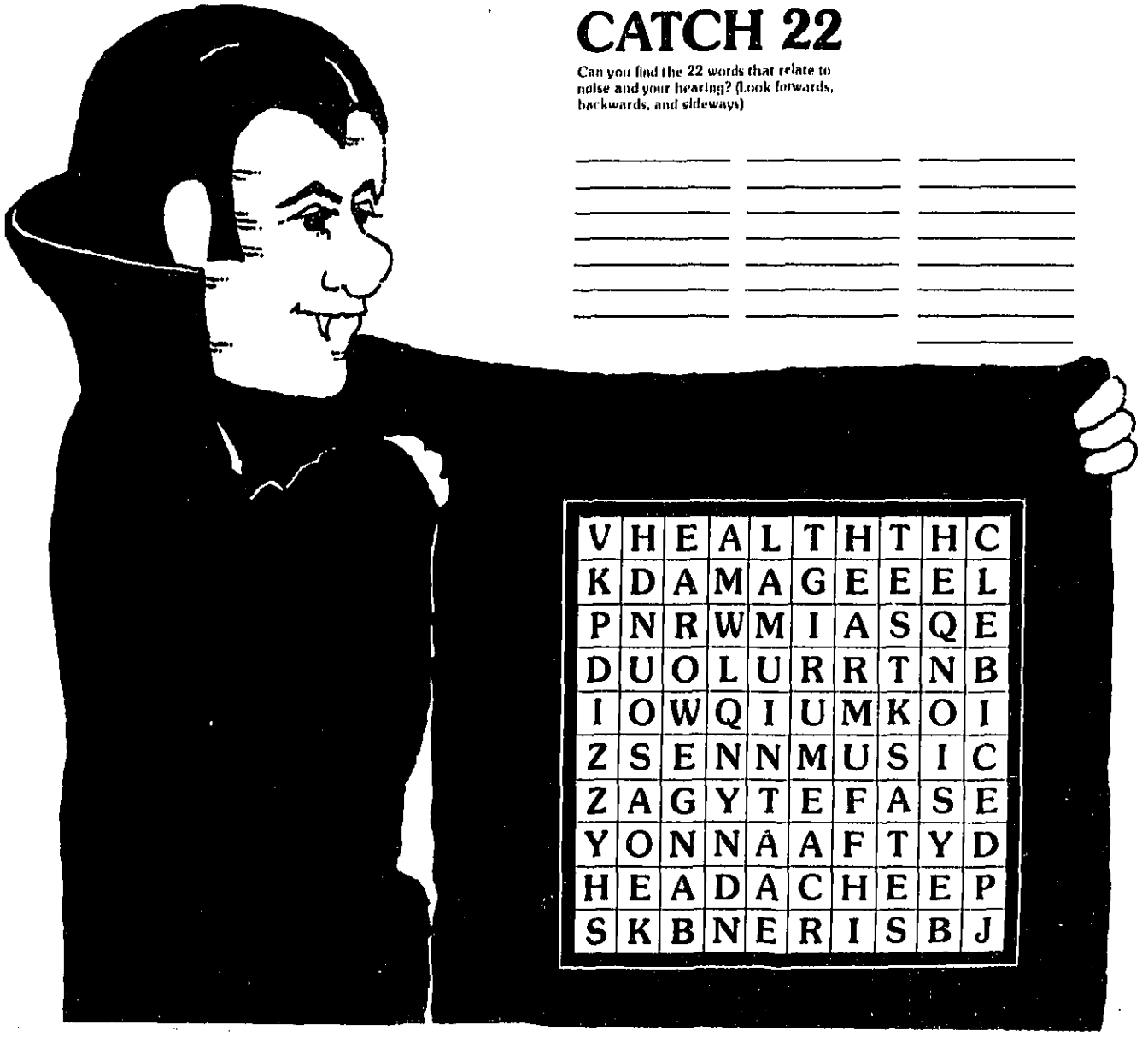
The Hearing Aid Dealer

After you have seen the otolaryngologist and the audiologist, the hearing aid dealer may sell you a hearing aid.



CATCH 22

Can you find the 22 words that relate to noise and your hearing? (Look forwards, backwards, and sideways)



V	H	E	A	L	T	H	T	H	C
K	D	A	M	A	G	E	E	E	L
P	N	R	W	M	I	A	S	Q	E
D	U	O	L	U	R	R	T	N	B
I	O	W	Q	I	U	M	K	O	I
Z	S	E	N	N	M	U	S	I	C
Z	A	G	Y	T	E	F	A	S	E
Y	O	N	N	A	A	F	T	Y	D
H	E	A	D	A	C	H	E	E	P
S	K	B	N	E	R	I	S	B	J

YOU

Reme
doesn'

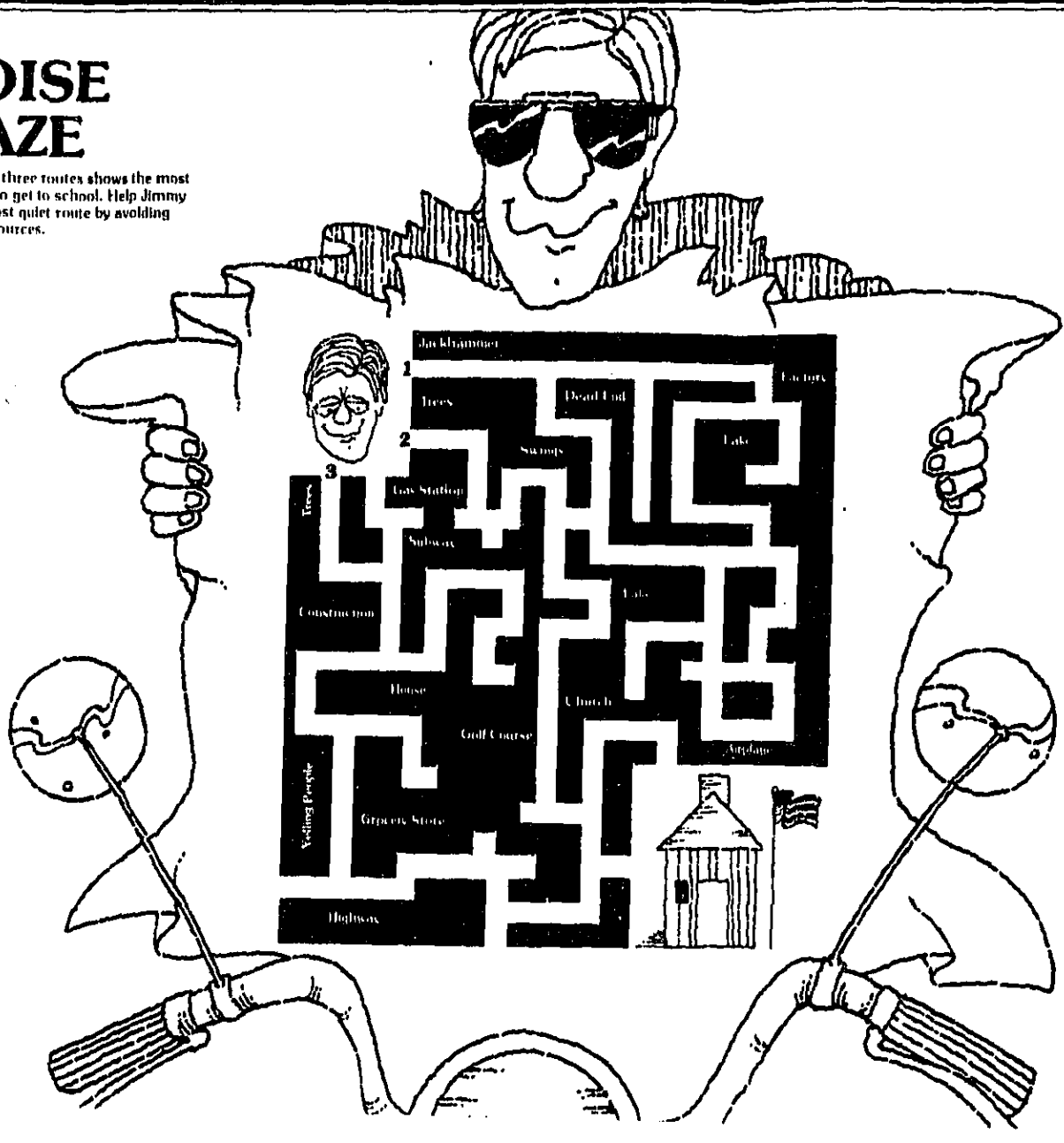
Like t
good

Answe

MUMI
JUMB

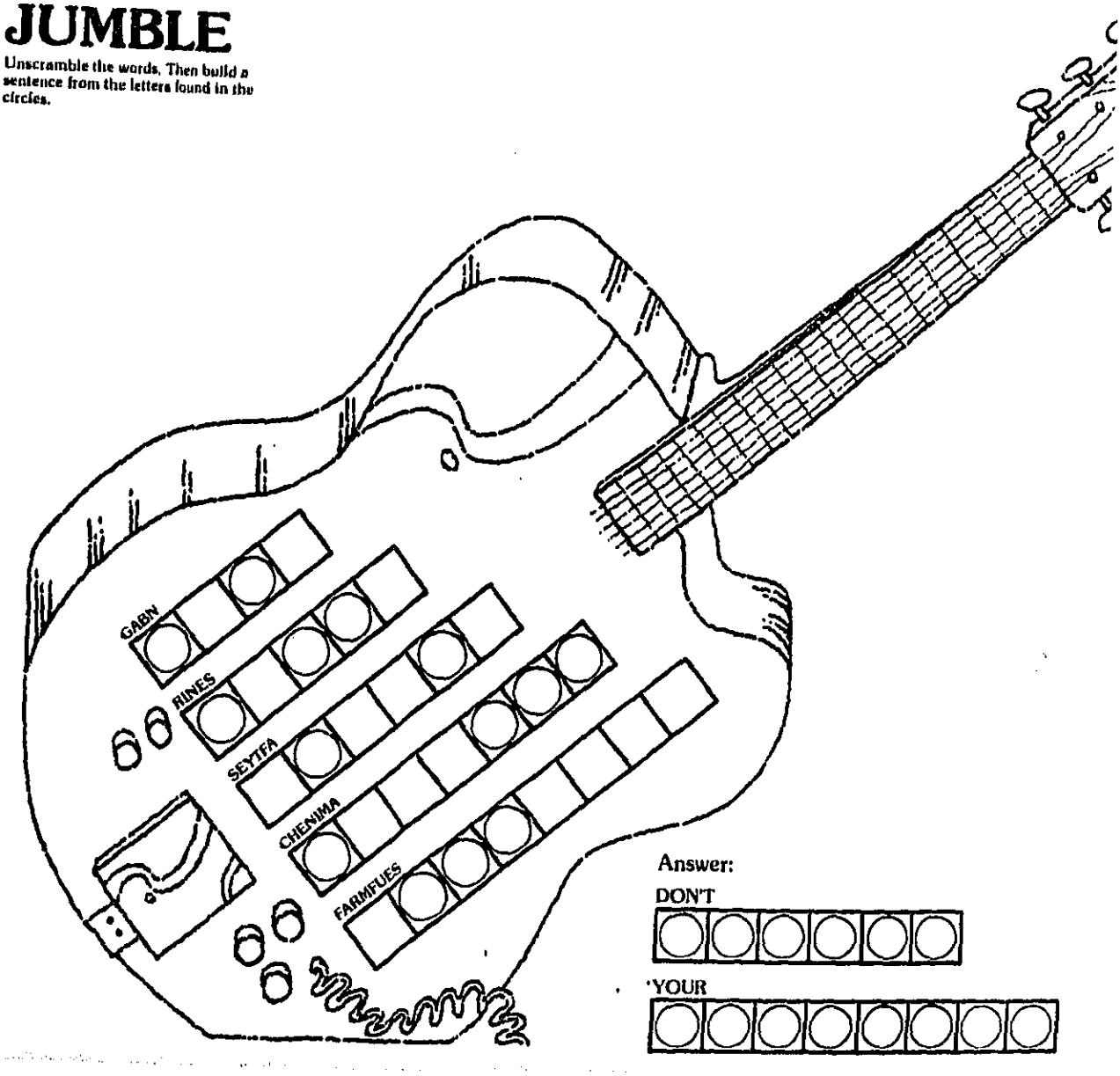
NOISE MAZE

One of the three routes shows the most quiet way to get to school. Help Jimmy find the most quiet route by avoiding the noise sources.



MUMBLE JUMBLE

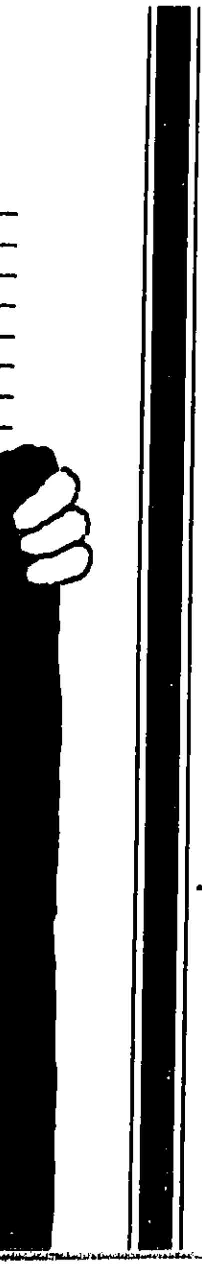
Unscramble the words. Then build a sentence from the letters found in the circles.



Answer:

DON'T ○○○○○○

'YOUR ○○○○○○○○



YOU can help too!

Remember . . . just because you have ears doesn't mean you can hear!

Like the air we breathe, your hearing is a good thing to have around!

PROTECT your hearing.

- Turn down the radio and TV.
- Don't listen to loud music too long.
- Wear ear protectors, (earmuffs and earplugs) when working or playing around loud noise.
- Complain when something is too loud.
- Have your hearing checked.
- Look for EPA noise labels, which will be on consumer products soon.
- Become aware of local noise ordinances.
- Teach others about noise. Many people don't know how bad noise is for them.
- List other things you can do:

____

____

____

____

____

____

____

____

For further information about noise and your hearing:

ASHA
American Speech-Language and Hearing Association
10801 Rockville Pike
Rockville, Maryland 20852

EPA
U.S. Environmental Protection Agency
Office of Noise Abatement and Control
Washington, D.C. 20460

Answers:

MUMBLE JUMBLE

YOUR MEMBRANE

DON'T STRAIN

Bang, siren, safety, machine, earmuffs

NOISE MAZE

Route 2 is the quietest route.

CATCH 22

V	H	E	A	L	T	H	T	H	C
K	D	A	M	A	G	E	E	E	L
P	N	R	W	M	I	A	S	Q	E
D	U	O	L	U	R	R	T	N	B
I	O	W	Q	I	U	M	K	O	I
Z	S	E	N	N	M	U	S	I	C
Z	A	G	Y	T	E	F	A	S	E
Y	O	N	N	A	A	F	T	Y	D
H	E	A	D	A	C	H	E	E	P
S	K	B	N	E	R	I	S	B	J

BY ALICE H. SUTER

Noise Wars

Citizens are losing their hearing because the federal government's efforts to dampen neighborhood and workplace noise have dwindled.

For the past six years, residents of Blanford, Ind., have had their peace of mind shattered up to 12 times a day as blast waves from open-pit mining rip through their houses. Despite numerous complaints, no government agency seems willing or able to stop the acoustic onslaught.

The same noise that is nerve-wracking for community residents can deafen those who work in it. Millions of mineworkers, railroad workers, shipbuilders, punch-press operators, chicken processors, and truck drivers lose a little bit of hearing each day to their occupations. The noise levels of the textile plant in the film *Norma Rae* could not have been reproduced at their actual levels or the dialogue would have been inaudible. Besides, the audience would have walked out.

More than 9 million U.S. workers are exposed to hazardous levels of noise on the job. It is not uncommon for young workers to enter a production plant with perfect hearing and come out 25 years later nearly deaf. And the Environmental Protection Agency (EPA) estimates that background noise in communities could adversely affect nearly 90 million Americans.

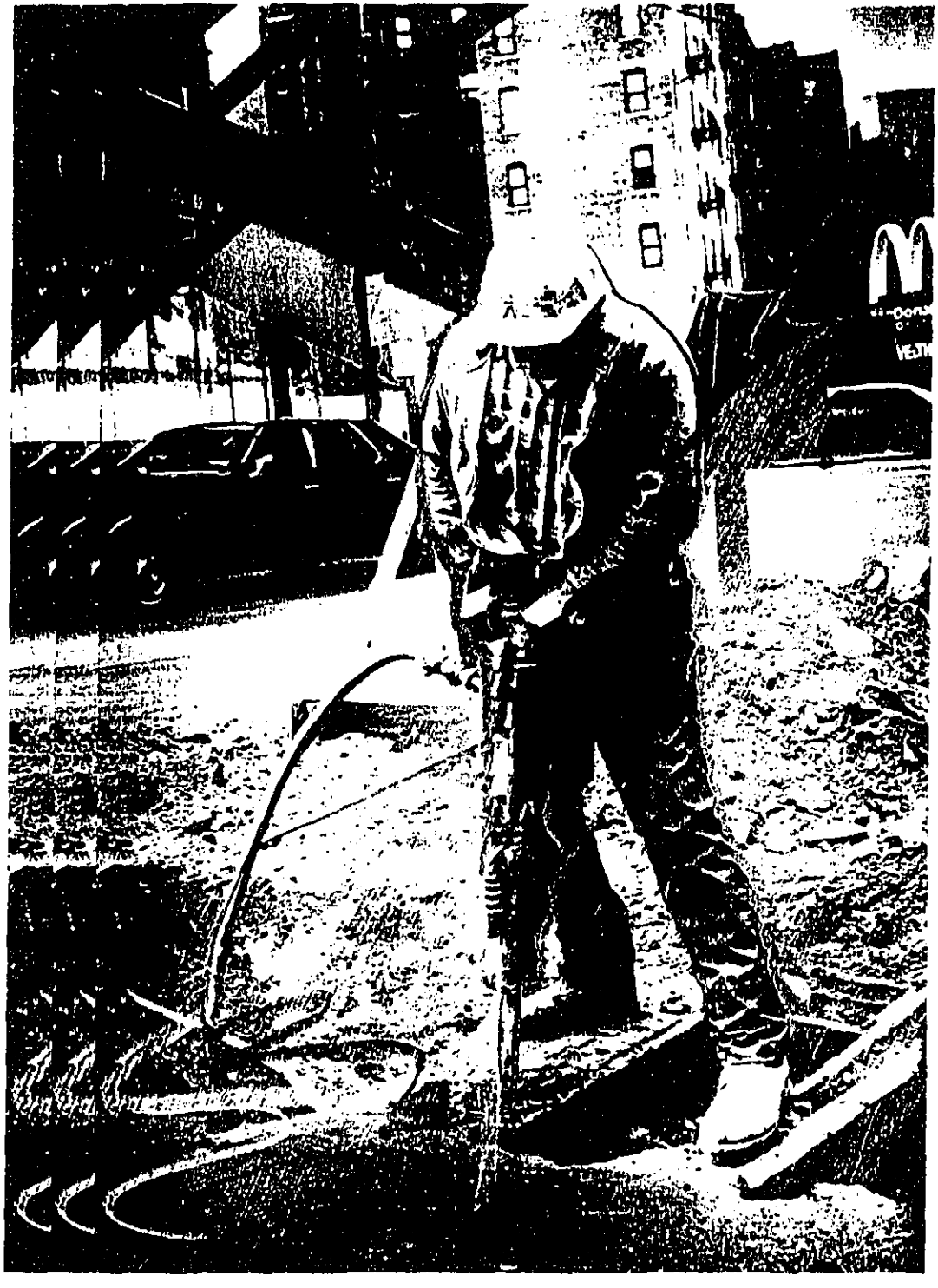
These situations are preventable. During the 1970s, both EPA and the Labor Department's Occupational Safety and Health Administration (OSHA) made progress toward reducing, or at least capping, noise levels in both industry and the environment. In 1969, the Labor Department began regulating workplace noise only for employers with federal contracts, but then in 1971 it extended standards to virtually all U.S. employers. After enforcing its regulations hesitantly at first, the agency pursued the task more rigorously as the political scene changed from Nixon to Ford to Carter.

To extend this mandate, Congress overwhelmingly passed the Noise Control Act in 1972, giving EPA's Office of Noise Abatement sweeping powers to regulate major sources of environmental noise, as well as setting a stringent timetable for getting the job done. The act also instructed other agencies to minimize the harmful effects of noise, and gave EPA the task of coordinating all federal noise activities.

For a while, noise was the hot "new" pollution. Consulting groups and seminars sprang up, noise-control engineers were in demand, research flourished, and EPA and OSHA were busy making regulations. EPA's noise office grew to a staff of about 130 people, with an annual budget of more than $10 million. OSHA's noise program was much smaller, but the process of devising an occupational noise standard generated years of staff and contractor effort, along with a considerable amount of publicity.

Unfortunately, the noise programs at EPA and OSHA are now virtually dead. EPA's noise office closed in 1982,

PHOTOS: LIBERTY MUTUAL AUDIO VISUAL



HANDCUFFING · WENDY AUSTIN

Employers often fail to investigate simple measures to control noise unless pressed to do so.

targeted as an example of Big Brother regulatory programs that should be eliminated. OSHA is enforcing its standards only weakly. More than a thousand community noise-abatement programs, which depended on federal funding and expertise, have virtually shut down. And R&D programs for quieter technology have been abandoned.

The nation needs to resurrect these efforts and provide a variety of incentives to noise makers to reduce the acoustic insult. Otherwise the din will only grow as the number of vehicles and aircraft increases, and workplaces will continue to deafen the people who labor there.

Controlling Noise at Work

OSHA estimates that slightly more than 1 million Americans have a "material impairment of hearing" caused by noise exposure in manufacturing industries. The noisiest jobs are in lumber and wood products, textiles, petroleum and coal, and primary metals (foundries and forges). Shipbuilding, printing, food processing, and many other industries also maintain extremely noisy operations. High-powered drills in underground mines, tractors, pneumatic construction tools, and aircraft engines all can impair the hearing of their users.

Daily average noise levels above 80 decibels (dB)—comparable to the sound of a city street with some construction activity—begin to pose a hazard over a working lifetime of 40 years. Some 5 million manufacturing workers endure daily average noise levels above 85 dB—roughly those produced by power lawn mowers. Slightly more than 2 million face daily average noise levels between 85 and 90 dB (comparable to those of passing tractor trailers), 1.5 million face those between 90 and 95 dB, some 815,000 withstand from 95 to 100 dB, and about 425,000 must endure average noise levels above 100 dB.

A key element in determining the effects of noise is duration. Some high-level sounds can be tolerated without damage as long as they are short. Isolated bursts of gunfire, for example, can be relatively harmless even at 140 dB. But if they are repeated, especially on a regular basis, high-level sounds stress the delicate structures of the inner ear, which begin to deteriorate. The continuous grind of a circular saw at 95 dB will almost certainly impair hearing if experienced daily over many years.

OSHA's noise standard allows employers to expose workers to 90 dB over 8 hours, even though the hazard at this level is well known. Employees can be exposed to higher levels for shorter periods, with a 5-dB increase permitted for each halving of exposure time. Thus, 95 dB is permitted for four hours, 100 dB for two hours, and so forth to a maximum level of 115 dB for 15 minutes.

Employers must use engineering or administrative controls—such as muffling sounds or rotating jobs—to adhere to these limits, but only *to the extent feasible.* The problem is that the law does not specify what that means. The Reagan administration interpreted the stricture so liberally that the number of citations to employers lacking engineering controls decreased dramatically from 2,292 in 1981 to 191 in 1987.

A 1981 amendment promulgated during the final days of the Carter administration strengthened OSHA's noise regulations somewhat. The amended standard requires "hearing-conservation programs" for workers exposed above 85 dB. These are supposed to include strict monitoring of people's noise exposure, as well as hearing tests, use of hearing protectors, worker training and education, and record keeping. But the Reagan administration immediately stayed the standard's effective date. Only after the AFL-CIO filed suit did OSHA allow parts of its own amendment to become effective, finally releasing a revised version in 1983.

By requiring hearing-conservation programs at 85 dB, the amendment affords some protection to workers who would not otherwise have any, and the monitoring provisions can help focus employers' attention on workers who are beginning to lose their hearing. However, in practice, many people dislike wearing hearing protectors or have trouble getting them to fit properly, so they often receive little benefit.

Moreover, the Reagan administration saw the amendment as an opportunity to shift its enforcement efforts almost entirely from engineering controls to hearing conservation. In 1982, OSHA instructed its field offices to refrain from issuing citations to companies whose employees were exposed to daily average noise levels of less than 100 dB, as long as the

ALICE H. SUTER is a consultant in community and occupational noise, based in Silver Spring, Md. She became interested in the effects of noise while working with hearing-impaired Vietnam returnees at the Veterans Administration Hospital in Washington, D.C. After obtaining a PhD in audiology from the University of Maryland, she worked in the EPA's Office of Noise Abatement and Control, and was the principal author of the hearing-conservation amendment while at the Occupational Safety and Health Administration's Office of Health Standards.

OSHA estimates that noise exposure on the job has damaged the hearing of over 1 million Americans.

companies had "effective"—the term has never been defined—hearing-conservation programs. Thus, without going through the official rule-making procedure, OSHA has raised the permissible exposure limit from 90 dB to 100 dB. Although the legality of this policy is questionable, it has not been challenged in the courts.

Another problem is that the amended standard applies only to workers in manufacturing and maritime occupations. OSHA puts construction workers in a different category—they are covered by a narrower, pre-amendment rule that the agency rarely enforces. Such fragmentation is typical of noise standards. Transportation workers receive spotty coverage from bureaus within the Department of Transportation. The Mine Safety and Health Administration applies a less stringent standard to coal miners, and agency inspectors do not issue citations regardless of exposure levels as long as miners are wearing hearing protectors. (It is common knowledge that miners remove the protectors when visitors leave, fearing that they will not be able to hear the sound of imminent cave-ins.) Agricultural workers, who supposedly fall under OSHA's purview, are not protected at all from the noise of tractors, harvesting equipment, and other machinery.

Many employers prefer to set up hearing-conservation rather than noise-control programs because they are less expensive in the short run. OSHA estimates that such programs cost about $41 per worker per year, whereas engineering controls average about $4,000 per worker at one time. However, engineering controls *can* cost less in the long run, especially when they involve simply maintaining a piece of equipment—tightening bolts on a rattling machine, say, or installing an inexpensive muffler. For example, a British manufacturer of concrete products devised a simple but successful scheme to control the noise of a vibrating steel mold on a steel platform. By applying a sheet of rubber to the surface of the platform and enclosing the vibrator with a rubber skirt, the company reduced noise from 103 to 93 dB. The cost was essentially nothing, since the firm used scrap rubber. Employers often fail to investigate such remedies until pressed to do so.

Despite OSHA's focus on hearing conservation, citations for this part of the regulation slipped from a high of 3,572 in 1984 to 2,368 in 1987. And the real test of enforcement lies not in the number of violations cited but in the amount of the resulting penalties. In 1980, before the hearing-conservation amendment, U.S. industry was fined a total of $633,485 for 2,292 violations of the noise standard. In 1987 that figure had dropped to $200,880 for 2,259 violations. And OSHA often adjusts these penalties after conferring with the companies, so U.S. firms actually paid a total of only $279,962 in 1980 and a paltry $46,236 in 1987 for

How Noise Affects People

To the individual developing a noise-induced hearing impairment, it sounds as if people are not speaking clearly. That's because high-frequency hearing—which is necessary to hear the consonant sounds that carry the meaning of speech—goes first, and is most severely damaged. Thus, the individual with noise-induced hearing loss can hear the voices of others but has difficulty understanding what has been said.

People often believe that because noise doesn't hurt, they're "getting used" to it and the sound is not harmful. But noise-induced hearing loss is insidious. Tiny sensory cells in the inner ear are steadily worn down, damaged, and eventually depleted, never to be restored. Early signs of trouble are ringing noises in the ears (called tinnitus) and a temporary dullness of hearing after an intense noise exposure. If the noise source is not controlled or if the individual is not protected, permanent hearing impairment (and often permanent tinnitus) results.

In addition to hearing loss, noise can produce other kinds of damage. With the first exposure to high noise levels, especially if the onset is sudden and unexpected, the human body experiences a surge of adrenalin that mobilizes it for any contingency. Heart rate, blood pressure, and muscle tone increase, peripheral blood vessels constrict, and respiration quickens.

Even though people can try to adapt to noise that they know does not require [illegible] some of these physiological changes persist, most notably elevated blood pressure and heart rate, as well as changes in blood chemistry. When Ernest Peterson and his colleagues at the University of Miami investigated the effects of noise on rhesus monkeys in 1978, they found that protracted exposure to levels of 85 to 90 dB caused a chronic elevation of blood pressure that did not return to normal after the noise stopped.

People who live near noise sources, especially intermittent ones like airports, wake up frequently and experience changes from heavier to lighter sleep stages. These changes impair the normal pattern of sleep and can produce fatigue and even affect performance the next day. In a large survey of the residents around Amsterdam's airport in 1977, Dutch scientists found greater use of sleeping medications and drugs prescribed for cardiovascular disorders than in an equivalent population exposed to less noise.

On the job, noise can lead to accidents by interfering with speech or masking warning signals. Noise levels above about 95 dB can degrade job performance, especially when the tasks are complex and involve mental and motor skills. Performance is particularly affected when the noise is unpredictably intermittent and when the listener has no control over it. The same pattern also disrupts performance even after the noise has ceased. Laboratory studies have shown that people who are exposed to noise, especially unpredictable and uncontrollable [illegible]

noise violations. The latter amounts to an average of $18 per citation—hardly a significant deterrent.

OSHA's reluctance to press citations and prosecute violations may reflect the fact that employers have been increasingly inclined to contest these complaints. The stipulation for feasible engineering controls used to be interpreted as *technically* feasible, but the courts have begun to require an economic test as well. The first of these cases occurred in 1976, when a court ruled that OSHA must take economic feasibility into account when citing Continental Can Co. for failing to use engineering controls to reduce noise. Although the courts have not yet explicitly defined economic feasibility, later decisions have upheld the idea that OSHA must consider the cost of engineering controls.

Department of Labor lawyers also hesitate to litigate such cases because economic feasibility is much more difficult to prove than technical feasibility. In 1987, companies contested nearly one-fourth of all noise-related citations, even though many of the hearing-conservation amendment's provisions carry no penalties. When penalties are assessed, court settlements often reduce the dollar amount and extend compliance times.

Dealing with Noisy Neighborhoods

Away from their jobs, some 60 million people are exposed to noise from city traffic that exceeds EPA's "safe" level, determined by a measure called the "day-night sound level," or DNL. This is the average 24-hour noise level, with sounds occurring after 10 p.m. and before 7 a.m. measured as if they were 10 dB higher. EPA's noise office has determined that a DNL greater than 55 dB begins to affect public health and welfare. The agency defines this criterion quite broadly, including individual well-being as well as the absence of disease.

Environmental noise sources can induce hearing loss, although that is not as common or as severe as occupational hearing loss. Probably the most frequent environmental cause is sport shooting. Most gun clubs now advocate that their members wear hearing protectors, but few hunters do so. Noisy power tools are also a potential hazard. Manufacturers of such products seldom warn consumers when noise levels could be hazardous to hearing.

EPA's noise office had made significant progress in dealing with such problems before it was closed. The agency had established noise standards for existing fleets of trucks, buses, and railroad cars, and for new

Manufacturers of power tools seldom warn consumers when noise levels could be hazardous to hearing.

air compressors, medium- and heavy-duty trucks, motorcycles, and garbage trucks. Regulations for buses, wheel tractors, and crawler tractors had been proposed, and regulations for other noise makers such as lawn mowers, jackhammers, and rock drills were in the pipeline. The office had also begun the process of requiring manufacturers to specify the noise levels of their products, and to rate the effectiveness of items sold to abate noise. EPA's only regulation under this program requires that labels indicate the effectiveness of hearing-protection devices, but this regulation is not being actively enforced.

In 1974 the agency published a landmark treatise describing potentially hazardous levels of environmental noise. Some 260 reports generated by the noise office can be found on various library shelves, and most are still available from the National Technical Information Service. EPA also set up a "Buy Quiet" program to encourage federal and state officials to purchase quiet lawn mowers and road construction equipment, and to stimulate manufacturers to develop them.

In 1979, another congressional effort addressed a weakness at EPA—the absence of funding and directives for technical assistance to states and municipalities. Senator John Culver (D-Iowa) sponsored a bill called the Quiet Communities Act to provide the needed grants and training, as well as programs for senior citizens and a clearinghouse on noise information.

All these activities have ceased. However, EPA officials have had to figure out what to do with the regulations. After all, once something is identified as a major source of noise it is difficult to change this designation. EPA finally decided to remove products from the list of major noise sources "temporarily." The only regulation actually rescinded was the standard for garbage trucks. The others remain on the books, unenforced.

Because of cutbacks, state and local noise programs, which had flourished with technical assistance from EPA, have gone from a maximum of about 1,100 to a low of 15 today. Many communities still have noise ordinances, but few are actively enforced. The alleged virtue of returning responsibility for controlling noise to the states and localities—the basis for closing EPA's noise office—has worked about as well as "trickle-down" economics. And federal rules remain on the books to preempt state and local programs, as stipulated by the Noise Control Act, even though EPA standards may be long out of date.

The FAA and Aircraft Noise

Some 15 million people must endure regular aircraft noise above 65 dB, the DNL level the Federal Aviation Administration (FAA) uses to make zoning and planning decisions. Many airport neighbors feel that the DNL scale is inadequate because it averages the noise

Product-liability lawsuits could be a powerful incentive for manufacturers to design quieter products.

from all flyovers rather than describing single events: a jet overhead at 1,000 feet can measure an ear-splitting 103 dB on the ground.

Aircraft noise seems to bother people more than road noise, probably because flyovers can disrupt conversation completely and the sound has an annoying high-frequency component. A recent study of three medium-sized airports in residential communities—the Burbank-Glendale-Pasadena Airport, the John Wayne Airport in Orange County, Calif., and the Westchester County Airport north of New York City—showed that 50 percent of the people became "highly annoyed" at 65 dB levels. The FAA would have projected 15 percent.

Concerned about such effects, in 1968 Congress instructed the FAA to take action, and the agency established limits on noise emissions from new aircraft. The FAA has made the noisiest aircraft, labeled stage 1, obsolete. Stage 2 planes, including Boeing 727s, 737s, and older 747s and McDonnell Douglas DC-9s, comprise the bulk of today's fleet, with stage 3 representing the latest generation.

Unfortunately, gains from such efforts have been offset by increases in air traffic: the number of passengers has doubled over the past decade. And the FAA has not vigorously pursued other options for controlling noise, even though further advances in designing quieter engines seem unlikely.

For example, the Aviation Safety and Noise Abatement Act of 1979 prompted the FAA to set up a fund to finance noise-control efforts, such as soundproofing and purchases of houses near airports. Fed by taxes on airline tickets and fuel, the fund now contains a $6 billion surplus, and is presumably being used to reduce the federal deficit. Airport operators complain of long delays in getting their noise-reduction programs approved, and the FAA rejects many applications from mid-sized airports because their noise problems are supposedly not yet serious enough.

Despite FAA footdragging and in response to irate citizens, airport operators have been taking the lead in managing noise. About 300 airports are imposing restrictions on stage 2 aircraft, and others have begun to assign airlines a "noise budget" that they can allocate among their fleet. In Palm Beach, Fla., owners of the noisiest aircraft pay higher takeoff and landing fees, which are then used to control noise in the nearby community. Many airports also require noise-abating flight procedures, such as throttle and flap manipulations during takeoff and landing, and reroute aircraft over more sparsely populated areas. However, if these restrictions become too rigorous, the FAA sues operators for impeding interstate commerce.

The Airport Operators Council International has recommended phasing out stage 2 planes by the year 2000, at a cost the airline industry puts at $90 billion. And the European Community wants to prohibit member nations from adding stage 2 planes after 1990. Such a regulation could either stimulate the FAA to take more vigorous action with the U.S. fleet or turn the U.S. market into a dumping ground for noisy—but cheap—aircraft.

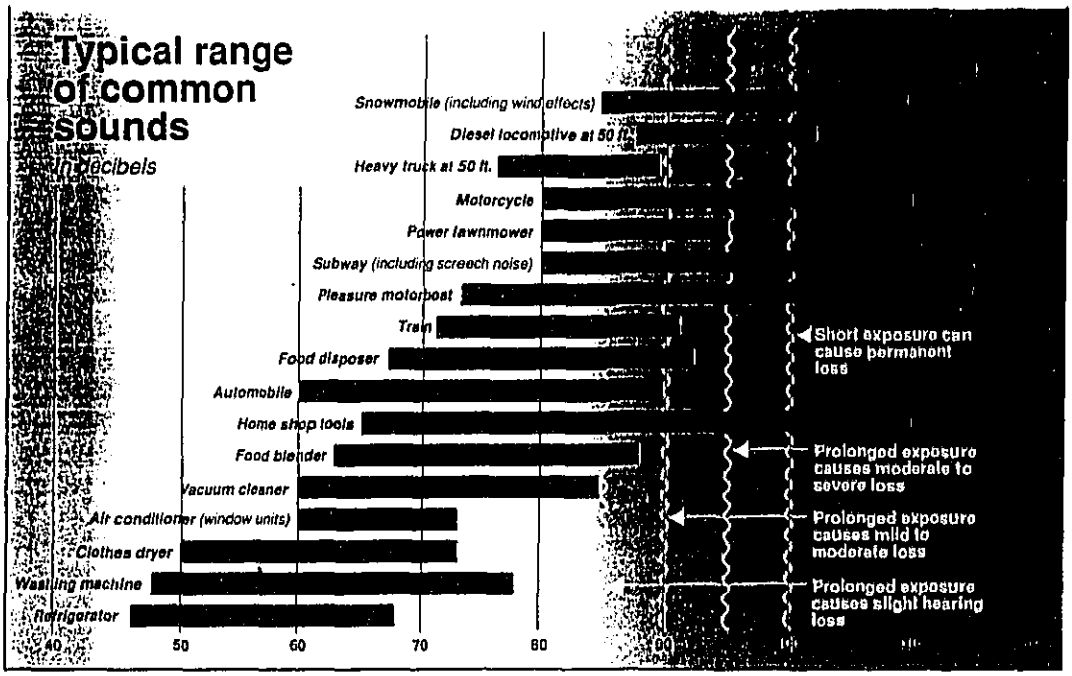
The most promising solution to controlling aircraft noise is to develop "wayports": airports in less populated areas specifically for passengers who need to change planes en route to their final destination. A bill in Congress would fund four to six wayports with money from the Airport/Airway Trust Fund.

Finding Effective Remedies

With federal enforcement efforts stalled, noise levels have risen as the number of major sources—aircraft, trucks, buses, cars—have grown. As Charles Elkins, EPA's deputy assistant administrator for noise abatement and control, said in 1979: "If EPA is vigorous in its implementation of the Quiet Communities Act, we may be able to hold the line on noise exposure. Of course, without a Federal program, the situation would be much worse."

Can anything be done to improve the situation? Worker-compensation awards, which are generally administered by the states, could provide an incentive for companies to protect employees against noise-induced hearing loss. More employees are filing claims for such loss, and the size of awards is increasing.

However, the average payment for hearing loss is only about $3,000, and many states make compensation difficult or even impossible to obtain. They may require that workers be away from noise for up to six months to make a claim, forcing them to quit or retire before filing. Most states use an old American Medical Association formula for calculating hearing loss that fails to include high-frequency hearing, the earliest and most severely damaged. Some states subtract a standard amount for aging from hearing loss, even though such an adjustment is already built into the formula. And some also restrict the time that can elapse between when a worker first notices a hearing impairment and when he or she files a claim, even though the individual may still be working in noise. These rules mean that only



a small fraction of the total that is due to employees is paid out.

Still, worker-compensation claims as well as OSHA inspections, even when only threatened, can encourage employers to find ways to run equipment more quietly. Noise can be controlled at the source, such as by adding a muffler to a noisy power tool or damping a saw blade. The noise path can be interrupted by installing acoustical materials along walls or ceilings or around noisy machines. Or people can operate noisy machinery from within a soundproofed control room, a common recourse in power plants. However, some industrial processes require operators to work close to their machines, and equipment such as forge hammers, paper corrugators, cigarette-making machines, and fly-shuttle looms can be difficult if not impossible to modify.

Obviously, the best way to control noise is for manufacturers to design equipment to run more quietly from the beginning. At a 1979 EPA symposium on machinery and construction noise, a panel of experts from industry, academia, and consulting firms expressed confidence that they could design quieter products "provided *that the proper economic incentives were available.* Without incentives, both positive and negative, there can be no technological development, and present incentives for noise control are weak, absent, or uncertain." The panel then drew up a list of some 100 machines for which R&D was needed to bring noise to reasonable levels.

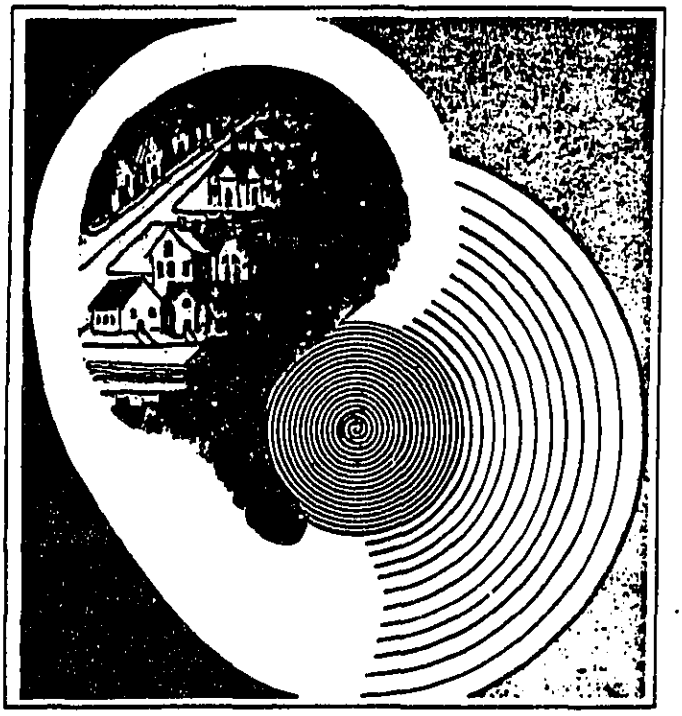
In a 1980 OSHA report, J. Ronald Bailey, Franklin Hart, and Noral Stewart, three acoustical engineers from North Carolina, found that the costs of noise control are seldom excessive, even in the most difficult cases. For example, manufacturers could quiet welding equipment by 5 dB simply by modifying existing vision and spark shields and by relocating the power supply. Redesigning parts in the impact devices used in mining and construction, such as jackhammers and other pneumatic tools, can reduce deafening noise levels of 110 to 120 dB to 95 dB with only minor losses in productivity.

As the EPA panel pointed out, without incentives from OSHA and EPA few manufacturers are applying these techniques. But product-liability claims against equipment manufacturers could provide a powerful incentive to do so. Although civil suits for noise-induced hearing loss lag far behind asbestos suits, they are gaining in popularity. For example, 4,000 Mississippi shipyard workers are suing the manufacturers of pneumatic tools for damaging their hearing.

A similar development could produce significant changes at EPA. John J. Ross, Jr., an attorney in Jackson, Tenn., is suing the EPA administrator and the secretary of transportation for abrogating their duties under the Noise Control Act as amended by the Quiet Communities Act. The plaintiff decided to sue when, disturbed by truck noise, he found that the agency in charge of abating truck noise had gone out of business. He believes the value of his property has been diminished and the quality of his work impaired. Such efforts could convince officials to enforce laws that could prevent workers from losing their hearing and community residents from losing their sanity. ■

CHART: DEBORAH PERUGI DESIGN

Model Noise Control Ordinance



U.S. ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

Preamble to Model Community Noise Control Ordinance

This model noise control ordinance was drafted by the U.S. Environmental Protection Agency and the National Institute of Municipal Law Officers.

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U.S. Environmental Protection Agency
Washington, D.C. 20460

INTRODUCTION

Purpose

The Model Community Noise Control Ordinance (model ordinance) is intended to be a basic tool which communities, both large and small, can use to construct noise control ordinances suited to local needs and conditions. The complete model ordinance, including optional provisions, is perhaps most suitable for larger communities, with populations of about 100,000 or more. Smaller communities and large communities with limited resources may wish to adopt only those provisions which address their most pressing noise problems. It is important that the community ensure that all provisions adopted are realistic in relation to local needs and conditions; that all provisions are consistent with one another, with other local law, and with State and Federal law; and, finally, that all provisions are clear and otherwise well drafted so that enforcement problems will be minimized.

Background

This model ordinance is an outgrowth of the Federal Noise Control Act of 1972 (49 U.S.C. §§ 4901 *et seq.*) and the tremendous increase in interest regarding noise abatement and control which the Act has precipitated. Many existing community noise ordinances are based on outmoded model ordinances and/or the common law approach to noise control which relies exclusively on difficult to enforce nuisance provisions. While the model ordinance preserves common law with Article VI provisions prohibiting noise disturbances, it also contains definitive performance standards for motor vehicles and other sources of community noise. The increase in reliable monitoring equipment available to local governments, coupled with definitive standards incorporated into local noise control ordinances, should result in ordinances which are more easily enforceable than many have been in the past.

It is anticipated that an analagous model ordinance will form part of a workbook on community noise abatement and control to be published by the U.S. Environmental Protection Agency during late 1977. In addition to containing the model ordinance (perhaps with discussions of a number of alternative provisions), the workbook may contain chapters on the legal basis of noise control, the health effects of noise and various enforcement approaches.

Although the model ordinance will stand alone as a legal document, for proper enforcement the City/County must additionally have a code of recommended practices or rules and regulations which give general specifications for sound measuring equipment and measurement methodology. This document should also provide detailed procedures for measurements to be taken for certain provisions of the ordinance, such as motor vehicles and stationary sources. To assist communities in the development of a code of recommended practices, EPA is preparing a model code which, when completed, will be sent to recipients of the model ordinance.

Interrelationship of Various Provisions

An overview of the model ordinance can most readily be obtained by reading the List of Provisions. When a community determines which activities it wishes to regulate, the appropriate model provision or provisions can be located by referring to this list.

A glance through the List of Provisions suggests that certain acts may be prohibited by more than one provision. For example, use of a noisy go-cart could violate Section 9.2 ("Recreational Vehicles Operating Off Public Rights-Of-Way"), as well as Section 6.1 (Noise Disturbances). It may be that a community desires such multiple coverage. In this case, enforcement against the owner or operator of a noisy go-cart would probably come under the provision more easily enforced, but could come under both provisions violated, at the discretion of the enforcement agency. If a community does not desire such multiple coverage, it can either omit certain provisions or it can exempt acts covered by other provisions from multiple coverage. Such modifications deserve careful consideration, however, so that they do not modify the ordinance more than desired or otherwise jeopardize enforcement.

GENERAL PROVISIONS

Policy Regarding Levels

In this model ordinance, recommended values for sound levels in the performance standards have been omitted in most cases. Suggested times for the curfews on the hours of the conduct of activities or the operation of equipment have also generally been omitted. The reason for these omissions is that the drafters of the ordinance feel that there is no single number that can be chosen for each provision that would be appropriate for all types of communities. Each community has its own set of environmental, health, economic and other goals it wishes to attain. Each community also has its own configuration of noise sources and their impact which it wishes to control. The level and extent of such control is fully within the purview of local decision. Of course, localities will wish to consider the

technical practicality and economic reasonableness of sound levels chosen. However, in the regulation of noise pollution, the protection of public health and welfare is the major legal basis for control and must be carefully considered in the determination of performance standard noise levels and hours of curfew. For a specification of national maximum noise exposure guidelines, consult *Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (U.S. Environmental Protection Agency, March 1974).

Pre-Emption

Under the Noise Control Act of 1972 (49 U.S.C. §§ 4901 *et seq.*), certain areas of local authority will become pre-empted on the effective date of regulations developed by the U.S. Environmental Protection Agency pursuant to Sections 6, 17 and 18 of this Act. In this discussion, we will present the scope of Federal pre-emption and indicate the provisions of the model ordinance which were drafted wholly or partially to respond to the issue of pre-emption.

An over-all requirement to monitor Federal pre-emptive regulations and to respond to them in the local noise ordinance is contained in Section 4.3.6(b). This subsection provides that, at such time as Federal regulations become effective which are by law pre-emptive of the laws of State and local governments, the Environmental Protection Officer(r)/Noise Control Office(r) (EPO/NCO) shall review the provisions of the local ordinance which may be affected and make appropriate recommendations for changes to the city council/legislative body.

The purposes of including such a provision in this ordinance are to facilitate the coordination of the local noise control efforts with the Federal noise program and to reduce the possibility of defendants raising Federal pre-emption as a defense to charges of local law violations.

With regard to the scope of pre-emption, the pre-emptive provision of Section 6 of the Noise Control Act differs considerably from those of Sections 17 and 18. The Section 6 provision is relatively narrow, pre-empting local laws covering new product noise emission levels which are directed at the manufacture or sale of such products. The pre-emptive provisions of Sections 17 and 18 are very broad, pre-empting local noise laws which affect the operation of interstate motor and rail carrier vehicles.

In Section 6, subsection 6(e)(1) provides that, after the effective date of an EPA regulation prescribing noise emission levels for a specific new product or component, no State or political subdivision thereof may adopt or enforce with respect to that particular new product or component any law or regulation which sets a noise emission limit on such product (or component) enforceable against the manufacturer of the product, applicable at the time of sale, unless such law or regulation is identical to the Federal regulation. Thus, the preemption is against State and local laws which regulate the noise levels of a new product (i.e., a product which has not yet been sold to the first retail purchaser) and which, at any time, impact the manufacturer of the product.

State and local governments, under subsection 6(e)(2), retain authority to control products by all other available means. This subsection states that nothing in this section precludes or denies the right of State or local governments to establish and enforce controls on environmental noise and sources thereof through the licensing, regulation, or restriction of the use, operation or movement of any product or combination of products.

Thus, although a local government may not enforce a non-identical local law regarding the noise level of an EPA-regulated new product which affects the manufacture or sale of such product, the local government may regulate the product noise impact through regulations enforceable against the owner or operator of the product by providing, for example, maximum noise levels for operation, curfews on operation, prohibition of use in a residential neighborhood or hospital zone, or requirements for periodic inspection and licensing of the product.

Broader pre-emptive coverage is found in Sections 17(c)(1) and 18(c)(1). These sections provide that, after the effective date of an EPA regulation applicable to noise emissions from interstate rail or motor carriers, no State or political subdivision thereof may adopt or enforce any standard applicable to the same noise source unless such standard is identical to the Federal standard. However, Sections 17(c)(2) and 18(c)(2) provide that nothing in these sections shall diminish or enhance the right of State and local governments to establish and enforce standards or controls on levels of environmental noise or to control, license, regulate or restrict the use, operation or movement of any regulated product if two conditions occur:

1) the EPA Administrator, after consultation with the Secretary of the Department of Transportation, determines that such local law is necessitated by special local conditions, and

2) if he determines that such local law is not in conflict with the EPA regulations.

Thus, on the effective date of the EPA regulations under Section 18 (October 15,

1975) and Section 17 (undetermined as yet), local governments should review any ordinance provisions applicable to noise emissions resulting from the use or operation of motor vehicles with a gross vehicle or combination weight rating of greater than 10,000 lbs. operated by an interstate motor carrier and of interstate surface railroad locomotives and cars. Local regulations providing standards on noise emissions resulting from operations subject to Federal regulations must be identical to the Federal regulation. Such identity applies not only to the standard but also to the core measurement methodology which defines the standard. Non-identical standards may not be enforced, and should be declared ineffective, as of the effective date of the Federal regulation. For this reason, Section 18 standards have been incorporated into Table II of Section 9.1 in the model ordinance. The appropriate measurement methodology should be incorporated into the community code of recommended practices.

In general, we can classify the pre-emptive effect of these sections on local law into three categories. First, any local law which sets noise emission levels for interstate motor vehicles and rail locomotives and cars must be identical to the Federal standard. No special local condition or other factor can exempt this requirement. Second, local laws which regulate or restrict the use, operation, or movement of interstate motor rail carriers by such means as curfews and truck routes (see Section 4.3.4, Truck Routes and Transportation Planning) will not be subject to pre-emption if (1) the principal purpose of such regulation is not to control noise, or (2) the principal purpose is to control noise but the regulation has been approved by the EPA as necessitated by special local conditions and not in conflict with Federal regulations. For example, truck routes designated solely on the basis of noise must be submitted to EPA for determination of a special local condition. Truck routes based on additional factors, such as the safety of children, maximum load on street surfaces, etc., will not need EPA approval. Third, general noise regulations, such as the property line noise emission standards of Article VIII, will not be affected by these pre-emption provisions except in rare cases. Thus, the property line levels may be applied to noise emissions caused by interstate motor carrier vehicles at a loading terminal so long as means of abatement are possible which do not require controlling the noise emission level of the motor vehicle itself. Such other means of abatement can include, for example, installation of noise barriers at the perimeter of the terminal and creation of buffer zones of land between the terminal and the noise-impacted areas.

Hearing Board and Advisory Council

A City/County with a large EPO/NCO may prefer to utilize a Hearing Board (or an administrative court) to hear cases regarding ordinance violations. Under this approach, the Hearing Board would decide the case and determine the penalty. Local courts would be utilized in appeals of the decisions of the board. This approach avoids overburdening existing courts.

The City/County may also wish to use a Hearing Board to make determinations on Special Variances (Section 7.2) and Variances for Time to Comply (Section 7.3). This would free EPO/NCO personnel to perform other tasks under the ordinance. However, the EPO/NCO could still be consulted on technical matters.

If the City/County decides to have a Hearing Board, the terms of existence and operation of the Board should be specified in the ordinance.

A Noise Control Advisory Council should also be considered by the City/County. The functions of this council could include providing (1) advice on development of the noise control program; (2) recommendations on which provisions of the model ordinance should be included in the City/County ordinance; (3) recommendations on sound level values and curfew periods for the various provisions; and (4) stimulation of public interest on noise abatement. This Council could also be responsible for writing the periodic reports, specified in Section 4.3.9, concerning the progress of the local noise control program.

SPECIFIC PROVISIONS

Article III—Definitions

1. Section 3.2.16, Definition of "Motorboat"

A community which serves as an international port may wish to explicitly exclude vessels in international commerce from the definition of motorboat, since many such vessels would be effectively prohibited from using the port (under Section 6.2.15, Motorboats).

2. Section 3.2.29, Definition of "Sound"

The term "sound" is generally used as the operative word in this ordinance rather than the term "noise." This is to avoid the problem of associating "noise" with a sound that is "disturbing" or "unwanted", with the attendant possibility that in order to prove a violation of the ordinance, proof must be given that the sound had indeed been "disturbing" or "unwanted." Because the substantive provisions of the ordinance have been narrowly drawn and often contain objective criteria, proof of an additional subjective element is unnecessary.

3. Section 3.2.22, Definition of "Person"

The definition of person does not include Federal agencies and departments. This is because legal decisions have not yet determined the extent of a locality's authority to bring action against the Federal government for noise control violations.

Section 4 of the Noise Control Act of 1972 requires that all departments, agencies, and instrumentalities of the executive legislative, and judical branches of the Federal Government comply with Federal, State, interstate, and local requirements respecting control and abatement of environmental noise to the same extent that any person is subject to such requirements. The Federal Courts of Appeals, deciding cases under identical language in the Clean Air Act, have disagreed as to whether this language extends to administrative as well as substantive requirements. See *State of Alabama v. Seeber*, 502 F. 2d. 1238 (5 Cir. 1974); *Commonwealth of Kentucky v. Ruckelshaus*, 497 F. 2d. 1172, (6 Cir. 1974). *Kentucky v. Ruckelshaus* is pending before the Supreme Court, and a resolution of the issue is likely. Further questions exist as to whether a State or local government can bring an action against the Federal Government for violations of their noise control laws, regulations and ordinances. Accordingly, the key definition of "person" in the model ordinance, which serves as an applicability section, does not include the Federal Government.

In the absence of such specificity, Section 4 of the Noise Control Act continues to require that the Federal Government comply with the local ordinance. However, it is left to each community to determine the position it will take with respect to the relevant issues, such as whether the Federal Government must comply with administrative provisions, and whether penalties, orders, and enforcement actions will be directed at the Federal Government under Article XI (Enforcement).

Article IV—Powers and Duties of The (Environmental Protection)/(Noise Control) Office(r)

Resolving Inter-Departmental Conflicts

Section 4.2.4 (Review of Actions of Other Departments); Section 4.2.5 (Review of Public and Private Projects), Section 4.3.4 (Truck Routes and Transportation Planning) and Article V (Duties and Responsibilities of other Departments) have the potential of causing inter-departmental conflicts since there is shared responsibility. The community may wish to specify in the ordinance a method for resolving such conflicts, perhaps by authorizing the city council, county board of supervisors, mayor, etc., to negotiate differences and make a final decision.

Education

Section 4.2.2 authorizes the Environmental Protection (Noise Control) Office(r) to educate the public on methods of controlling noise and on the provisions of the ordinance. The EPO may wish to exercise caution, however, in providing specific advice on solving a particular noise problem. For instance, if the EPO were to advise a commercial establishment on a method of reducing noise from its air conditioning unit and this method failed to be effective, the commercial establishment may try to use this fact as a defense in any action brought against it by the EPO. The EPO officer should use his discretion in handling matters of this type.

Review of Public and Private Projects

Section 4.2.5 grants the EPO the power to review public and private projects over which another department has authority in order to determine whether they will comply with the ordinance. This applies to such matters as licensing a race track, approving a housing project, or granting a permit for a construction site, if required to be approved by a department other than that of the EPO/NCO and if likely to create sound levels or sound exposures in violation of the ordinance.

Some communities may wish to expand this section to authorize the EPO to recommend to other departments appropriate modifications to projects if the EPO believes such projects will violate the ordinance or to allow him veto power over projects significantly impacting the noise environment.

This provision does not set criteria for determining whether a proposed project must be reviewed by the EPO/NCO. If the City/County wishes the EPO/NCO to review every proposed project, such criteria are not necessary, but this policy may create an unnecessarily large burden on the EPO/NCO. If the City/County wishes to limit situations where the proposed project is subject to noise impact review, criteria can be either included in the language of this provision, or the EPO/NCO can develop criteria in consultation with affected departments. Such criteria may include, for example, minimum monetary or time limits for the review of activities or specification of the types of activities which are likely to produce sound in violation of the ordinance.

Inspections

Section 4.2.6 concerns inspections. To be constitutionally permissible, administrative searches or inspections conducted by municipal inspectors on private property must be made using a warrant procedure (*Camara v. Municipal Court*, 387 U.S. 523 (1967);

See v. Seattle, 387 U.S. 511 (1967)). Thus, if a private property holder refuses to allow his premises to be inspected by a City/County official, the official must obtain a search warrant for the premises before he may inspect them. The Court in *See* also held that there is no distinction between the rights of a residential property holder and those of a commercial property holder concerning searches or inspections. Both types of property are thus treated the same in Section 4.2.6(a).

Violations of Article VIII (Noise Levels by Receiving Land Use) and most Article VI (Prohibited Acts) violations can be determined without an inspection on the premises on which the sound source is situated, so a search warrant is not needed in these situations.

Article VIII—Sound Levels by Receiving Land Use (Defining Land Use Districts)

Article VIII sets property line sound limits for the broad receiving land use categories of residential, commercial and industrial. Many communities are employing this type of quantitative limit to provide stronger legal control over undesirable sound levels than is attainable with an ordinance containing only nuisance provisions.

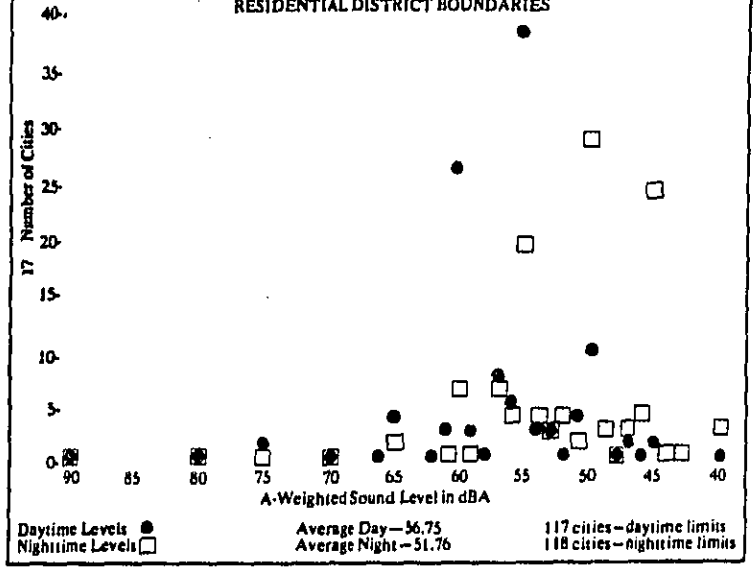
If the community land use/zoning code accurately reflects the actual use of the land, then the designations used by the city for zoning categories may effectively be plugged into the three Article VIII categories (with the corresponding definitions placed in Article III). On the other hand, if there are numerous discrepancies between the way the land is zoned and the way it is actually used (e.g., commercial establishments in a residential zone), or if there are large tracts of unzoned land, the community may prefer to base property line limits on the actual *use* of the land. This would provide greater protection for impacted properties.

A related matter to be considered in controlling property line noise is that of the occasional non-conforming land use. An example is the case of a single residence located in an industrial area. It may not be possible for several manufacturers impacting the residence to lower their noise levels to meet the limit specified for residential areas. Situations of this type will require some discretion in enforcement.

Figures I, II, and III summarize graphically the property line levels set by current municipal noise ordinances.

FIGURE I

FIXED SOURCE NOISE LEVELS ALLOWABLE AT RESIDENTIAL DISTRICT BOUNDARIES



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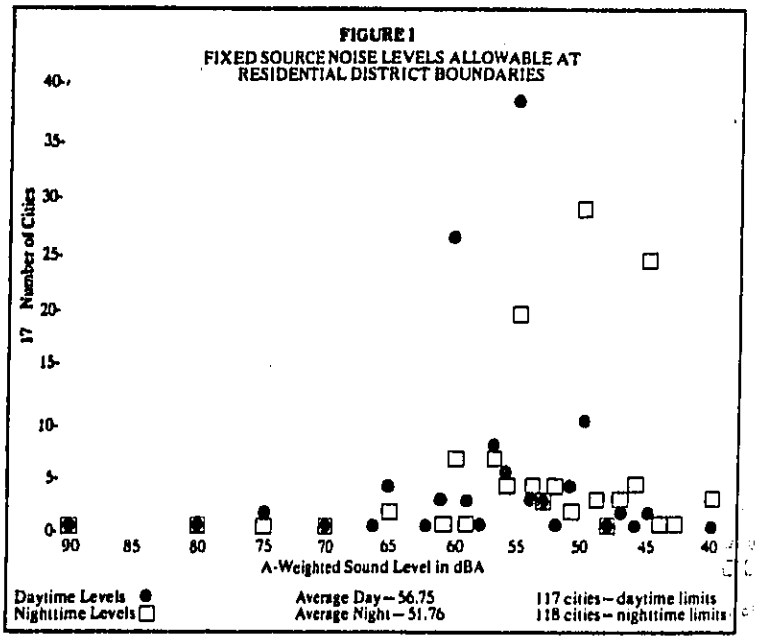

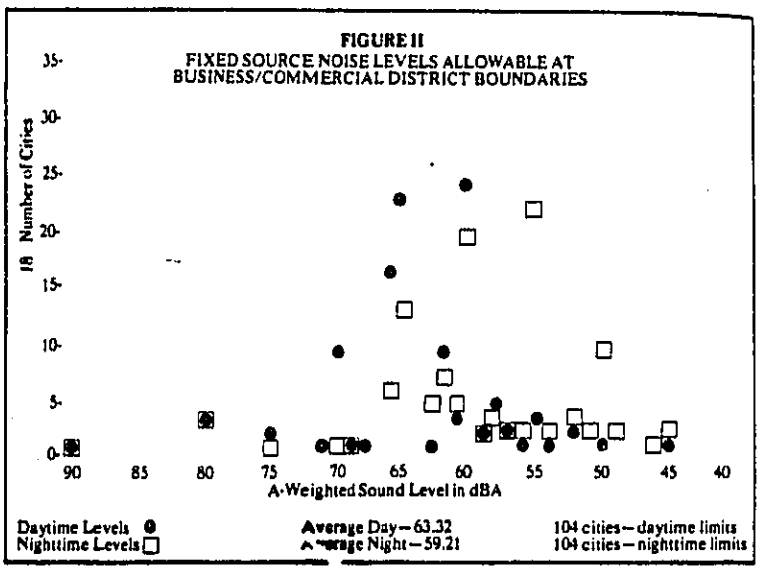

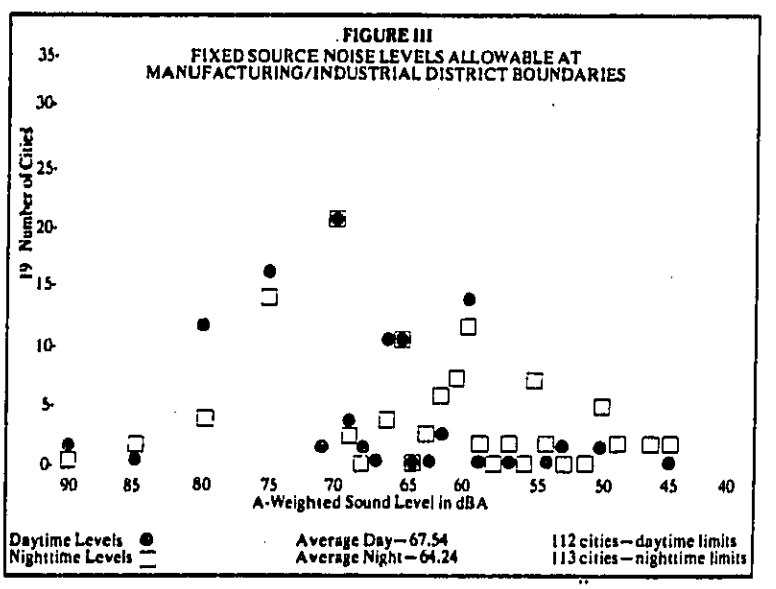

Article X—Land Use

The basic purpose of the Article X land use planning provisions is to ensure that no new residences, institutions or recreational areas are constructed in high noise areas, as determined by the appropriate sections. Although the Article was drafted to stand independently from the existing community land use planning or zoning systems, it is

important for a community considering enactment of this Article to study the interaction of Article X with the land use planning and/or zoning laws and to reconcile them where necessary. It may be better, for example, to enact Article X as an amendment to an existing land use law rather than as a part of the noise control ordinance. Furthermore, because this Article effectively rezones land subject to its provisions, the community may want or need to take special measures before enactment of this Article. These may include a general identification of the areas that will be affected by these provisions.

Article XI—Enforcement

Provisions in this Article are more likely to need revision to conform with local law than other provisions of the model ordinance. For example, the City/County may wish to make violations of the ordinance "infractions," similar to minor traffic violations, rather than misdemeanors, due to the stigma attached to such violations.

The City/County may wish to ensure that the public is reasonably well-informed of activities prohibited by the ordinance before fully effectuating its enforcement program. For example, the City/County may utilize a discretionary policy of issuing an abatement order for a first violation, followed by a citation for the original violation, if the abatement order is not complied with. This approach is provided for in Section 11.2 (Abatement Order), and would be used for violations that are presumed to be unintentional. The EPO/NCO may wish to establish guidelines for use of the abatement order, indicating, for example, appropriate types of violations for which an order may be issued and maximum time period of an order.

The enforcement scheme contained in this ordinance also includes a provision for citizen suits (Section 11.5). The advantage of the citizen suit approach is that many violations of the ordinance which the EPO/NCO has insufficient resources to prosecute can be legally dealt with by persons affected by the violation. Provisions under which one citizen can sue another are limited to those listed in Table VI, to minimize the possibility of "harassment" suits.

Section 11.3 (Notice of Violation) is incomplete in several respects for easy adaptation to the local law of the particular City/County.

Section 11.4 (Immediate Threats to Health and Welfare) provides the EPO/NCO with the authority to force immediate abatement of sources producing sound intensities that not only violate the ordinance but are also unquestionably harmful to the health of the public exposed to them. The sound levels regulated (see Tables IV and V) are deliberately set high, because there is no procedure in this provision for balancing public health with economic or other considerations; public health is the sole determinant. The health and welfare criterion for the levels set is a temporary threshold shift of 30 dB at 4 kHz.

Subsection (b) limits the applicability of this provision to impacts on members of the general public who are involuntarily exposed to the sound. Employee exposures at their workplace are exempted because employee sound exposure levels are regulated under the Occupational Safety and Health Act (29 U.S.C. §§ 669 *et seq.* (1970)).

Severe sanctions for noncompliance with the order are provided for in subsection (d), so that the sound will not continue to be a detriment to public health. If the order is unjustified, a court can invalidate or suspend it soon after the order is issued, in a mandamus type proceeding. This remedy is contained in subsection (c), which may need to be modified to conform with local procedure.

Under Section 11.6 (Other Remedies), common law and statutory remedies previously used to regulate excessive sound will still remain available. It is desirable to retain such remedies to allow private persons the possibility of recovering damages or other remedies for the effects of excessive sound since private recovery is not provided for under the ordinance. The ordinance is intended to expand existing sound control law, not to limit it.

FORMAT

In reading the model ordinance it is essential that certain typographical symbols and format be understood. Several brief rules have been followed in drafting. These are:

- The material contained in square brackets [ ] is optional, depending on the needs and conditions of a given community. (Of course, communities developing ordinances may decide that any given provision should be deleted.)
- Parenthesis ( ) are generally used to designate alternative choices, but in some cases contain explanatory information, depending on the context.
- Blanks —— must be filled in by the community with appropriate information.
- Wherever the term EPO/NCO appears, the title of the community's lead noise enforcement agency or official should be inserted.

Model Community Noise Control Ordinance

List of Provisions

Tables

ARTICLE I Short Title

This ordinance may be cited as the "Noise Control Ordinance of the (City/County) of....."

ARTICLE II Declaration of Findings and Policy; Scope

2.1 Declaration of Findings and Policy

WHEREAS excessive sound and vibration are a serious hazard to the public health and welfare, safety, and the quality of life; and
WHEREAS a substantial body of science and technology exists by which excessive sound and vibration may be substantially abated; and,
WHEREAS the people have a right to and should be ensured an environment free from excessive sound and vibration that may jeopardize their health or welfare or safety or degrade the quality of life; and,
NOW, THEREFORE, it is the policy of the (City/County) of ..... to prevent excessive sound and vibration which may jeopardize the health and welfare or safety of its citizens or degrade the quality of life.

2.2 Scope

This ordinance shall apply to the control of all sound and vibration originating within the limits of the (City/County) of .....

ARTICLE III Definitions

3.1 Terminology

All terminology used in this ordinance, not defined below, shall be in conformance with applicable publications of the American National Standards Institute (ANSI) or its successor body.

3.2.1 "A-Weighted Sound Level" Means

The sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dB(A) or dBA.

3.2.2 "Commercial Area" Means

((As defined in the community (comprehensive plan)/(zoning ordinance)).

3.2.3 "Construction" Means

Any site preparation, assembly, erection, substantial repair, alteration, or similar action, but excluding demolition, for or of public or private rights-of-way, structures, utilities or similar property.

3.2.4 "Day-Night Average Sound Level (L_{dn})" Means

The 24-hour energy average of the A-weighted sound pressure level, with the levels during the period 10:00 p.m. to 7:00 a.m. the following day increased by 10 dBA before averaging.

3.2.5 "Decibel (dB)" Means

A unit for measuring the volume of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

3.2.6 "Demolition" Means

Any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces, or similar property.

3.2.7 "Emergency" Means

Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

3.2.8 "Emergency Work" Means

Any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

3.2.9 "Environmental Protection Office(r)/Noise Control Office(r) (EPO/NCO)" Means

The municipal agency or department having lead responsibility for this ordinance. (If no such agency is designated, the term shall mean the municipal official having lead responsibility for this ordinance.)

3.2.10 "Equivalent A-Weighted Sound Level (L_{eq})" Means

The constant sound level that, in a given situation and time period, conveys the same sound energy as the actual time-varying A-weighted sound. [For the purposes of this ordinance, a time period of 24 hours shall be used, unless otherwise specified.]

3.2.11 "Gross Vehicle Weight Rating (GVWR)" Means

The value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating (GCWR), which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.

3.2.12 "Impulsive Sound" Means

Sound of short duration, usually less

than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms.

3.2.13 "Industrial Area" Means

((As defined in the community (comprehensive plan)/(zoning ordinance)).

3.2.14 "Motor Carrier Vehicle Engaged in Interstate Commerce" Means

Any vehicle for which regulations apply pursuant to Section 18 of the Federal Noise Control Act of 1972 (P.L. 92-574), as amended, pertaining to motor carriers engaged in interstate commerce.

3.2.15 "Motor Vehicle" Means

(As defined in the motor vehicle code of the State)/(Any vehicle which is propelled or drawn on land by a motor, such as, but not limited to, passenger cars, trucks, truck-trailers, semi-trailers, campers, go-carts, snowmobiles, amphibious craft on land, dune buggies, or racing vehicles, but not including motorcycles.)

3.2.16 "Motorboat" Means

Any vessel which operates on water and which is propelled by a motor, including, but not limited to, boats, barges, amphibious craft, water ski towing devices and hover craft.

3.2.17 "Motorcycle" Means

(As defined in the motor vehicle code of the State)/(An unenclosed motor vehicle having a saddle for the use of the operator and two or three wheels in contact with the ground, including, but not limited to, motor scooters and minibikes.)

3.2.18 "Muffler or Sound Dissipative Device" Means

A device for abating the sound of escaping gases of an internal combustion engine.

3.2.19 "Noise" Means

Any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

3.2.20 "Noise Disturbance" Means

Any sound which (a) endangers or injures the safety or health of humans or animals, or (b) annoys or disturbs a reasonable person of normal sensitivities, or (c) endangers or injures personal or real property.

3.2.21 "Noise Sensitive Zone" Means

Any area designated pursuant to Section 4.2.10 of this ordinance for the purpose of ensuring exceptional quiet.

3.2.22 "Person" Means

Any individual, association, partnership, or corporation, and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

3.2.23 "Powered Model Vehicle" Means

Any self-propelled airborne, waterborne, or landborne plane, vessel, or vehicle, which is not designed to carry persons, including, but not limited to, any model airplane, boat, car, or rocket.

3.2.24 "Public Right-of-Way" Means

Any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

3.2.25 "Public Space" Means

Any real property or structures thereon which are owned or controlled by a governmental entity.

3.2.26 "Pure Tone" Means

Any sound which can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this ordinance, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetric average of the sound pressure levels of the two contiguous one-third octave bands by 5 dB for center frequencies of 500 Hz and above and by 8 dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

3.2.27 "Real Property Boundary" Means

An imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intra-building real property divisions.

3.2.28 "Residential Area" Means

((As defined in the community (comprehensive plan)/(zoning ordinance)).

3.2.29 "RMS Sound Pressure" Means

The square root of the time averaged square of the sound pressure, denoted P_{rms}.

3.2.30 "Sound" Means

An oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

3.2.31 "Sound Level" Means

The weighted sound pressure level obtained by the use of a sound level meter and frequency weighting network, such as A, B, or C as specified in American National Standards Institute specifications for sound level meters (ANSI S1.4–1971, or the latest approved revision thereof). If the frequency weighting employed is not indicated, the A-weighting shall apply.

3.2.32 "Sound Level Meter" Means

An instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, output meter, and weighting networks used to measure sound pressure levels.

3.2.33 "Sound Pressure" Means

The instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

3.2.34 "Sound Pressure Level" Means

20 times the logarithm to the base 10 of the ratio of the RMS sound pressure to the reference pressure of 20 micropascals (20×10^{-6} N/m^2). The sound pressure level is denoted L_p or SPL and is expressed in decibels.

3.2.35 "Vibration" Means

An oscillatory motion of solid bodies of deterministic or random nature described by displacement, velocity, or acceleration with respect to a given reference point.

3.2.36 "Weekday" Means

Any day Monday through Friday which is not a legal holiday.

ARTICLE IV Powers and Duties of the (Environmental Protection)/(Noise Control) Office(r)

4.1 Lead (Agency/Official)

The noise control program established by this ordinance shall be administered by (title of municipal agency or lead official).

4.2 Powers of The (Environmental Protection)/(Noise Control Office(r)

In order to implement and enforce this ordinance and for the general purpose of sound and vibration abatement and control, the EPO/NCO shall have, in addition to any other authority vested in it, the power to:

4.2.1 Studies

Conduct, or cause to be conducted, research, monitoring, and other studies related to sound and vibration.

4.2.2 Education

(a) Conduct programs of public education regarding:

(1) the causes, effects and general methods of abatement and control of noise and vibration; and,

(2) the actions prohibited by this ordinance and the procedures for reporting violations; and

(b) Encourage the participation of public interest groups in related public information efforts.

4.2.3 Coordination and Cooperation

(a) Coordinate the noise and vibration control activities of all municipal departments;

(b) Cooperate to the extent practicable with all appropriate State and Federal agencies;

(c) Cooperate or combine to the extent practicable with appropriate county and municipal agencies; and,

(d) Enter into contracts [with the approval of the (appropriate authority)] for the provision of technical and enforcement services.

4.2.4 Review of Actions of Other Departments

Request any other department or agency responsible for any proposed or final standard, regulation or similar action to consult on the advisability of revising the action, if there is reason to believe that the action is not consistent with this ordinance.

4.2.5 Review of Public and Private Projects

Review public and private projects, subject to mandatory review or approval by other departments, for compliance with this ordinance, if such projects are likely to cause sound or vibration in violation of this ordinance.

4.2.6 Inspections

(a) Upon presentation of proper credentials, enter and inspect any private property or place, and inspect any report or records at any reasonable time when granted permission by the owner, or by some other person with apparent authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon showing of probable cause to believe that a violation of this ordinance may exist. Such inspection may include administration of any necessary tests.

[(b) Stop any motor vehicle, motorcycle, or motorboat operated on a

public right-of-way, public space, or public waterway reasonably suspected of violating any provision of this ordinance, and issue a notice of violation or abatement order which may require the motor vehicle, motorcycle or motorboat to be inspected or tested as the EPO/NCO may reasonably require.]

4.2.7 Records

Require the owner or operator of any commercial or industrial activity to establish and maintain records and make such reports as the EPO/NCO may reasonably prescribe.

4.2.8 Measurements by The Owner or Operator

Require the owner or operator of any commercial or industrial activity to measure the sound level of or the vibration from any source in accordance with the methods and procedures and at such locations and times as the EPO/NCO may reasonably prescribe and to furnish reports of the results of such measurements to the EPO/NCO. The EPO/NCO may require the measurements to be conducted in the presence of its enforcement officials.

4.2.9 Product Performance Standard Recommendations

(a) Develop and recommend for promulgation (to the appropriate authority) provisions regulating the use and operation of any product, including the specification of maximum allowable sound emission levels of such product.

[(b) Develop and recommend for promulgation (to the appropriate authority) provisions prohibiting the sale of products which do not meet specified sound emission levels, where the sound level of the product is not regulated by the United States Environmental Protection Agency under Section 6 of the Noise Control Act of 1972.]

4.2.10 Noise Sensitive Zone Recommendations

Prepare recommendations, to be approved by (the appropriate authority), for the designation of noise sensitive zones which contain noise sensitive activities. Existing quiet zones shall be considered noise sensitive zones until otherwise designated. Noise sensitive activities include, but are not limited to, operations of schools, libraries open to the public, churches, hospitals, and nursing homes.

4.3 Duties of (Environmental Protection)/(Noise Control) Office(r)

In order to implement and enforce this ordinance effectively, the EPO/NCO shall within a reasonable time after the effective date of the ordinance:

4.3.1 Standards, Testing Methods, and Procedures

Develop, [recommend to the appropriate authority,] and promulgate standards, testing methods and procedures.

4.3.2 Investigate and Pursue Violations

In consonance with Section 4.2.6, Article XI, and other provisions of this ordinance, investigate and pursue possible violations of this ordinance.

4.3.3 Delegation of Authority

Delegate functions, where appropriate under this ordinance, to personnel within the EPO/NCO and to other agencies or departments, [subject to approval of .....].

4.3.4 Truck Routes and Transportation Planning

(a) Study the existing transportation systems, such as truck routes within the community; determine areas with sensitivity to sound and vibration caused by transportation; recommend changes or modifications to transportation systems to minimize the sound and vibration impact on residential areas and noise sensitive zones. (b) Assist in or review the total transportation planning of the community, including planning for new roads and highways, bus routes, airports, and other systems for public transportation, to ensure that the impact of sound and vibration receives adequate consideration.

4.3.5 Capital Improvement Guidelines

Establish noise assessment guidelines for the evaluation of proposed improvements for the capital improvements budget and program pursuant to Section 5.5. These guidelines shall assist in the determination of the relative priority of each improvement in terms of noise impact.

4.3.6 State and Federal Laws and Regulations

(a) Prepare and publish [with the approval of .....] a list of those products manufactured to meet specified noise emission limits under Federal, State, or community law for which "tampering" enforcement will be conducted; and,

(b) Make recommendations for modi-

fications or amendments to this ordinance to ensure consistency with all State and Federal laws and regulations.

[4.3.7] Planning to Achieve Long Term Noise Goals

[Develop a generalized sound level map of the (city/county), a long term plan for achieving quiet in the (city/county), and [with the approval of .....,] integrate this plan into the planning process of the (city/county).]

4.3.8 Administer Grants, Funds and Gifts

Administer noise program grants and other funds and gifts from public and private sources, including the State and Federal governments.

[4.3.9] Periodic Report

[Evaluate and report, every ..... year(s) following the effective date of this ordinance, on the effectiveness of the (city/county) noise control program and make recommendations for any legislative or budgetary changes necessary to improve the program. This report shall be made to the (Noise Control Advisory Board)/(appropriate authority) which may amend it after consultation with the EPO/NCO, and then submit it to the (appropriate authority), for approval.]

ARTICLE V Duties and Responsibilities of Other Departments

5.1 Departmental Actions

All departments and agencies shall, to the fullest extent consistent with other law, carry out their programs in such a manner as to further the policy of this ordinance.

5.2 Departmental Cooperation

All departments and agencies shall cooperate with the EPO/NCO to the fullest extent in enforcing this ordinance.

5.3 Departmental Compliance with Other Laws

All departments and agencies shall comply with Federal and State laws and regulations and the provisions and intent of this ordinance respecting the control and abatement of noise to the same extent that any person is subject to such laws and regulations.

5.4 Project Approval

All departments whose duty it is to review and approve new projects or changes to existing projects, that result, or may result, in the production of sound or vibration shall consult with the EPO/NCO prior to any such approval.

5.5 Contracts

Any written contract, agreement, purchase order, or other instrument whereby the (city/county) is committed to the expenditure of ..... dollars or more in return for goods or services shall contain provisions requiring compliance with this ordinance.

5.6 Low Noise Emission Products

Any product which has been certified by the Administrator of the United States Environmental Protection Agency pursuant to Section 15 of the Noise Control Act as a low noise emission product and which he determines is suitable for use as a substitute, shall be procured by the city/county and used in preference to any other product, provided that such certified product is reasonably available and has a procurement cost which is not more than (125) percentum of the least expensive type of product for which it is certified as a substitute.

5.7 Capital Improvement Program

All departments responsible for a capital improvements budget and program shall prepare an analysis of the noise impact of any proposed improvements in accordance with noise assessment guidelines established by the EPO/NCO pursuant to Section 4.3.5. Proposed capital improvements include land acquisition, building construction, highway improvements, and utilities and fixed equipment installation.

ARTICLE VI Prohibited Acts

6.1 Noise Disturbances Prohibited

No person shall unreasonably make, continue, or cause to be made or continued, any noise disturbance. Non-commercial public speaking and public assembly activities conducted on any public space or public right-of-way shall be exempt from the operation of this Section.

6.2 Specific Prohibitions

The following acts, and the causing thereof, are declared to be in violation of this ordinance:

6.2.1 Radios, Television Sets, Musical Instruments and Similar Devices

Operating, playing or permitting the operation or playing of any radio, television, phonograph, drum, musical instrument, sound amplifier, or

similar device which produces, reproduces, or amplifies sound:

(a) Between the hours of .....p.m. and .....a.m. the following day in such a manner as to create a noise disturbance across a real property boundary or within a noise sensitive zone, [except for activities open to the public and for which a permit has been issued by (appropriate authority) according to criteria set forth in .....];

(b) In such a manner as to create a noise disturbance at 50 feet (15 meters) from such device, when operated in or on a motor vehicle on a public right-of-way or public space, or in a boat on public waters; or,

(c) In such a manner as to create a noise disturbance to any person other than the operator of the device, when operated by any passenger on a common carrier;

(d) This section shall not apply to non-commercial spoken language covered under Section 6.2.2.

6.2.2 Loudspeakers/Public Address Systems

(a) Using or operating for any non-commercial purpose any loudspeaker, public address system, or similar device between the hours of 10:00 p.m. and 8:00 a.m. the following day, such that the sound therefrom creates a noise disturbance across a residential real property boundary or within a noise sensitive zone.

(b) Using or operating for any commercial purpose any loudspeaker, public address system, or similar device (1) such that the sound therefrom creates a noise disturbance across a real property boundary or within a noise sensitive zone; or (2) between the hours of .....p.m. and .....a.m. the following day on a public right-of-way or public space.

6.2.3 Street Sales

Offering for sale or selling anything by shouting or outcry within any residential or commercial area of the (city/county [except by permit issued by (appropriate authority) according to criteria set forth in ..... and/or except between the hours of ....a.m. and ....p.m.].

6.2.4 Animals and Birds

Owning, possessing or harboring any animal or bird which frequently or for continued duration, howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential real property boundary or within a noise sensitive zone. [This provision shall not apply to public zoos.]

6.2.5 Loading and Unloading

Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of .....p.m. and .....a.m. the following day in such a manner as to cause a noise disturbance across a residential real property boundary or within a noise sensitive zone.

6.2.6 Construction

Operating or permitting the operation of any tools or equipment used in construction, drilling, or demolition work:

(a) Between the hours of .....p.m. and .....,a.m. the following day on weekdays or at any time on (Sundays/weekends) or holidays, such that the sound therefrom creates a noise disturbance across a residential real property boundary or within a noise sensitive zone, except for emergency work of public service utilities or by special variance issued pursuant to Section 7.2;

(b) At any other time such that the sound level at or across a real property boundary exceeds an L_{eq} of .... dBA for the daily period of operation.

(c) This section shall not apply to the use of domestic power tools subject to Section 6.2.17.

6.2.7 Vehicle or Motorboat Repairs and Testing

Repairing, rebuilding, modifying, or testing any motor vehicle, motorcycle, or motorboat in such a manner as to cause a noise disturbance across a residential real property boundary or within a noise sensitive zone.

6.2.8 Airport and Aircraft Operations

(a) The EPO/NCO shall consult with the airport proprietor to recommend changes in airport operations to minimize any noise disturbance which the airport owner may have authority to control in its capacity as proprietor.

(b) Nothing in this section shall be construed to prohibit, restrict, penalize, enjoin, or in any manner regulate the movement of aircraft which are in all respects conducted in accordance with, or pursuant to, applicable Federal laws or regulations.

6.2.9 Places of Public Entertainment

Operating, playing or permitting the operation or playing of any radio, television, phonograph, drum, musical instrument, sound amplifier, or

similar device which produces, reproduces, or amplifies sound in any place of public entertainment at a sound level greater than .....dBA as *read* by the slow response on a sound level meter at any point that is normally occupied by a customer, unless a conspicuous and legible sign is located outside such place, near each public entrance, stating "WARNING: SOUND LEVELS WITHIN MAY CAUSE PERMANENT HEARING IMPAIRMENT."

6.2.10 Explosives, Firearms, and Similar Devices

The use or firing of explosives, firearms, or similar devices which create impulsive sound so as to cause a noise disturbance across a real property boundary or on a public space or right-of-way, without first obtaining a special variance issued pursuant to Section 7.2. [Such permit need not be obtained for licensed game-hunting activities on property where such activities are authorized.]

6.2.11 Powered Model Vehicles

Operating or permitting the operation of powered model vehicles so as to create a noise disturbance across a residential real property boundary, in a public space or within a noise sensitive zone between the hours of..... p.m. and .....a.m. the following day. Maximum sound levels in a public space during the permitted period of operation shall conform to those set forth for residential land use in Table I of Section 8.1 and shall be measured at a distance of ..... feet (meters) from any point on the path of the vehicle. Maximum sound levels for residential property and noise sensitive zones, during the permitted period of operation, shall be governed by Section 8.1 and Section 6.2.16, respectively.

6.2.12 Vibration

Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of an individual at or beyond the property of the source if on private property or at ..... feet (meters) from the source if on a public space or public right-of-way. For the purposes of this section, "vibration perception threshold" means the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects.

6.2.13 Stationary Non-Emergency Signaling Devices

(a) Sounding or permitting the sounding of any [electronically-amplified] signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place, [for more than ..... minutes in any hourly period.]

[(b) Devices used in conjunction with places of religious worship shall be exempt from the operation of this provision.]

[(c) Sound sources covered by this provision and not exempted under subsection (b) shall be exempted by (appropriate authority) using criteria set forth in Section 7.2.]

6.2.14 Emergency Signaling Devices

(a) The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing, as provided in Subsection (b).

(b) (i) Testing of a stationary emergency signaling device shall occur at the same time of day each time such a test is performed, but not before .....a.m. or after .....p.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed ..... seconds. (ii) Testing of the complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before .....a.m. or after .....p.m. The time limit specified in subsection (i) shall not apply to such complete system testing.

[[(c) Sounding or permitting the sounding of any exterior burglar [or fire] alarm or any motor vehicle burglar alarm unless such alarm is automatically terminated within .... minutes of activation. [This section shall not be interpreted to apply to .....alarms.]]

6.2.15 Motorboats

Operating or permitting the operation of any motorboat in any lake, river, stream, or other waterway in such manner as to exceed a sound level of .....dBA at 50 feet (15 meters) or the nearest shoreline, whichever distance is less.

6.2.16 Noise Sensitive Zones

(a) Creating or causing the creation

of any sound within any noise sensitive zone designated pursuant to Section 4.2.10, so as to disrupt the activities normally conducted within the zone, provided that conspicuous signs are displayed indicating the presence of the zone; or

(b) Creating or causing the creation of any sound within any noise sensitive zone, designated pursuant to Section 4.2.10, containing a hospital, nursing home, or similar activity, so as to interfere with the functions of such activity or disturb or annoy the patients in the activity, provided that conspicuous signs are displayed indicating the presence of the zone.

4.2.17 Domestic Power Tools

Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, snowblower, or similar device used outdoors in residential areas between the hours of .....p.m. and .....a.m. the following day so as to cause a noise disturbance across a residential real property boundary.

4.2.18 Tampering

The following acts or the causing thereof are prohibited:

(a) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any noise control device or element of design or noise label of any product identified under Section 4.3.6. The EPO/NCO may, by regulation, list those acts which constitute violation of this provision.

[b. The (intentional) moving or rendering inaccurate or inoperative of any sound monitoring instrument or device positioned by or for the EPO/NCO, provided such device or the immediate area is clearly labeled, in accordance with EPO/NCO regulations, to warn of the potential illegality.]

(c) The use of a product, identified under Section 4.3.6, which has had a noise control device or element of design or noise label removed or rendered inoperative, with knowledge that such action has occurred.

ARTICLE VII Exceptions and Variances

7.1 Emergency Exception

The provisions of this ordinance shall not apply to (a) the emission of sound for the purpose of alerting persons to the existence of an emergency, or (b) the emission of sound in the performance of emergency work

7.2 Special Variances

(a) The (EPO/NCO)/(Hearing Board) shall have the authority, consistent with this section, to grant special variances which may be requested pursuant to Sections 6.2.6 (Construction) and 6.2.10 (Explosives, Firearms, and Similar Devices).

(b) Any person seeking a special variance pursuant to this section shall file an application with the (EPO/NCO)/(Hearing Board). The application shall contain information which demonstrates that bringing the source of sound or activity for which the special variance is sought into compliance with this ordinance would constitute an unreasonable hardship on the applicant, on the community, or on other persons. [Notice of an application for a special variance shall be published according to (jurisdictional procedure).] Any individual who claims to be adversely affected by allowance of the special variance may file a statement with the (EPO/NCO)/(Hearing Board) containing any information to support his claim. If the (EPO/NCO)/(Hearing Board) finds that a sufficient controversy exists regarding an application, a public hearing may be held.

(c) In determining whether to grant or deny the application, the (EPO/NCO)/(Hearing Board) shall balance the hardship to the applicant, the community, and other persons of not granting the special variance against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the special variance. Applicants for special variances and persons contesting special variances may be required to submit any information the (EPO/NCO)/(Hearing Board) may reasonably require. In granting or denying an application, the (EPO/NCO)/(Hearing Board) shall place on public file a copy of the decision and the reasons for denying or granting the special variance.

(d) Special variances shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The special variance shall not become effective uiitil all conditions are agreed to by the applicant. Noncompliance with any condition of the special variance shall terminate it and subject the person holding it to those provisions of this ordinance regulating the source of sound or activity for

which the special variance was granted.

(e) Application for extension of time limits specified in special variances or for modification of other substantial conditions shall be treated like applications for initial special variances under subsection (b).

(f) The (EPO/NCO)/(Hearing Board) may issue guidelines [approved by .....] defining the procedures to be followed in applying for a special variance and the criteria to be considered in deciding whether to grant a special variance.

7.3 Variances for Time to Comply

(a) Within ..... days following the effective date of this ordinance, the owner of any commercial or industrial source of sound may apply to the (EPO/NCO)/(Hearing Board) for a variance in time to comply with Section 6.2.12 (Vibration) or Article VIII. The (EPO/NCO)/(Hearing Board) shall have the authority, consistent with this section, to grant a variance, not to exceed ..... days from the effective date of this ordinance.

(b) Any person seeking a variance in time to comply shall file an application with the (EPO/NCO)/(Hearing Board). The application shall contain information which demonstrates that bringing the source of sound or activity for which the variance is sought into compliance with this ordinance prior to the date requested in the application would constitute an unreasonable hardship on the applicant, on the community, or on other persons. [Notice of an application for a variance in time to comply shall be published according to (jurisdictional procedure).] Any individual who claims to be adversely affected by allowance of the variance in time to comply may file a statement with the (EPO/NCO)/(Hearing Board) containing any information to support his claim. If the (EPO/NCO)/(Hearing Board) finds that a sufficient controversy exists regarding an application, a public hearing may be held.

(c) In determining whether to grant or deny the application, the (EPO/NCO)/(Hearing Board) shall balance the hardship to the applicant, the community, and other persons of not granting the variance in time to comply against the adverse impact on health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the variance. Applicants for variances in time to comply and persons contesting variances may be required to submit any information the (EPO/NCO)/(Hearing Board) may reasonably require. In granting or denying an application, the (EPO/NCO)/(Hearing Board) shall place on public file a copy of the decision and the reasons for denying or granting the variance in time to comply.

(d) Variances in time to comply shall be granted to the applicant containing all necessary conditions, including a schedule for achieving compliance. The variance in time to comply shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this ordinance for which the variance was granted.

(e) Application for extension of time limits specified in variances in time to comply or for modification of other substantial conditions shall be treated like applications for initial variances under subsection (b), except that the (EPO/NCO)/(Hearing Board) must find that the need for the extension or modification clearly outweighs any adverse impacts of granting the extension or modification.

(f) The (EPO/NCO)/(Hearing Board) may issue guidelines [approved by .....] defining the procedures to be followed in applying for a variance in time to comply and the criteria to be considered in deciding whether to grant a variance.

7.4 Appeals

Appeals of an adverse decision of the (EPO/NCO)/(Hearing Board) shall be made to the (appropriate court of law). Review of the court shall be (*de novo*)/(limited to whether the decision is supported by substantial evidence)/(as specified by the ....).

ARTICLE VIII Sound Levels by Receiving Land Use

8.1 Maximum Permissible Sound Levels by Receiving Land Use

No person shall operate or cause to be operated on private property any source of sound in such a manner as to create a sound level which exceeds the limits set forth for the receiving land use category in Table I when measured at or within the property boundary of the receiving land use.

TABLE I. SOUND LEVELS BY RECEIVING LAND USE

Receiving Land Use Category	Time	Sound Level Limit, dBA
R-1, R-2, etc.	(A) a.m.— (B) p.m.	L_1
(Residential, Public Space, Open Space, Agricultural or Institutional)	(B) p.m.— (A) a.m.	L_2
C-1, C-2, etc. B-1, B-2, etc. (Commercial or Business)	At All Times	L_3
M-1, M-2, etc. (Industrial)	At All Times	L_4

8.2 Correction for Character of Sound

For any source of sound which emits a pure tone or impulsive sound, the maximum sound level limits set forth in Section 8.1 shall be reduced by .....dBA.

8.3 Exemptions

The provisions of this article shall not apply to:

(a) Activities covered by the following Sections: 6.2.6 (Construction), 6.2.8 (Aircraft and Airport Operations), 6.2.10 (Explosives, Firearms, and Similar Devices), 6.2.13 (Stationary Nonemergency Signaling Devices), 6.2.14 (Emergency Signaling Devices), 6.2.15 (Motorboats), 6.2.17 (Domestic Power Tools), 9.1.3 (Refuse Collection Vehicles), 9.2 (Recreational Motorized Vehicles Operating Off Public Rights-Of-Way);

(b) the unamplified human voice;

(c) interstate railway locomotives and cars; and

[(d) (non-stationary farming equipment)/(all agricultural activities)]

ARTICLE IX Motor Vehicle Maximum Sound Levels

9.1 Motor Vehicles and Motorcycles on Public Rights-of-way

No person shall operate or cause to be operated a public or private motor vehicle or motorcycle on a public right-of-way at any time in such a manner that the sound level emitted by the motor vehicle or motorcycle exceeds the level set forth in Table II.

TABLE II
MOTOR VEHICLE AND MOTORCYCLE SOUND LIMITS
(MEASURED AT 50 FEET OR 15 METERS)

Vehicle Class	Sound Level in dBA: Speed Limit 35 MPH or Less	Speed Limit Over 35 MPH	Stationary Run-up
Motor Carrier Vehicle engaged in interstate commerce of GVWR or GCWR of 10,000 lbs. or more	86	90	88
All other motor vehicles of GVWR or GCWR of 10,000 lbs. or more	A	B	—
Any motorcycle	C	D	—
Any other motor vehicle or any combination of vehicles towed by any motor vehicle	E	F	—

9.1.1 Adequate Mufflers or Sound Dissipative Devices

(a) No person shall operate or cause to be operated any motor vehicle or motorcycle not equipped with a muffler or other sound dissipative device in good working order and in constant operation;

(b) No person shall remove or render inoperative, or cause to be removed or rendered inoperative, other than for purposes of maintenance, repair, or replacement, any muffler or sound dissipative device on a motor vehicle or motorcycle;

(c) The EPO/NCO may, by (guidelines) (regulations subject to approval by .....), list those acts which constitute violation of this section.

9.1.2 Motor Vehicle Horns and Signaling Devices

The following acts and the causing thereof are declared to be in violation of this ordinance:

(a) The sounding of any horn or other auditory signaling device on or

in any motor vehicle on any public right-of-way or public space, except (as a warning of danger)/(as provided in the vehicle code).

[(b) The sounding of any horn or other auditory signaling device which produces a sound level in excess of ..... dBA at ..... feet (meters).]

9.1.3 Refuse Collection Vehicles

No person shall:

(a) On or after (2 years) following the effective date of this ordinance, operate or permit the operation of the compacting mechanism of any motor vehicle which compacts refuse and which creates, during the compacting cycle, a sound level in excess of .... dBA when measured at ..... feet (meters) from any point on the vehicle; or

(b) Operate or permit the operation of the compacting mechanism of any motor vehicle which compacts refuse, between the hours of ..... p.m. and ..... a.m. the following day in a residential area or noise sensitive zone; or

(c) Collect refuse with a refuse collection vehicle between the hours of ..... p.m. and ..... a.m. the following day in a residential area or noise sensitive zone.

9.1.4 Standing Motor Vehicles

No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of ten thousand (10,000) pounds, or any auxiliary equipment attached to such a vehicle, for a period longer than ..... minutes in any hour while the vehicle is stationary, for reasons other than traffic congestion, on a public right-of-way or public space within 150 feet (46 meters) of a residential area or designated noise sensitive zone, between the hours of ..... p.m. and ..... a.m. the following day.

9.2 Recreation Motorized Vehicles Operating Off Public Rights-of-way

(a) [Except as permitted in subsection (b) or (c),] no person shall operate or cause to be operated any recreational motorized vehicle off a public right-of-way in such a manner that the sound level emitted therefrom exceeds the limits set forth in Table III at a distance of 50 feet (15 meters) or more from the path of the vehicle when operated on a public space or at or across the boundary of private property when operated on private property. This section shall apply to all recreational motorized vehicles, whether or not duly licensed and registered, including, but not limited to, commercial or non-commercial racing vehicles, motorcycles, go-carts, snowmobiles, amphibious craft, campers and dune buggies, but not including motorboats.

[(b) Permits for motor vehicle racing events may be obtained from (appropriate authority) according to procedures and criteria set forth in .....]

[(c) Special variances for.....may be obtained from (appropriate authority) according to procedure and criteria set forth in .....]

TABLE III.
RECREATIONAL MOTORIZED VEHICLE SOUND LIMITS (MEASURED AT 50 FEET OR 15 METERS)

Vehicle Type	Sound Level, dBA
Snowmobile	A
Motorcycle	B
Any Other Vehicle	C

ARTICLE X Land Use

10.1 General Provisions

(a) No owner of any land shall commence or cause to be commenced construction of any structure covered by Sections 10.2, 10.3, 10.5 or 10.6 unless approved by the EPO/NCO as provided in this Article.

(b) Any application for approval required by this Article shall be submitted in writing to the EPO/NCO, with a copy to the (Buildings Department)/(Appropriate Department), by the owner of the land on which the structure is proposed to be constructed and shall contain the following information:

(1) identification of the land on which the construction is proposed;

(2) the section of this Article under which approval is requested;

(3) information and data supporting the claim that the appropriate requirements will be met; and,

(4) any other information which the EPO/NCO may reasonably require.

10.2 Construction Restrictions for Habitable and Institutional Structures

(a) Except as provided in subsection (c), no new single family residential structure shall be approved for construction (excluding substantial re-

pair or alteration) if the exterior day-night average sound level (L_{dn}) anywhere on the site of the proposed structure is projected to be in excess of ..... dBA within ..... years following the estimated completion date of the structure.

(b) Except as provided in subsection (c), no new multiple-family residence, dormitory, mobile home park, transient lodging, school, hospital, nursing home or similar structure, or substantial modification of such existing structure, shall be approved for construction if the exterior day-night average sound level (L_{dn}) anywhere on the site of the proposed structure is projected to be in excess of..... dBA within.....years following the estimated completion date of the structure or modification.

(c) Construction otherwise prohibited pursuant to subsections (a) or (b) shall be allowed if the exterior day-night average sound level (L_{dn}) on the site of the proposed structure is projected not to be in excess of ..... dBA for ..... years following construction, provided that there is incorporated into the design and construction of the structure such sound attenuation measures as are necessary to reduce the maximum interior day-night average sound level (L_{dn}) to ..... dBA. Subsections (a) and (b) shall not apply to any site development plan or its equivalent on which four or fewer dwelling units are to be constructed.

(d) Prior to issuance of any occupancy permit for any structure regulated pursuant to subsection (c), the owner of the structure shall submit for EPO/NCO review the report of an independent testing agency [approved by the EPO/NCO] certifying that sound attenuation measures have been properly incorporated into the design and construction of the structure and that the interior L_{dn} meets the criterion specified in subsection (c). Such report shall contain the results of simultaneous measurements of the exterior and interior day-night average sound levels for a representative sample of locations.

(e) The EPO/NCO may conduct such inspections and measurements as are necessary to ensure the accuracy of any report submitted pursuant to subsection (d) and to ascertain compliance with this section. These may include on-site inspections by a certified independent testing agency during specified periods of construction.

10.3 Recreational Area Restrictions

(a) Except as provided in subsections (b), (c), and (d) no land shall be designated or approved for construction or use as a public or private exterior recreational area, including, but not limited to, childrens' playgrounds, outdoor theaters and amphitheaters, picnic grounds, tennis courts and swimming pools, if the exterior day-night average sound level (L_{dn}) anywhere on the site of the proposed recreational area is projected to be in the excess of ..... dBA within ..... years following the construction or designation of the site.

(b) This section shall not apply to the designation or approval of any green belt or open space in any area in which the L_{dn} exceeds the level specified in subsection (a) regardless of whether such green belt or open space is open to public use, provided that no recreational improvement or facility is constructed thereon.

(c) Designation or approval of exterior recreational areas otherwise prohibited under subsection (a) shall be allowed if the L_{dn} specified in that subsection can be achieved by appropriate means of sound attenuation, such as berms, barriers, or buildings, at the perimeter of or elsewhere on the site.

(d) No new interior recreational facility, including, but not limited to, gymnasiums, ice or roller skating rinks, indoor swimming pools, and tennis courts, shall be approved for construciton if the exterior day-night average sound level anywhere on the site is projected to be in excess of ..... dBA within ..... years following the estimated date of completion of the structure unless there is incorporated into the design and construction of the structure such sound attenuation measures as are necessary to reduce the maximum interior day-night average sound level (L_{dn}) to ..... dBA.

10.4 Site Study Requirement

(a) If the EPO/NCO has reason to believe that a full report is necessary to determine whether a proposed project is prohibited under Section 10.1, such report shall be made by the applicant prior to approval of any subdivision, zoning, or building permit application. (If a full report has not been made and the applicant believes the project was wrongfully prohibited under Section 10.1, he may file a full report within ..... days of the EPO/NCO decision and re-

quest reconsideration by the EPO/NCO). A full report shall contain the following information and any other information which the EPO/NCO may reasonably require:

(1) the existing day-night average sound levels (L_{dn}), including identification of the major sources of sound, for a representative sample of locations, measured in accordance with guidelines published by the EPO/NCO;

(2) any projected or proposed new or expanded sources of sound which may affect exposure of the site during ..... years following completion of the project and the projected future L_{dn} at the site resulting from these new or expanded sources; and,

(3) where applicable, plans for sound attenuation measures on the site and/or of the structure proposed to be built and the amount of sound attenuation anticipated as a result of these measures.

(b) In determining whether an applicant should be required to submit a full report pursuant to subsection (a), the EPO/NCO shall consider Circular 1390.2 (Noise Abatement and Control) and other publications of the U.S. Department of Housing and Urban Development.

10.5 Commercial and Industrial Construction

No new or substantially modified structure on land used or zoned as commercial or industrial shall be approved for construction unless the owner or developer of such land has demonstrated, in accordance with guidelines published by the EPO/NCO, that the completed structure and the activities associated with and on the same property as the structure, will comply with the provisions of Article VIII at the time for initial full-scale operation of such activities.

10.6 Sound From New Transportation Systems in Residential Areas or Noise Sensitive Zones

No plans for construction of new transportation systems or expansion of the capacity of existing transportation systems will be approved for location in or near residential areas or noise sensitive zones, regardless of the source of project funds, unless such plan includes all control measures necessary to ensure that the projected day-night average sound level (L_{dn}) due to the operation of the transportation system does not exceed ..... dBA at any point on residential property within ..... years after the expected completion of the project.

10.7 Equivalent Measurement Systems

For the purposes of this Article, all measurements and designations of sound levels shall be expressed in day-night average sound levels (L_{dn}) or in any other equivalent measurement system the EPO/NCO may reasonably approve.

10.8 Zoning Ordinance or Comprehensive Plan

(a) No proposed zoning ordinance or comprehensive plan shall be approved unless such plan includes a sound analysis which (1) identifies existing and projected noise sources and associated sound levels for ..... years in and around the area under consideration, and (2) ensures usage of adequate measures to avoid violation of any provision of this ordinance.

(b) No zoning change application shall be approved unless the site feasibility study submitted, as required by the (Zoning Board of Appeals)/(Planning Commission), contains an analysis which shows (1) the impact of existing and projected noise sources for ..... years on the intended use, and (2) the projected noise impact of the intended use, when completed, on surrounding areas. Such sites study shall ensure the use of adequate measures to avoid violation of any provision of this ordinance.

10.9 Truth in Selling or Renting

No person shall sell or rent, or cause to be sold or rented, any structure or property to be used for human habitation, where the structure or property is exposed to sound levels regularly in excess of (an L_{dn} in any hour of ..... dBA)/(an L_{dn} of ..... dBA), without making full written disclosure to all potential buyers or renters of the existence of such sound levels and of the nature of the sources. The EPO/NCO shall develop a standard format for written disclosures, which shall include information on the effects of noise on human health and welfare.

10.10 Appeals

Any applicant may appeal an adverse decision by the EPO/NCO under this Article, in the (appropriate court of law), on the grounds that the EPO/NCO disapproval was arbitrary, capricious, or unreasonable.

ARTICLE XI Enforcement

11.1 Penalties

(a) Any person who violates any provision of this ordinance shall be fined for each *offense* not more than ..... dollars.

(b) Any person who willfully or knowingly violates any provision of this ordinance shall be fined for each offense a sum of not less than .... dollars and not more than .... dollars.

(c) Each day of violation of any provision of this ordinance shall constitute a separate offense.

[11.2 *Abatement Orders*

(a) Except as provided in subsection (b), *in lieu of issuing* a notice of violation as provided for in Section 11.3, the EPO/NCO or other (agency/official) responsible for enforcement of any provision of this ordinance may issue an order requiring abatement of any source of sound or vibration alleged to be in violation of this ordinance within a reasonable time period and according to guidelines [to be approved by appropriate authority] which the EPO/NCO may prescribe.

(b) An abatement order shall not be issued: (1) for any violation covered by Section 11.1 (b); (2) for any violation of .....; or, (3) when the EPO/NCO or other enforcement (agency) / (official) has reason to believe that there will not be compliance with the abatement order.]

11.3 Notice of Violation

[Except where a person is acting in good faith to comply with an abatement order issued pursuant to Section 11.2 (a)], violation of any provision of this ordinance shall be cause for a (notice of violation)/(summons)/(complaint)/(information or indictment) to be issued by the EPO/NCO or other responsible enforcement (agency official) according to procedures (which the EPO/NCO may prescribe)/(set forth in .....).

11.4 Immediate Threats to Health and Welfare

(a) The EPO/NCO shall order an immediate halt to any sound which exposes any person, except those excluded pursuant to subsection (b), to continuous sound levels in excess of those shown in Table IV or to impulsive sound levels in excess of those shown in Table V. Within ..... days following issuance of such an order, the EPO/NCO shall apply to the appropriate court for an injunction to replace the order.

(b) No order pursuant to subsection (a) shall be issued if the only persons exposed to sound levels in excess of those listed in Tables IV and V are exposed as a result of (1) trespass; (2) invitation upon private property by the person causing or permitting the sound; (3) employment by the person or a contractor of the person causing or permitting the sound.

(c) Any person subject to an order issued pursuant to subsection (a) shall comply with such order until (1) the sound is brought into compliance with the order, as determined by the EPO/NCO; or (2) a judicial order has superseded the EPO/NCO order.

(d) Any person who violates an order issued pursuant to this section shall, for each day of violation, be fined not less than ..... dollars nor more than ..... dollars.

TABLE IV
CONTINUOUS SOUND LEVELS WHICH POSE AN IMMEDIATE THREAT TO HEALTH AND WELFARE
(Measured at 50 Feet or 15 Meters)*

Sound Level Limit—(dBA)	Duration
90	24 hours
93	12 hours
96	6 hours
99	3 hours
102	1.5 hours
105	45 minutes
108	22 minutes

* Use equal energy time-intensity trade-off if level varies, find energy equivalent over 24 hours.

TABLE V
IMPULSIVE SOUND LEVELS WHICH POSE AN IMMEDIATE THREAT TO HEALTH AND WELFARE
(Measured at 50 Feet or 15 Meters)

Sound Level Limit (dB)	Number of Repetitions per 24 Hour Period
145	1
135	10
125	100

11.5 Citizen Suits

(a) Any person, other than persons responsible for enforcement of this ordinance, may commence a civil action on his own behalf (1) against any person who is alleged to be in violation of any provision of this ordinance set forth in Table VI below or (2) against the EPO/NCO where there is alleged a failure of the EPO/NCO to perform any act under this ordinance which is not discretionary. The ..... court shall have jurisdiction, without regard to the amount in controversy, to grant such relief as it deems necessary.

(b) No action may be commenced

(1) under subsection (a)(1)

(A) prior to ..... days after the plaintiff has given notice of the alleged violation to the EPO/NCO [and to the alleged violator] of such violation, or

(B) if the EPO/NCO has commenced and is diligently prosecuting an action against the alleged violator with respect to such violation, [but in such action any affected person may intervene as a matter of right], or

(2) under subsection (a)(2), prior to ..... days after the plaintiff has given notice to the EPO/NCO that he will commence such action. Notice under this subsection shall be given in a manner prescribed by the EPO/NCO.

(c) In any action under this section, the EPO/NCO, if not a party, may intervene as a matter of right.

(d) The court, in issuing any final order in any action brought pursuant to subsection (a), may at its discretion award the costs of litigation to any party.

TABLE VI
Provisions Under Which Civil Actions May Be Commenced

6.2.1(a)	(Radios, Television Sets, Musical Instruments and Similar Devices)
6.2.2	(Loudspeakers/Public Address Systems)
6.2.3	(Street Sales)
6.2.5	(Loading and Unloading)
6.2.6	(Construction)
6.2.7	(Vehicle or Motorboat Repairs and Testing)
6.2.9	(Places of Public Entertainment)
6.2.10	(Explosives, Firearms, and Similar Devices)
6.2.11	(Powered Model Vehicles)
6.2.12	(Vibration)
[6.2.13]	(Stationary, Non-Emergency Signaling Devices)
6.2.14	(Emergency Signaling Devices)
6.2.15	(Motorboats)
6.2.17	(Domestic Power Tools)
6.2.18	(Tampering)
8.1	(Maximum Permissible Sound Levels by Receiving Land Use)
9.1.3	(Refuse Collection Vehicles)
9.1.4	(Standing Motor Vehicles)
9.2(b)	(Motor Vehicle Racing Events)
9.2.1(b)	(Motor Vehicle Horns and Signaling Devices)
10.9	(Truth-in Selling or Renting)

11.6 Other Remedies

No provision of this ordinance shall be construed to impair any common law or statutory cause of action, or legal remedy therefrom, of any person for injury or damage arising from any violation of this ordinance or from other law.

11.7 Severability

If any provision of this ordinance is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of the ordinance shall not be invalidated.

11.8 Effective Date

This law/ordinance shall take the effect on .....

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United States
Environmental Protection
Agency

Washington, D.C. 20460
December 1978

xxxEPA

THE NOISE CONTROL ACT OF 1972

as amended by

THE QUIET COMMUNITIES ACT OF 1978

The Noise Control Act of 1972, Public Law 92-574
(H.R. 11021, 92nd Congress), October 27, 1972

The Quiet Communities Act of 1978, Public Law 95-609
(S. 3083, 95th Congress), November 8, 1978

which contains amendments to the
Noise Control Act of 1972 and a requirement
for an airport noise study.

These amendments are shown in italics.

An Act

To control the emission of noise detrimental to the human environment, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

Section 1. This Act may be cited as the "Noise Control Act of 1972," *as amended by the "Quiet Communities Act of 1978."*

FINDINGS AND POLICY

Sec. 2. (a) The Congress finds–

(1) that inadequately controlled noise presents a growing danger to the health and welfare of the Nation's population, particularly in urban areas;

(2) that the major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products in commerce; and

(3) that, while primary responsibility for control of noise rests with State and local governments, Federal action is essential to deal with major noise sources in commerce, control of which requires national uniformity of treatment.

(b) The Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare. To that end, it is the purpose of this Act to establish a means for effective coordination of Federal research and activities in noise control, to authorize the establishment of Federal noise emission standards for products distributed in commerce, and to provide information to the public respecting the noise emission and noise reduction characteristics of such products.

DEFINITIONS

Sec. 3. For purposes of this Act:

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "person" means an individual, corporation, partnership, or association, and (except as provided in sections 11(e) and 12(a)) includes any officer, employee, department, agency, or instrumentality of the United States, a State, or any political subdivision of a State.

(3) The term "product" means any manufactured article or goods or component thereof; except that such term does not include–

(A) any aircraft, aircraft engine, propeller, or appliance, as such terms are defined in section 101 of the Federal Aviation Act of 1958; or

(B) (i) any military weapons or equipment which are designed for combat use; (ii) any rockets or equipment which are designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration; or (iii) to the extent provided by regulations of the Administrator, any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

(4) The term "ultimate purchaser" means the first person who in good faith purchases a product for purposes other than resale.

(5) The term "new product" means (A) a product, the equitable or legal title of which has never been transferred to an ultimate purchaser, or (B) a product which is imported or offered for importation into the United States and which is manufactured after the effective date of a regulation under section 6 or section 8 which would have been applicable to such product had it been manufactured in the United States.

(6) The term "manufacturer" means any person engaged in the manufacturing or assembling of new products, or the importing of new products for resale, or who acts for, and is controlled by, any such person in connection with the distribution of such products.

(7) The term "commerce" means trade, traffic, commerce, or transportation–

(A) between a place in a State and any place outside thereof, or

(B) which affects trade, traffic, commerce, or transportation described in subparagraph (A).

(8) The term "distribute in commerce" means sell in, offer for sale in, or introduce or deliver for introduction into, commerce.

(9) The term "State" includes the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Trust Territory of the Pacific Islands.

(10) The term "Federal agency" means an executive agency (as defined in section 105 of title 5, United States Code) and includes the United States Postal Service.

(11) The term "environmental noise" means the intensity, duration, and the character of sounds from all sources.

FEDERAL PROGRAMS

Sec. 4. (a) The Congress authorizes and directs that Federal agencies shall, to the fullest extent consistent with their authority under Federal laws administered by them, carry out the programs within their control in such a manner as to further the policy declared in section 2(b).

(b) Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government–

(1) having jurisdiction over any property or facility, or

(2) engaged in any activity resulting, or which may result, in the emission of noise,

shall comply with Federal, State, interstate, and local requirements respecting control and abatement of environmental noise to the same extent that any person is subject to such requirements. The President may exempt any single activity or facility, including noise emission sources or classes thereof, of any department, agency, or instrumentality in the executive branch from compliance with any such requirement if he determines it to be in the paramount interest of the United States to do so; except that no exemption, other than for those products referred to in section 3(3)(B) of this Act, may be granted from the requirements of sections 6, 17, and 18 of this Act. No such exemption shall be granted due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation. Any exemption shall be for a period not in excess of one year, but additional exemptions may be granted for periods of not to exceed one year upon the President's making a new determination. The President shall report each January to the Congress all exemptions from the requirements of this section granted during the preceding calendar year, together with his reason for granting such exemption.

(c) (1) The Administrator shall coordinate the programs of all Federal agencies relating to noise research and noise control. Each Federal agency shall, upon request, furnish to the Administrator such information as he may reasonably require to determine the nature, scope, and results of the noise-research and noise-control programs of the agency.

(2) Each Federal agency shall consult with the Administrator in prescribing standards or regulations respecting noise. If at any time the Administrator has reason to believe that a standard or regulation, or any proposed standard or regulation, of any Federal agency respecting noise does not protect the public health and welfare to the extent he believes to be required and feasible, he may request such agency to review and report to him on the advisability of revising such standard or regulation to provide such protection. Any such request may be published in the Federal Register and shall be accompanied by a detailed statement of the information on which it is based. Such agency shall complete the requested review and report to the Administrator within such time as the Administrator specifies in the request, but such time specified may not be less than ninety days from the date the request was made. The report shall be published in the Federal Register and shall be accompanied by a detailed statement of the findings and conclusions of the agency respecting the revision of its standard or regulation. With respect to the Federal Aviation Administration, section 611 of the Federal Aviation Act of 1958 (as amended by section 7 of this Act) shall apply in lieu of this paragraph.

(3) On the basis of regular consultation with appropriate Federal agencies, the Administrator shall compile and publish, from time to time, a report on the status and progress of Federal activities relating to noise research and noise control. This report shall describe the noise-control programs of each Federal agency and assess the contributions of those programs to the Federal Government's overall efforts to control noise.

IDENTIFICATION OF MAJOR NOISE SOURCES; NOISE CRITERIA AND CONTROL TECHNOLOGY

Sec. 5. (a) (1) The Administrator shall, after consultation with appropriate Federal agencies and within nine months of the date of the enactment of this Act, develop and publish criteria with respect to noise. Such criteria shall reflect the scientific knowledge most useful in indicating the kind and extent of all identifiable effects on the public health or welfare which may be expected from differing quantities and qualities of noise.

(2) The Administrator shall, after consultation with appropriate Federal agencies and within twelve months of the date of the enactment of this Act, publish information on the levels of environmental noise, the attainment and maintenance of which in defined areas under various conditions are requisite to protect the public health and welfare with an adequate margin of safety.

(b) The Administrator shall, after consultation with appropriate Federal agencies, compile and publish a report or series of reports (1) identifying products (or classes of products) which in his judgment are major sources of noise, and (2) giving information on techniques for control of noise from such products, including available data on the technology, costs, and alternative methods of noise control. The first such report shall be published not later than eighteen months after the date of enactment of this Act.

(c) The Administrator shall from time to time review and, as appropriate, revise or supplement any criteria or reports published under this section.

(d) Any report (or revision thereof) under subsection (b) (1) identifying major noise sources shall be published in the Federal Register. The publication or revision under this section of any criteria or information on control techniques shall be announced in the Federal Register, and copies shall be made

NOISE EMISSION STANDARDS FOR PRODUCTS DISTRIBUTED IN COMMERCE

Sec. 6. (a) (1) The Administrator shall publish proposed regulations, meeting the requirements of subsection (c), for each product–

(A) which is identified (or is part of a class identified) in any report published under section 5 (b) (1) as a major source of noise,

(B) for which, in his judgment, noise emission standards are feasible, and

(C) which falls in one of the following categories:

(i) Construction equipment.

(ii) Transportation equipment (including recreational vehicles and related equipment).

(iii) Any motor or engine (including any equipment of which an engine or motor is an integral part).

(iv) Electrical or electronic equipment.

(2) (A) Initial proposed regulations under paragraph (1) shall be published not later than eighteen months after the date of enactment of this Act, and shall apply to any product described in paragraph (1) which is identified (or is a part of a class identified) as a major source of noise in any report published under section 5 (b) (1) on or before the date of publication of such initial proposed regulations.

(B) In the case of any product described in paragraph (1) which is identified (or is part of a class identified) as a major source of noise in a report published under section 5 (b) (1) after publication of the initial proposed regulations under subparagraph (A) of this paragraph, regulations under paragraph (1) for such product shall be proposed and published by the Administrator not later than eighteen months after such report is published.

(3) After proposed regulations respecting a product have been published under paragraph (2), the Administrator shall, unless in his judgment noise emission standards are not feasible for such product, prescribe regulations, meeting the requirements of subsection (c), for such product–

(A) not earlier than six months after publication of such proposed regulations, and

(B) not later than–

(i) twenty-four months after the date of enactment of this Act, in the case of a product subject to proposed regulations published under paragraph (2) (A), or

(ii) in the case of any other product, twenty-four months after the publication of the report under section 5 (b) (1) identifying it (or a class of products of which it is a part) as a major source of noise.

(b) The Administrator may publish proposed regulations, meeting the requirements of subsection (c), for any product for which he is not required by subsection (a) to prescribe regulations but for which, in his judgment, noise emission standards are feasible and are requisite to protect the public health and welfare. Not earlier than six months after the date of publication of such proposed regulations respecting such product, he may prescribe regulations, meeting the requirements of subsection (c), for such product.

(c) (1) Any regulation prescribed under subsection (a) or (b) of this section (and any revision thereof) respecting a product shall include a noise emission standard which shall set limits on noise emissions from such product and shall be a standard which in the Administrator's judgment, based on criteria published under section 5, is requisite to protect the public health and welfare, taking into account the magnitude and conditions of use of such product (alone or in combination with other noise sources), the degree of noise reduction achievable through the application of the best available technology, and the cost of compliance. In establishing such a standard for any product, the

Administrator shall give appropriate consideration to standards under other laws designed to safeguard the health and welfare of persons, including any standards under the National Traffic and Motor Vehicle Safety Act of 1966, the Clean Air Act, and the Federal Water Pollution Control Act. Any such noise emission standards shall be a performance standard. In addition, any regulation under subsection (a) or (b) (and any revision thereof) may contain testing procedures necessary to assure compliance with the emission standard in such regulation, and may contain provisions respecting instructions of the manufacturer for the maintenance, use, or repair of the product.

(2) After publication of any proposed regulations under this section, the Administrator shall allow interested persons an opportunity to participate in rulemaking in accordance with the first sentence of section 553 (c) of title 5, United States Code.

(3) The Administrator may revise any regulation prescribed by him under this section by (A) publication of proposed revised regulations, and (B) the promulgation, not earlier than six months after the date of such publication, of regulations making the revision; except that a revision which makes only technical or clerical corrections in a regulation under this section may be promulgated earlier than six months after such date if the Administrator finds that such earlier promulgation is in the public interest.

(d) (1) On and after the effective date of any regulation prescribed under subsection (a) or (b) of this section, the manufacturer of each new product to which such regulation applies shall warrant to the ultimate purchaser and each subsequent purchaser that such product is designed, built, and equipped so as to conform at the time of sale with such regulation.

(2) Any cost obligation of any dealer incurred as a result of any requirement imposed by paragraph (1) of this subsection shall be borne by the manufacturer. The transfer of any such cost obligation from a manufacturer to any dealer through franchise or other agreement is prohibited.

(3) If a manufacturer includes in any advertisement a statement respecting the cost or value of noise emission control devices or systems, such manufacturer shall set forth in such statement the cost or value attributed to such devices or systems by the Secretary of Labor (through the Bureau of Labor Statistics). The Secretary of Labor, and his representatives, shall have the same access for this purpose to the books, documents, papers, and records of a manufacturer as the Comptroller General has to those of a recipient of assistance for purposes of section 311 of the Clean Air Act.

(e) (1) No State or political subdivision thereof may adopt or enforce—

(A) with respect to any new product for which a regulation has been prescribed by the Administrator under this section, any law or regulation which sets a limit on noise emissions from such new product and which is not identical to such regulation of the Administrator; or

(B) with respect to any component incorporated into such new product by the manufacturer of such product, any law or regulation setting a limit on noise emissions from such component when so incorporated.

(2) Subject to sections 17 and 18, nothing in this section precludes or denies the right of any State or political subdivision thereof to establish and enforce controls on environmental noise (or one or more sources thereof) through the licensing, regulation, or restriction of the use, operation, or movement of any product or combination of products.

(f) *At any time after the promulgation of regulations respecting a product under this section, a State or political subdivision thereof may petition the Administrator to revise such standard on the grounds that a more stringent standard under subsection (c) of this section is necessary to protect the public health and welfare. The Administration shall publish notice of receipt of such petition in the Federal Register and shall within ninety days of receipt of such*

petition respond by (1) publication of proposed revised regulations in accordance with subsection (c) (3) of this section, or (2) publication in the Federal Register of a decision not to publish such proposed revised regulations at that time, together with a detailed explanation for such decision.

AIRCRAFT NOISE STANDARDS

Sec. 7. (a) The Administrator, after consultation with appropriate Federal, State, and local agencies and interested persons, shall conduct a study of the (1) adequacy of Federal Aviation Administration flight and operational noise controls; (2) adequacy of noise emission standards on new and existing aircraft, together with recommendations on the retrofitting and phaseout of existing aircraft; (3) implications of identifying and achieving levels of cumulative noise exposure around airports; and (4) additional measures available to airport operators and local governments to control aircraft noise. He shall report on such study to the Committee on Interstate and Foreign Commerce of the House of Representatives and the Committees on Commerce and Public Works of the Senate within nine months after the date of the enactment of this Act.

(b) Section 611 of the Federal Aviation Act of 1958 (49 U.S.C. 1431) is amended to read as follows:

"CONTROL AND ABATEMENT OF AIRCRAFT NOISE AND SONIC BOOM

"Sec. 611. (a) For purposes of this section:

" (1) The term 'FAA' means Administrator of the Federal Aviation Administration.

" (2) The term 'EPA' means the Administrator of the Environmental Protection Agency.

" (b) (1) In order to afford present and future relief and protection to the public health and welfare from aircraft noise and sonic boom, the FAA, after consultation with the Secretary of Transportation and with EPA, shall prescribe and amend standards for the measurement of aircraft noise and sonic boom and shall prescribe and amend such regulations as the FAA may find necessary to provide for the control and abatement of aircraft noise and sonic boom, including the application of such standards and regulations in the issuance, amendment, modification, suspension, or revocation of any certificate authorized by this title. No exemption with respect to any standard or regulation under this section may be granted under any provision of this Act unless the FAA shall have consulted with EPA before such exemption is granted, except that if the FAA determines that safety in air commerce or air transportation requires that such an exemption be granted before EPA can be consulted, the FAA shall consult with EPA as soon as practicable after the exemption is granted.

" (2) The FAA shall not issue an original type certificate under section 603 (a) of this Act for any aircraft for which substantial noise abatement can be achieved by prescribing standards and regulations in accordance with this section, unless he shall have prescribed standards and regulations in accordance with this section which apply to such aircraft and which protect the public from aircraft noise and sonic boom, consistent with the considerations listed in subsection (d).

" (c) (1) Not earlier than the date of submission of the report required by section 7 (a) of the Noise Control Act of 1972, EPA shall submit to the FAA proposed regulations to provide such control and abatement of aircraft noise and sonic boom (including control and abatement through the exercise of any of the FAA's regulatory authority over air commerce or transportation or over aircraft or airport operations) as EPA determines is necessary to protect the

public health and welfare. The FAA shall consider such proposed regulations submitted by EPA under this paragraph and shall, within thirty days of the date of its submission to the FAA, publish the proposed regulations in a notice of proposed rulemaking. Within sixty days after such publication, the FAA shall commence a hearing at which interested persons shall be afforded an opportunity for oral (as well as written) presentations of data, views, and arguments. Within *ninety days* after the conclusion of such hearing and after consultation with EPA, the FAA shall—

" (A) in accordance with subsection (b), prescribe regulations (i) substantially as they were submitted by EPA, or (ii) which are a modification of the proposed regulations submitted by EPA, or

" (B) publish in the Federal Register a notice that it is not prescribing any regulation in response to EPA's submission of proposed regulations, together with a detailed explanation providing reasons for the decision not to prescribe such regulations *and a detailed analysis of and response to all documentation or other information submitted by the Environmental Protection Agency with such proposed regulations.*

" (2) If EPA has reason to believe that the FAA's action with respect to a regulation proposed by EPA under paragraph (1) (A) (ii) or (1) (B) of this subsection does not protect the public health and welfare from aircraft noise or sonic boom, consistent with the considerations listed in subsection (d) of this section, EPA shall consult with the FAA and may request the FAA to review, and report to EPA on, the advisability of prescribing the regulation originally proposed by EPA. Any such request shall be published in the Federal Register and shall include a detailed statement of the information on which it is based. The FAA shall complete the review requested and shall report to EPA within such time as EPA specifies in the request, but such time specified may not be less than ninety days from the date the request was made. The FAA's report shall be accompanied by a detailed statement of the FAA's findings and the reasons for the FAA's conclusions; shall identify any statement filed pursuant to section 102 (2) (C) of the National Environmental Policy Act of 1969 with respect to such action of the FAA under paragraph (1) of this subsection; and shall specify whether (and where) such statements are available for public inspection. The FAA's report shall be published in the Federal Register, except in a case in which EPA's request proposed specific action to be taken by the FAA, and the FAA's report indicates such action will be taken.

" (3) If, in the case of a matter described in paragraph (2) of this subsection with respect to which no statement is required to be filed under such section 102 (2) (C), the report of the FAA indicates that the proposed regulation originally submitted by EPA should not be made, then EPA may request the FAA to file a supplemental report, which shall be published in the Federal Register within such a period as EPA may specify (but such time specified shall not be less than ninety days from the date the request was made), and which shall contain a comparison of (A) the environmental effects (including those which cannot be avoided) of the action actually taken by the FAA in response to EPA's proposed regulations, and (B) EPA's proposed regulations.

" (d) In prescribing and amending standards and regulations under this section, the FAA shall—

" (1) consider relevant available data relating to aircraft noise and sonic boom, including the results of research, development, testing, and evaluation activities conducted pursuant to this Act and the Department of Transportation Act;

" (2) consult with such Federal, State, and interstate agencies as he deems appropriate;

"(3) consider whether any proposed standard or regulation is consistent with the highest degree of safety in air commerce or air transportation in the public interest;

"(4) consider whether any proposed standard or regulation is economically reasonable, technologically practicable, and appropriate for the particular type of aircraft, aircraft engine, appliance, or certificate to which it will apply; and

"(5) consider the extent to which such standard or regulation will contribute to carrying out the purposes of this section.

"(e) In any action to amend, modify, suspend, or revoke a certificate in which violation of aircraft noise or sonic boom standards or regulations is at issue, the certificate holder shall have the same notice and appeal rights as are contained in section 609, and in any appeal to the National Transportation Safety Board, the Board may amend, modify, or reverse the order of the FAA if it finds that control or abatement of aircraft noise or sonic boom and the public health and welfare do not require the affirmation of such order, or that such order is not consistent with safety in air commerce or air transportation."

(c) All—

(1) standards, rules, and regulations prescribed under section 611 of the Federal Aviation Act of 1958, and

(2) exemptions, granted under any provision of the Federal Aviation Act of 1958, with respect to such standards, rules, and regulations,

which are in effect on the date of the enactment of this Act, shall continue in effect according to their terms until modified, terminated, superseded, set aside, or repealed by the Administrator of the Federal Aviation Administration in the exercise of any authority vested in him, by a court of competent jurisdiction, or by operation of law.

LABELING

Sec. 8. (a) The Administrator shall by regulation designate any product (or class thereof)—

(1) which emits noise capable of adversely affecting the public health or welfare; or

(2) which is sold wholly or in part on the basis of its effectiveness in reducing noise.

(b) For each product (or class thereof) designated under subsection (a) the Administrator shall by regulation require that notice be given to the prospective user of the level of the noise the product emits, or of its effectiveness in reducing noise, as the case may be. Such regulations shall specify (1) whether such notice shall be affixed to the product or to the outside of its container, or to both, at the time of its sale to the ultimate purchaser or whether such notice shall be given to the prospective user in some other manner, (2) the form of the notice, and (3) the methods and units of measurement to be used. Sections 6 (c) (2) shall apply to the prescribing of any regulation under this section.

(c) This section does not prevent any State or political subdivision thereof from regulating product labelling or information respecting products in any way not in conflict with regulations prescribed by the Administrator under this section.

IMPORTS

Sec. 9. The Secretary of the Treasury shall, in consultation with the Administrator, issue regulations to carry out the provisions of this Act with respect to new products imported or offered for importation.

PROHIBITED ACTS

Sec. 10. (a) Except as otherwise provided in subsection (b), the following acts or the causing thereof are prohibited:

(1) In the case of a manufacturer, to distribute in commerce any new product manufactured after the effective date of a regulation prescribed under section 6 which is applicable to such product, except in conformity with such regulation.

(2) (A) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any product in compliance with regulations under section 6, prior to its sale or delivery to the ultimate purchaser or while it is in use, or (B) the use of a product after such device or element of design has been removed or rendered inoperative by any person.

(3) In the case of a manufacturer, to distribute in commerce any new product manufactured after the effective date of a regulation prescribed under section 8 (b) (requiring information respecting noise) which is applicable to such product, except in conformity with such regulation.

(4) The removal by any person of any notice affixed to a product or container pursuant to regulations prescribed under section 8 (b), prior to sale of the product to the ultimate purchaser.

(5) The importation into the United States by any person of any new product in violation of a regulation prescribed under section 9 which is applicable to such product.

(6) The failure or refusal by any person to comply with any requirement of section 11 (d) or 13 (a) or regulations prescribed under section 13 (a), 17, or 18.

(b) (1) For the purpose of research, investigations, studies, demonstrations, or training, or for reasons of national security, the Administrator may exempt for a specified period of time any product, or class thereof, from paragraphs (1), (2), (3), and (5) of subsection (a), upon such terms and conditions as he may find necessary to protect the public health or welfare.

(2) Paragraphs (1), (2), (3), and (4) of subsection (a) shall not apply with respect to any product which is manufactured solely for use outside any State and which (and the container of which) is labeled or otherwise marked to show that it is manufactured solely for use outside any State; except that such paragraphs shall apply to such product if it is in fact distributed in commerce for use in any State.

ENFORCEMENT

Sec. 11. (a) (1) Any person who willfully or knowingly violates paragraph (1), (3), (5), or (6) of subsection (a) of section 10 of this Act shall be punished by a fine of not more than $25,000 per day of violation, or by imprisonment for not more than one year, or by both. If the conviction is for a violation committed after a first conviction of such person under this subsection, punishment shall be by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two years, or by both.

(2) *Any person who violates paragraph (1), (3), (5), or (6) of subsection (a) of section 10 of this Act shall be subject to a civil penalty not to exceed $10,000 per day of such violation.*

(b) For the purpose of this section, each day of violation of any paragraph of section 10 (a) shall constitute a separate violation of that section.

(c) The district courts of the United States shall have jurisdiction of actions brought by and in the name of the United States to restrain any violations of section 10 (a) of this Act.

(d) (1) Whenever any person is in violation of section 10 (a) of this Act, the Administrator may issue an order specifying such relief as he determines is necessary to protect the public health and welfare.

(2) Any order under this subsection shall be issued only after notice and opportunity for a hearing in accordance with section 554 of title 5 of the United States Code.

(e) The term "person," as used in this section, does not include a department, agency, or instrumentality of the United States.

CITIZEN SUITS

Sec. 12. (a) Except as provided in subsection (b), any person (other than the United States) may commence a civil action on his own behalf—

(1) against any person (including (A) the United States, and (B) any other governmental instrumentality or agency to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any noise control requirement (as defined in subsection (e)), or

(2) against—

(A) the Administrator of the Environmental Protection Agency where there is alleged a failure of such Administrator to perfonn any act or duty under this Act which is not discretionary with such Administrator, or

(B) the Administrator of the Federal Aviation Administration where there is alleged a failure of such Administrator to perfonn any act or duty under section 611 of the Federal Aviation Act of 1958 which is not discretionary with such Administrator.

The district courts of the United States shall have jurisdiction, without regard to the amount in controversy, to restrain such person from violating such noise control requirement or to order such Administrator to perform such act or duty, as the case may be.

(b) No action may be commenced—

(1) under subsection (a) (1)—

(A) prior to sixty days after the plaintiff has given notice of the violation (i) to the Administrator of the Environmental Protection Agency (and to the Federal Aviation Administrator in the case of a violation of a noise control requirement under such section 611) and (ii) to any alleged violator of such requirement, or

(B) if an Administrator has commenced and is diligently prosecuting a civil action to require compliance with the noise control requirement, but in any such action in a court of the United States any person may intervene as a matter of right, or

(2) under subsection (a) (2) prior to sixty days after the plaintiff has given notice to the defendant that he will commence such action.

Notice under this subsection shall be given in such manner as the Administrator of the Environmental Protection Agency shall prescribe by regulation.

(c) In an action under this section, the Administrator of the Environmental Protection Agency, if not a party, may intervene as a matter of right. In an action under this section respecting a noise control requirement under section 611 of the Federal Aviation Act of 1958, the Administrator of the Federal Aviation Administration, if not a party, may also intervene as a matter of right.

(d) The court, in issuing any final order in any action brought pursuant to subsection (a) of this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such an award is appropriate.

(e) Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any noise control requirement or to seek any other relief (including relief against an Administrator).

(f) For purposes of this section, the term "noise control requirement" means paragraph (1), (2), (3), (4), or (5) of section 10 (a), or a standard, rule, or regulation issued under section 17 or 18 of this Act or under section 611 of the Federal Aviation Act of 1958.

RECORDS, REPORTS, AND INFORMATION

Sec. 13. (a) Each manufacturer of a product to which regulations under section 6 or section 8 apply shall—

(1) establish and maintain such records, make such reports, provide such information, and make such tests, as the Administrator may reasonably require to enable him to determine whether such manufacturer has acted or is acting in compliance with this Act.

(2) upon request of an officer or employee duly designated by the Administrator, permit such officer or employee at reasonable times to have access to such information and the results of such tests and to copy such records, and

(3) to the extent required by regulations of the Administrator, make products coming off the assembly line or otherwise in the hands of the manufacturer available for testing by the Administrator.

(b) (1) All information obtained by the Administrator or his representatives pursuant to subsection (a) of this section, which information contains or relates to a trade secret or other matter referred to in section 1905 of title 18 of the United States Code, shall be considered confidential for the purpose of that section, except that such information may be disclosed to other Federal officers or employees, in whose possession it shall remain confidential, or when relevant to the matter in controversy in any proceeding under this Act.

(2) Nothing in this subsection shall authorize the withholding of information by the Administrator, or by any officers or employees under his control, from the duly authorized committees of the Congress.

(c) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction be punished by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both.

QUIET COMMUNITIES, RESEARCH, PUBLIC INFORMATION

Sec. 14. *To promote the development of effective State and local noise control programs, to provide an adequate Federal noise control research program designed to meet the objectives of this Act, and to otherwise carry out the policy of this Act, the Administrator shall, in cooperation with other Federal agencies and through the use of grants, contracts, and direct Federal actions—*

(a) *develop and disseminate information and educational materials to all segments of the public on the public health and other effects of noise and the most effective means for noise control, through the use of materials for school curricula, volunteer organizations, radio and television programs, publication, and other means;*

(b) *conduct or finance research directly or with any public or private organization or any person on the effects, measurement, and control of noise, including but not limited to–*

(1) *investigation of the psychological and physiological effects of noise on humans and the effects of noise on domestic animals, wildlife, and property, and the determination of dose/response relationships suitable for use in decision-making, with special emphasis on the nonauditory effects of noise;*

(2) *investigation, development, and demonstration of noise control technology for products subject to possible regulation under sections 6, 7, and 8 of this Act;*

(3) *investigation, development, and demonstration of monitoring equipment and other technology especially suited for use by State and local noise control programs;*

(4) *investigation of the economic impact of noise on property and human activities; and*

(5) *investigation and demonstration of the use of economic incentives (including emission charges) in the control of noise;*

(c) *administer a nationwide Quiet Communities Program which shall include, but not be limited to–*

(1) *grants to States, local governments, and authorized regional planning agencies for the purpose of–*

(A) *identifying and determining the nature and extent of the noise problem within the subject jurisdiction;*

(B) *planning, developing, and establishing a noise control capacity in such jurisdiction, including purchasing initial equipment;*

(C) *developing abatement plans for areas around major transportation facilities (including airports, highways, and rail yards) and other major stationary sources of noise, and, where appropriate, for the facility or source itself; and,*

(D) *evaluating techniques for controlling noise (including institutional arrangements) and demonstrating the best available techniques in such jurisdiction;*

(2) *purchase of monitoring and other equipment for loan to State and local noise control programs to meet special needs or assist in the beginning implementation of a noise control program or project;*

(3) *development and implementation of a quality assurance program for equipment and monitoring procedures of State and local noise control programs to help communities assure that their data collection activities are accurate;*

(4) *conduct of studies and demonstrations to determine the resource and personnel needs of States and local governments required for the establishment and implementation of effective noise abatement and control programs; and*

(5) *development of educational and training materials and programs, including national and regional workshops, to support State and local noise abatement and control programs;*

except that no actions, plans or programs hereunder shall be inconsistent with existing Federal authority under this Act to regulate sources of noise in interstate commerce;

(d) *develop and implement a national noise environmental assessment program to identify trends in noise exposure and response, ambient levels, and compliance data and to determine otherwise the effectiveness of noise abatement actions through the collection of physical, social, and human response data;*

(e) *establish regional technical assistance centers which use the capabilities of university and private organizations to assist State and local noise control programs;*

(f) *provide technical assistance to State and local governments to facilitate their development and enforcement of noise control, including direct onsite assistance of agency or other personnel with technical expertise, and preparation of model State or local legislation for noise control; and*

(g) *provide for the maximum use in programs assisted under this section of senior citizens and persons eligible for participation in programs under the Older Americans Act.*

DEVELOPMENT OF LOW-NOISE-EMISSION PRODUCTS

Sec. 15. (a) For the purpose of this section:

(1) The term "Committee" means the Low-Noise-Emission Product Advisory Committee.

(2) The term "Federal Government" includes the legislative, executive, and judicial branches of the Government of the United States, and the government of the District of Columbia.

(3) The term "low-noise-emission product" means any product which emits noise in amounts significantly below the levels specified in noise emission standards under regulations applicable under section 6 at the time of procurement to that type of product.

(4) The term "retail price" means (A) the maximum statutory price applicable to any type of product; or (B) in any case where there is no applicable maximum statutory price, the most recent procurement price paid for any type of product.

(b) (1) The Administrator shall determine which products qualify as low-noise-emission products in accordance with the provisions of this section.

(2) The Administrator shall certify any product—

(A) for which a certification application has been filed in accordance with paragraph (5) (A) of this subsection;

(B) which is a low-noise-emission product as determined by the Administrator; and

(C) which he determines is suitable for use as a substitute for a type of product at that time in use by agencies of the Federal Government.

(3) The Administrator may establish a Low-Noise-Emission Product Advisory Committee to assist him in determining which products qualify as low-noise-emission products for purposes of this section. The Committee shall include the Administrator or his designee, a representative of the National Bureau of Standards, and representatives of such other Federal agencies and private individuals as the Administrator may deem necessary from time to time. Any member of the Committee not employed on a full-time basis by the United States may receive the daily equivalent of the annual rate of basic pay in effect for grade GS-18 of the General Schedule for each day such member is engaged upon work of the Committee. Each member of the Committee shall be reimbursed for travel expenses, including per diem in lieu of subsistence as authorized by section 5703 of title 5, United States Code, for persons in the Government service employed intermittently.

(4) Certification under this section shall be effective for a period of one year from the date of issuance.

(5) (A) Any person seeking to have a class or model of product certified under this section shall file a certification application in accordance with regulations prescribed by the Administrator.

(B) The Administrator shall publish in the Federal Register a notice of each application received.

(C) The Administrator shall make determinations for the purpose of this section in accordance with procedures prescribed by him by regulation.

(D) The Administrator shall conduct whatever investigation is necessary, including actual inspection of the product at a place designated in regulations prescribed under subparagraph (A).

(E) The Administrator shall receive and evaluate written comments and documents from interested persons in support of, or in opposition to, certification of the class or model of product under consideration.

(F) Within ninety days after the receipt of a properly filed certification application the Administrator shall determine whether such product is a low-noise-emission product for purposes of this section. If the Administrator determines that such product is a low-noise-emission product, then within one hundred and eighty days of such determination the Administrator shall reach a decision as to whether such product is a suitable substitute for any class or classes of products presently being purchased by the Federal Government for use by its agencies.

(G) Immediately upon making any determination or decision under subparagraph (F), the Administrator shall publish in the Federal Register notice of such determination or decision, including reasons therefor.

(c) (1) Certified low-noise-emission products shall be acquired by purchase or lease by the Federal Government for use by the Federal Government in lieu of other products if the Administrator of General Services determines that such certified products have procurement costs which are no more than 125 per centum of the retail price of the least expensive type of product for which they are certified substitutes.

(2) Data relied upon by the Administrator in determining that a product is a certified low-noise-emission product shall be incorporated in any contract for the procurement of such product.

(d) The procuring agency shall be required to purchase available certified low-noise-emission products which are eligible for purchase to the extent they are available before purchasing any other products for which any low-noise-emission product is a certified substitute. In making purchasing selections between competing eligible certified low-noise-emission products, the procuring agency shall give priority to any class or model which does not require extensive periodic maintenance to retain its low-noise-emission qualities or which does not involve operating costs significantly in excess of those products for which it is a certified substitute.

(e) For the purpose of procuring certified low-noise-emission products any statutory price limitations shall be waived.

(f) The Administrator shall, from time to time as he deems appropriate, test the emissions of noise from certified low-noise-emission products purchased by the Federal Government. If at any time he finds that the noise-emission levels exceed the levels on which certification under this section was based, the Administrator shall give the supplier of such product written notice of this finding, issue public notice of it, and give the supplier an opportunity to make necessary repairs, adjustments, or replacements. If no such repairs, adjustments, or replacements are made within a period to be set by the Administrator, he may order the supplier to show cause why the product involved should be eligible for recertification.

(g) There are authorized to be appropriated for paying additional amounts for products pursuant to, and for carrying out the provisions of, this section,

$1,000,000 for the fiscal year ending June 30, 1973, and $2,000,000 for each of the two succeeding fiscal years.

(h) The Administrator shall promulgate the procedures required to implement this section within one hundred and eighty days after the date of enactment of this Act.

JUDICIAL REVIEW; WITNESSES

Sec. 16. (a) A petition for review of action of the Administrator of the Environmental Protection Agency in promulgating any standard or regulation under section 6, 17, or 18 of this Act or any labeling regulation under section 8 of this Act may be filed only in the United States Court of Appeals for the District of Columbia Circuit, and a petition for review of action of the Administrator of the Federal Aviation Administration in promulgating any standard or regulation under section 611 of the Federal Aviation Act of 1958 may be filed only in such court. Any such petition shall be filed within ninety days from the date of such promulgation, or after such date if such petition is based solely on grounds arising after such ninetieth day. Action of either Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement.

(b) If a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and was not available at the time of the proceeding before the Administrator of such Agency or Administration (as the case may be), the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before such Administrator, and to be adduced upon the hearing, in such manner and upon such terms and conditions as the court may deem proper. Such Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file with the court such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original order, with the return of such additional evidence.

(c) With respect to relief pending review of an action by either Administrator, no stay of an agency action may be granted unless the reviewing court determines that the party seeking such stay is (1) likely to prevail on the merits in the review proceeding and (2) will suffer irreparable harm pending such proceeding.

(d) For the purpose of obtaining information to carry out this Act, the Administrator of the Environmental Protection Agency may issue subpenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and he may administer oaths. Witnesses summoned shall be paid the same fees and mileage that are paid witnesses in the courts of the United States. In cases of contumacy or refusal to obey a subpena served upon any person under this subsection, the district court of the United States for any district in which such person is found or resides or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Administrator, to appear and produce papers, books, and documents before the Administrator, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

RAILROAD NOISE EMISSION STANDARDS

Sec. 17. (a) (1) Within nine months after the date of enactment of this Act, the Administrator shall publish proposed noise emission regulations for surface carriers engaged in interstate commerce by railroad. Such proposed regulations shall include noise emission standards setting such limits on noise emissions resulting from operation of the equipment and facilities of surface carriers engaged in interstate commerce by railroad which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance. These regulations shall be in addition to any regulations that may be proposed under section 6 of this Act.

(2) Within ninety days after the publication of such regulations as may be proposed under paragraph (1) of this subsection, and subject to the provisions of section 16 of this Act, the Administrator shall promulgate final regulations. Such regulations may be revised, from time to time, in accordance with this subsection.

(3) Any standard or regulation, or revision thereof, proposed under this subsection shall be promulgated only after consultation with the Secretary of Transportation in order to assure appropriate consideration for safety and technological availability.

(4) Any regulation or revision thereof promulgated under this subsection shall take effect after such period as the Administrator finds necessary, after consultation with the Secretary of Transportation, to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.

(b) The Secretary of Transportation, after consultation with the Administrator, shall promulgate regulations to insure compliance with all standards promulgated by the Administrator under this section. The Secretary of Transportation shall carry out such regulations through the use of his powers and duties of enforcement and inspection authorized by the Safety Appliance Acts, the Interstate Commerce Act, and the Department of Transportation Act. Regulations promulgated under this section shall be subject to the provisions of sections 10, 11, 12, and 16 of this Act.

(c) (1) Subject to paragraph (2) but notwithstanding any other provision of this Act, after the effective date of a regulation under this section applicable to noise emissions resulting from the operation of any equipment or facility of a surface carrier engaged in interstate commerce by railroad, no State or political subdivision thereof may adopt or enforce any standard applicable to noise emissions resulting from the operation of the same equipment or facility of such carrier unless such standard is identical to a standard applicable to noise emissions resulting from such operation prescribed by any regulation under this section.

(2) Nothing in this section shall diminish or enhance the rights of any State or political subdivision thereof to establish and enforce standards or controls on levels of environmental noise, or to control, license, regulate, or restrict the use, operation, or movement of any product if the Administrator, after consultation with the Secretary of Transportation, determines that such standard, control, license, regulation, or restriction is necessitated by special local conditions and is not in conflict with regulations promulgated under this section.

(d) The terms "carrier" and "railroad" as used in this section shall have the same meaning as such terms have under the first section of the Act of February 17, 1911 (45 U.S.C. 22).

MOTOR CARRIER NOISE EMISSION STANDARDS

Sec. 18 (a) (1) Within nine months after the date of enactment of this Act, the Administrator shall publish proposed noise emission regulations for motor carriers engaged in interstate commerce. Such proposed regulations shall include noise emission standards setting such limits on noise emissions resulting from operation of motor carriers engaged in interstate commerce which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance. These regulations shall be in addition to any regulations that may be proposed under section 6 of this Act.

(2) Within ninety days after the publication of such regulations as may be proposed under paragraph (1) of this subsection, and subject to the provisions of section 16 of this Act, the Administrator shall promulgate final regulations. Such regulations may be revised from time to time, in accordance with this subsection.

(3) Any standard or regulation, or revision thereof, proposed under this subsection shall be promulgated only after consultation with the Secretary of Transportation in order to assure appropriate consideration for safety and technological availability.

(4) Any regulation or revision thereof promulgated under this subsection shall take effect after such period as the Administrator finds necessary, after consultation with the Secretary of Transportation, to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.

(b) The Secretary of Transportation, after consultation with the Administrator, shall promulgate regulations to insure compliance with all standards promulgated by the Administrator under this section. The Secretary of Transportation shall carry out such regulations through the use of his powers and duties of enforcement and inspection authorized by the Interstate Commerce Act and the Department of Transportation Act. Regulations promulgated under this section shall be subject to the provisions of sections 10, 11, 12, and 16 of this Act.

(c) (1) Subject to paragraph (2) of this subsection but notwithstanding any other provision of this Act, after the effective date of a regulation under this section applicable to noise emissions resulting from the operation of any motor carrier engaged in interstate commerce, no State or political subdivision thereof may adopt or enforce any standard applicable to the same operation of such motor carrier, unless such standard is identical to a standard applicable to noise emissions resulting from such operation prescribed by any regulation under this section.

(2) Nothing in this section shall diminish or enhance the rights of any State or political subdivision thereof to establish and enforce standards or controls on levels of environmental noise, or to control, license, regulate, or restrict the use, operation, or movement of any product if the Administrator, after consultation with the Secretary of Transportation, determines that such standard, control, license, regulation, or restriction is necessitated by special local conditions and is not in conflict with regulations promulgated under this section.

(d) For purposes of this section, the term "motor carrier" includes a common carrier by motor vehicle, a contract carrier by motor vehicle, and a private carrier of property by motor vehicle as those terms are defined by paragraphs (14), (15), and (17) of section 203 (a) of the Interstate Commerce Act (49 U.S.C. 303 (a)).

AUTHORIZATION OF APPROPRIATIONS

Sec. 19. There are authorized to be appropriated to carry out this Act *(other than for research and development) $15,000,000 for the fiscal year ending September 30, 1979.*

LEGISLATIVE HISTORY: Public Law 92-574

HOUSE REPORT No. 92-842 (Comm. on Interstate and Foreign Commerce).
SENATE REPORT No. 92-1160 accompanying S. 3342 (Comm. on Public Works).
CONGRESSIONAL RECORD, Vol. 118 (1972):
Feb. 29, considered and passed House.
Oct. 12, 13, considered and passed Senate, amended, in lieu of S. 3342.
Oct. 18, House concurred in Senate amendment, with an amendment; Senate concurred in House amendment.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 8, No. 44:
Oct. 28, Presidential statement.

LEGISLATIVE HISTORY: Public Law 95-609

HOUSE REPORT No. 95-1171, accompanying H.R. 12647 (Comm. on Interstate and Foreign Commerce).
SENATE REPORT No. 95-875 (Comm. on Environment and Public Works).
CONGRESSIONAL RECORD, Vol. 124 (1978):
July 19, considered and passed Senate.
Oct. 10, H.R. 12647 considered and passed House, passage vacated, and S. 3083, amended, passed in lieu.
Oct. 13, Senate concurred in House amendments.

SECTION 8 OF THE QUIET COMMUNITIES ACT[1]

Sec. 8. (a) *The Secretary of Transportation and the Administrator of the Environmental Protection Agency shall jointly study the aircraft noise effects from an airport on communities located in a State other than the State in which the airport is located. The criteria to be used in selecting the airport to be studied shall include:*

(1) *the airport shall be operated by a State, a unit of general purpose local government of a State, or a special purpose entity constituted for the purpose of operating an airport, and*

(2) *the airport shall have a point on the airport boundary within one nautical mile from a State boundary, and*

(3) *the airport shall have had in excess of sixty thousand scheduled air carrier departures during the preceding calendar year.*

(b) *The study shall be conducted in cooperation with the airport operator, appropriate Federal, State, and local officials, and the appropriate Metropolitan Planning Organization.*

(c) *The Secretary and the Administrator shall prepare and submit to Congress a report within nine months of the conclusion of the study, but no later than twenty-four months after enactment of this section.*

[1]This section of the Quiet Communities Act does not amend the Noise Control Act of 1972. One other free-standing provision of the Quiet Communities Act of 1978 contained technical amendments to the Solid Waste Disposal Act. These solid waste amendments are not printed here.