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# Noise Around Our Homes

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EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life.

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In recent years public concern over noise pollution has resulted in a number of Federal and local laws and regulations aimed at quieting jet aircraft, motor vehicles, and construction and other heavy equipment.

But a more immediate and continuing problem is noise around the home. It is reaching levels that can cause not only annoyance and emotional stress but actually can damage hearing.



Among the noise offenders are power mowers, chain saws, shop tools, dishwashers, garbage disposals, and other appliances.

Added to the noise caused by these labor-saving devices are the effects of cost-cutting building techniques, poorly-insulated walls and ceilings, and thoughtless pressures by developers to build dwellings near high-noise areas such as jetports and freeways.

In the past, too many people believed the answer to excessive noise was simply to get used to it. But we know today from medical research and experience that the rising level of environmental noise in our technological society is becoming a health problem resulting in gradual hearing loss and emotional tension. "Getting used" to noise is obviously no solution to medical problems that may progress unnoticed, until it is too late to remedy them.

This pamphlet presents some basic facts about noise levels, the health problems they may cause, and what we can do to make our homes and apartments quieter places to live.

#### **Noise Levels**

Sound is measured in logarithmic units called "decibels," abbreviated "dB." The hearing threshold—the point where a person begins to hear sounds—starts at zero dB. A soft whisper at 15 feet equals 30 dB, a busy freeway at 50 feet is around 80, and a chain saw can reach 100 or more at operating distance. Brief exposure to noise levels over 140 dB without hearing protectors may even cause pain.

However, one can suffer a hearing loss from exposure to much lower noise levels. Continuous exposure for eight hours over a number of years to noise levels exceeding approximately 80 dB can cause permanent hearing loss. The degree of hearing damage may vary with individuals.

Below these levels, noise may still cause hearing loss and can also have many other undesirable effects. It can interfere with speech communication and can impair a child's ability to understand and pronounce words correctly. Noise can be a source of annoyance, interfere with study, disturb the performance of complicated tasks, and reduce the opportunity for privacy. It can also adversely influence mood, interrupt sleep, and prevent relaxation.

It is obvious from all these things that noise not only affects human health but the quality of life.

As the accompanying chart indicates, we cannot escape noise even in our own homes. As the number of appliances and machinery in our lives increases, exposure to noise generated by these devices takes on greater significance.

Home appliances and home-shop tools can be grouped into four categories based on the noise levels they produce.

Machines in the first group, which includes quieter major appliances such as refrigerators and clothes dryers, usually produce sound levels lower than 60 dB. Although the level is relatively low, such noise may be objectionable to a few people.

The second group includes clothes washers, food mixers, many dishwashers and sewing machines that produce noise from 65 to 75 dB. Exposure time tends to be brief and infrequent, but the resulting noise may disrupt the understanding of speech and may be disturbing to neighbors in multi-family dwellings.

The third group includes vacuum cleaners, noisy dishwashers, food blenders, electric shavers and food grinders. They usually produce 75 to 85 dB. The risk of hearing damage from them is small since use is not continuous or cumulative. Generally the noise from such appliances is annoying.

Appliances in the fourth group produce the highest noise levels in the home environment—above 85 dB. They include millions of yard-care and shop tools. Any amount of exposure to such equipment will probably interfere with activities, disrupt your neighbor's sleep, cause annoyance and stress, and may contribute to hearing loss. Both gasoline and electric walk-behind lawn mowers ranged from about 87 to 92 dB at the operator's ear, and even 50 feet away ranged up to 72 dB; some riding mowers reach 83 dB at 50 feet.

#### Noise Around our Homes

Noise Source	Sound Level for Operator (in dBA)
Refrigerator	40
Floor Fan	38 to 70
Clothes Dryer	55
Washing Machine	47 to 78
Dishwasher	54 to 85
Hair Dryer	59 to 80
Vacuum Cleaner	62 to 85
Sewing Machine	64 to 74
Electric Shaver	75
Food Disposal (Grinder)	67 to 93
Electric Lawn Edger	81
Home Shop Tools	85
Gasoline Power Mower	87 to 92
Gasoline Riding Mower	90 to 95
Chain Saw	100
Stereo	Up to 120

#### Siting and Construction—Part of the Noise Problem

Noise problems are worse in dwellings where the construction is of a type that relies on thinner and lighter materials. These materials do not effectively block noise and vibration from outside or between rooms, and in some cases actually can amplify sound.

Poor siting also may add to the noise problem. Housing developments often are built near the landing pattern of major airports, and apartment houses located near high-speed highways. Poor housing placement is one of the increase in many communities across the country.

To cope with the problems of lightweight construction and poor planning, the U.S. Department of Housing and Urban Development (HUD) has developed "Noise Assessment Guidelines" to aid in community planning, construction, modernization and rehabilitation of existing buildings.

In addition, the Veterans Administration requires disclosure of information to prospective buyers about the exposure of existing V.A.-financed houses to noise from nearby airports.

For the community, the control of noise around the home involves proper land use, zoning, and building regulations. For the construction industry it means better engineering. For the homeowner, it means insistence on quieter appliances and equipment, and the initiative to create less noisy dwellings.

One of the most effective actions residents can take regarding noise in the home is to make appliance dealers and manufacturers aware of their desire for quieter products and to influence their local governments to enact and enforce the necessary building codes. Beyond that, persons with noisy appliances and equipment should try to schedule use of these items when the least amount of disturbance is created. Discretion should be used in controlling the volume of TVs and stereos. Hearing protectors should be worn when operating very noisy equipment such as chain saws and power lawnmowers.

EPA has under preparation a model building code for various building types. The code will spell out extensive acoustical requirements and will make it possible for cities and towns to regulate construction in a comprehensive manner to produce a quieter local environment.

The Noise Control Act of 1972 provides EPA with authority to require labels on all products, both domestic and imported, that generate noise capable of adversely affecting public health or welfare and on those products sold wholly or in part for their effectiveness in reducing noise (such as acoustic

tile, some types of carpeting, certain building materials, etc.). EPA is initiating a study to rate home appliances and other consumer products by the noise generated and the impact of the noise on users and other persons normally exposed to it. Results of the study will be used to determine whether noise labeling or noise emission standards are necessary.

#### **Some Helpful Hints for a Quieter Home**

- Use carpeting to absorb noise, especially in areas where there is a lot of foot traffic.
- Hang heavy drapes over windows closest to outside noise sources.
- Put rubber or plastic treads on uncarpeted stairs. (They're safer too.)
- Use upholstered rather than hard-surfaced furniture to deaden noise.
- Install sound-absorbing ceiling tile in the kitchen. Wooden cabinets will vibrate less than metal ones.
- Use a foam pad under blenders and mixers.
- Use insulation and vibration mounts when installing dishwashers.
- Install washing machines in the same room with heating and cooling equipment, preferably in an enclosed space away from bedrooms.
- If you use a power mower, operate it at reasonable hours. The slower the engine setting, the quieter it will operate.
- When listening to a stereo, keep the volume down.
- Place window air conditioners where their hum can help mask objectionable noises. However, try to avoid locating them facing your neighbor's bedrooms.
- Use caution in buying children's toys that can make intensive or explosive sounds. Some can cause permanent ear injury.
- Compare, if possible, the noise outputs of different makes of an appliance before making your selection.

#### **Choosing a New House or Apartment**

- Be aware of major noise sources near any residence you are considering including airport flight paths, heavy truck routes, high-speed freeways. Ask the neighbors if there is a local noise problem. When buying a home, check the area zoning master plan for projected changes. (In some places, you can't get FHA loans for housing in noisy locations.)
- Use the HUD "walkaway test." By means of this method, a couple can assess background noise around a house. Simply have one person stand with some reading material at chest level and begin reading in a normal voice while the other slowly backs away. If the listener cannot understand the words closer than 7 feet, the noise is clearly

unacceptable. At 7 to 25 feet, it is normally unacceptable; at 26 to 70 feet, normally acceptable; and over 70, clearly acceptable.

- Look for wall-to-wall carpeting, especially in the apartment above you and in the corridors.
- Find out about the wall construction. Staggered-stud interior walls provide better noise control. (Studs are vertical wooden supports located behind walls. Staggering them breaks up the pattern of sound transmission.)
- Check the electrical outlet boxes. If they are back-to-back, noise will pass through the walls.
- Check the door construction. Solid or core-filled doors with gaskets or weatherstripping provide better noise control.
- Make sure sleeping areas are well away from rooms with noise-producing equipment.
- Check the heating and air conditioning ducts. Insulation makes them quieter.

#### **Hearing Protectors**

In today's mechanized world it is virtually impossible for an active person to avoid exposure to potentially harmful sound levels.

For this reason, hearing specialists now recommend that we get into the habit of wearing protectors, not only to guard against hearing loss but to reduce the annoying effects of noise.

There are two basic types of hearing protectors: muffs worn over the ears and inserts worn in the ears. Well-fitting protective muffs are more effective, but inserts also do a good job if properly fitted. Since ear canals are rarely the same size, inserts should be separately fitted for each ear. Cotton plugs are virtually useless.

Protective muffs should be adjustable to provide a good seal around the ear, proper tension of the cups against the head, and comfort.

Both types of protectors are available at many sports stores and drugstores. They are well worth the small inconvenience they cause for the wearer. Hearing protectors are recommended:

**At work**—Construction • Lumber • Mining • Steel • Textiles

**During recreational and home activities**—Target shooting and hunting • Power tool use • Lawn mowing • Snowmobile riding

**Note:** These are only some of the jobs and activities where hearing protectors are beneficial. Protectors are also helpful when concentration is necessary in the home or office.

For more information concerning noise, its effects, and what Federal, State, and local agencies are doing to control it, contact your nearest EPA Regional Office whose address appears on the back cover of this pamphlet.