

Testimony before the Economic Matters Committee
Maryland State Legislation
HB 934: Gas-powered Leaf Blowers

February 25, 2022

Members of the Committee:

My name is Chuck Elkins. I am a member of a small organization called Quiet Clean DC that worked with the District of Columbia City Council to help pass, unanimously, an Act to ban gas-powered leaf blowers in DC starting January 1st of this year. I was also the Director of the Noise Control Program at the U.S. Environmental Protection Agency for five years during in the 1970's. Additionally, I am one of 296 Advisory Neighborhood Commissioners in DC, elected to represent 2000 of their neighbors in the District government.

Because noise is an everyday experience, we tend to take it for granted and simply accept it as part of life. Unfortunately, noise above certain levels can have an effect on our hearing without our knowing it—and the damage is permanent, only partially correctable with hearing aids. Noise also causes a stress reaction that can cause other adverse health effects like high blood pressure, heart disease, and exacerbate anxiety and depression.

There is a public misconception that hearing loss is caused by occasional very loud noises. Those very loud noises can be harmful, but much more insidious are noise exposures, repeated over time, that we might think are only annoying but, in fact, slowly degrade our ability to hear—an impact we only become aware of when it is too late to do anything about it. It has also been shown the damage to blood vessels can be worsened by repeated exposure to noise. For these reasons, noise can be as insidious as many other invisible pollutants in our air and water.

When do sounds get so loud that they become noise that we need to avoid, if possible? Actually, these levels have been quite well established through decades of scientific study. Noise above the level of 70 decibels, experienced over time, can cause hearing loss. The Occupational Safety and Health Administration's (OSHA) workplace limit on noise was set many decades ago at 85 decibels. At the time, OSHA was told that the scientific literature clearly showed significant hearing loss at that level, but they still set it at 85 decibels, presumably for economic and feasibility reasons. However, this is not a safe noise level to protect the public's hearing. Levels to protect people from the non-hearing health effects of noise – like cardiovascular disease -- are even lower – 55 decibels, according to the World Health Organization and US EPA

How much louder is 85 decibels than 70 decibels? It is a 15-decibel difference, which sounds to a human being as more than doubling of the loudness, but because the decibel scale is logarithmic, the actual energy pounding on the ear is approximately 32 times more powerful.

Unfortunately, the tiny hairs in our ears that convert the vibration they receive into electrical currents that our brain can interpret as sound are subjected to this energy that is the 32 times more powerful. These little hairs can be killed by ongoing exposure to levels of noise that we might think are only annoying but are actually dangerous.

What does all of this have to do with leaf blowers? Some of the popular gas-powered leaf blowers are rated at 100 decibels or higher at the ear of the operator,¹ 32 times more energy (power) than an exposure of 85 decibels, and 2-4x louder. Even if the operator wears hearing protectors, he may not be successful in reducing his actual exposure inside his ears to the safer but still dangerous level of 85 decibels. While the packaging of the hearing protector may promise more than the 15 decibel attenuation from 100 down to 85, this is usually true only if the hearing protector is properly fit to the individual and worn correctly. In the real world, one has to conclude that most workers operating gas-powered leaf blowers day in and day out for hours a day, even if they are wearing hearing protectors, are exposed to noise that is permanently damaging their hearing.

Here in DC, as we were working on the legislation, we heard a number of arguments about why we should continue to use gas-powered leaf blowers, including assertions that company owners should have the free to choose what equipment to provide their workers. I know we all celebrate the freedom we have in our country to make a myriad of personal choices unhindered by societal rules. However, I would hope that most of us would agree that before we make these decisions, we should consider the effects of our choices on others. Here, a decision by a company owner to provide his workers with equipment that risks hearing loss and other health effects from the noise, not to mention the other serious effects of the air pollution produced by these machines in the breathing zone of the workers, is a decision that raises ethical issues.

Most of the workers in these lawn care companies do not have any bargaining power with their employers by which they can insist on safer machinery. They therefore have to accept the health risks imposed on them. Unfortunately, few workers are informed of these risks, so they are unknowingly exposed to them. The continued use of gas-powered leaf blowers therefore raises serious environmental justice issues for these disadvantaged workers, and any assertion of freedom needs to be weighed against these concerns. Of course, these environmental justice issues are applicable not just to the company owner, as we mentioned, but also to those who contract for their services, whether they are homeowners, apartment owners, or towns or cities.

So far, I have not mentioned another major consequence of company owners' choice of gas-powered leaf blowers over battery-powered blowers—namely, the disturbance of whole neighborhoods by the resulting irritating and disruptive noise. These effects have become better known in the past two years because so many people have been forced to work from home during the pandemic. Studies have long shown that children in school can lose as much as a year of instruction because of nearby noise. It is easy to extrapolate these findings to what effect the noise may have on a person's concentration and productivity if he or she is working from home.

As we studied this issue in DC, there were two arguments we heard repeatedly. One was that while gas-powered blowers are noisy, so are battery-powered leaf blowers. We were told that the industry had engineered at least one gas-powered blower to emit no more than 65 decibels, a level emitted by some battery-powered blowers. This argument led to the proposed conclusion that all gas-powered blowers should not be banned as a class, but that instead, each blower should be evaluated either by a hand-held noise meter or by decibel level shown on the label affixed by the manufacturer to each blower.

¹ OPE Reviews, December 2017

Intuitively, we felt that the statement that some battery blowers are just as noisy as some gas blowers did not reflect what we were hearing when these blowers were actually used in the outdoor environment. For one thing, lawn maintenance companies were not using the 65-decibel blowers but were choosing the more powerful ones that emit 100 decibels or more at the ear and 75-85 decibels at 50 feet. In addition, we believed the sounds of the two kinds of devices were just different in terms of the ability of the noise from the gas blowers to penetrate walls and windows in our neighborhoods.

We therefore collaborated with Quiet Communities, Inc., a Boston NGO, to hire an international acoustic engineering firm with offices in 33 countries (ARUP) to design a controlled study to compare the sound levels from gas-powered and battery-powered blowers at various distances from the source. What they found was remarkable and formed a central part of the testimony before the District's Council as it considered the ban on gas-powered blowers. [Pollock et al, 2018] You may want to read the entire published report on this study as you proceed with your investigations. I was told recently that an MIT professor repeated the study and arrived at very similar results as the original study.

I will summarize the results here. The ARUP study found that the sound from gas-powered blowers has a strong low frequency component that carries loud noise much further than the sound from the battery-powered blowers that lacks this strong low frequency component.² This low frequency sound is capable of penetrating building walls and window panes much more effectively than the higher frequency sound from the battery blowers. The combination of these characteristics means that a single gas-powered blower has a much greater capacity to disturb an entire neighborhood than the battery-powered blower. Remarkably, this is the case, even when a gas-powered blower and a battery-powered blower, both of which are tested and labeled as emitting 65 decibels at 50 feet, are compared. In addition, according to the World Health Organization, low frequency noise causes more serious non-hearing health effects than the higher frequencies. It turns out that the measurement technique the industry uses to label all of its machines does not adequately account for these low frequency sounds; thus a gas blower and a battery blower can both be labeled at 65 decibels, according to the industry test, but have dramatically different impacts on the actual neighborhoods in which they are used.

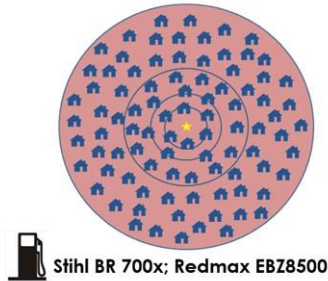
Dr. Jamie Banks, President of Quiet Communities, illustrated this difference in impact between the two kinds of blowers using the field test data collected by the acoustical engineering company. Applying these measured sounds to a hypothetical urban neighborhood with 1/8th acre zoning, she calculated the number of homes affected above a level of 55 decibels, the level identified as unhealthy by both the World Health Organization and the U.S. Environmental Protection Agency. The resulting diagrams and sounds tell the story quite well.

² This low frequency component was also found in an earlier pilot study of GLB noise – See Walker, Banks, 2017 (<https://sciforschenonline.org/journals/environmental-toxicological-studies/JETS-1-106.php>)

Typical GAS-powered Blowers

They emit noise above 55 decibels even at **400** feet.

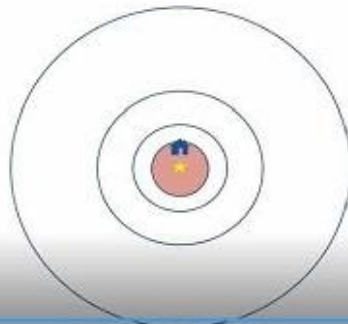
In urban neighborhoods (1/8th acre lots), they can affect more than **90** homes.



The typical gas-powered leaf blower today can disturb 90 homes in a neighborhood.

The Quietest BATTERY Leaf Blower

The quietest BATTERY leaf blower affects only the **ONE** home where it is operating.



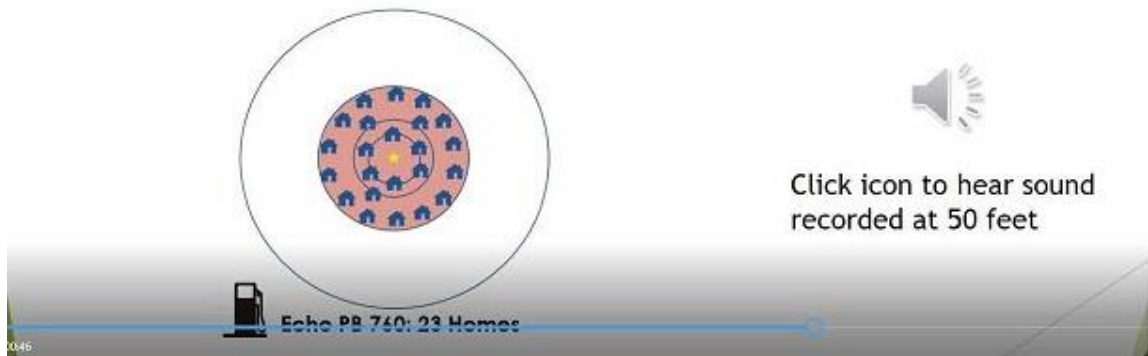
Click icon to hear sound recorded at 50 feet



The quietest battery-powered leaf blower today disturbs only one home.

Gas-powered rated at 65 dB(A)

The GAS blower marketed as “low noise” emits noise above 55 decibels out to **200** feet. This can affect up to **23** homes.



The industry produced a leaf blower that emits only 65 dB at 50 feet in order to compete with battery-powered blowers. But because the test for measuring the sound does not adequately take into account the low-frequency sound, it disturbs 23 homes compared to 6 below.

BATTERY-powered 65 dB(A) Blower

The most powerful BATTERY-powered blowers emit noise above 55 decibels out to **100** feet. This can affect up to **6** homes.

