

APPENDIX

Exhaust Emission

The contribution to pollution of each exhaust constituent from a gasoline-powered leaf blower is not meaningful because the engine is very small on low powered yard care products. Exhaust emission of concern from handheld engines consists of primarily three components:

- carbon dioxide (CO₂),
- carbon monoxide (CO),
- unburned hydrocarbons or fuel.

All other presumed exhaust emission constituents are insignificant or non-existent in small handheld gasoline-powered equipment, including two-stroke engines.

[Greenhouse gas, \(carbon dioxide\)](#) ⁵.

Think in terms of households that drive cars to work and have or use leaf blowers.

Gasoline is a hydrocarbon, which when completely burned turns into water vapor (H₂O) and Carbon Dioxide (CO₂). Carbon dioxide generation is directly proportional to the amount of fuel burned. While driving your car, how many gallons of gasoline do you burn in a week, one tank full (18 gallons)? How many cars in your household are used to drive to work? How much do you burn in a leaf blower in a week? Most likely not more than 10 ounces. A gallon, by the way, is 128 ounces. The average automobile is 230 times worse than a leaf blower when it comes to the emission of greenhouse gasses. Even though automobiles have a sophisticated emission control system, none of these controls will reduce the amount of CO₂ generated. Computers and catalytic converters minimize the emission of unburned hydrocarbons by converting them into water and carbon dioxide.

Aspen, Colorado did a [study](#) ⁶ to find the major sources of CO₂, but all lawn care products, of which a leaf blower is only a small part, were not even on the scale.

Carbon Monoxide

Carbon monoxide is of even less concern since leaf blowers are used outdoors. CO is less stable than CO₂ and is likely to dissipate in time. Like carbon dioxide, carbon monoxide is produced in very small amounts, because of the almost trivial amount of fuel being burned. Note that all two-stroke leaf blower engines manufactured after January 2005 have catalysts in the exhaust system to [reduce the generation of carbon monoxide](#) ²⁹ even further.

Hydrocarbon Emission

This is another matter. I am appalled by the statement that two stroke engines allow 30% of the fuel to pass straight through the engine unburned. This comment is only true of engines build 20 years ago. Two-stroke engines may be somewhat dirtier than the automobile, ounce per ounce of fuel burned, but today, they are certainly not as dirty as this incorrect statement leads you to believe. The federal government has set standards for this component, which manufacturers must comply with. Thirty years ago, hydrocarbons, or unburned fuel in the exhaust, were identified to be the source of environmental pollution. It caused [smog](#), sometimes called “ozone”. Admittedly, automobile manufacturers have done a lot over the years to reduce this constituent in exhaust gasses. But the leaf blower engine has also been improved. Mandated by the EPA, hydrocarbon emission has been reduced by as much as 90%, effective January 2005. See “[Certified Emission Levels](#)” ⁷. Cities can mandate cleaner engines by disallowing blowers built prior to the above date. See [emission label](#) ⁸ for manufacturing date.

When you consider hydrocarbon emission improvements and the amount of time per week a blower is used compared to an automobile, [gasoline-powered motor vehicles are 30 to 45 times worse](#) ⁹. Time of use must be a consideration in this comparison.

The statement claiming that leaf blower exhaust emission is 300 times worse than a pickup truck is taken from a report by “Edmonds Automotive Website”. Obviously, Edmonds.com knows how to test trucks, but they know nothing about testing leaf blowers on equipment designed for testing over the road vehicles. Consider this. The truck they used in their comparison has a 3-inch diameter exhaust pipe and the leaf blower has a 3/8-inch diameter exhaust outlet. That means the truck has an exhaust pipe 64 times larger because it must handle huge amounts of exhaust air flow. Suffice it to say here that this “300 times worse” claim is bogus. To learn the technical reasons why, check out the [report](#) ¹⁰ at my website.

Dust

A totally unsubstantiated claim is that leaf blowers contribute to respiratory allergies, asthma, dizziness, headaches, heart and lung disease, cancer, and dementia. Really? This isn't even logical. Don't be misled by claims that blowers make harmful clouds of dust. If you use a leaf blower, you know this claim is not true. If you don't use one, observe how a professional landscaper uses it. You need to ask; what kind of hazardous dust are we talking about? According to the EPA, the particulate matter that is potentially harmful to someone's health is known as PM10 and PM2.5. Nitrous oxides are the source of this kind of [particulate matter](#) ¹¹. Leaf blowers cannot generate PM10 and PM2.5 because the engine does not run on excess air, something required to generate NOx, which only diesel engines can do. So, there is no justification for banning them for this reason.

As for their ability to lift existing fine particles from the ground and resuspend them indefinitely, that is not possible. PM10 and PM2.5 particles are already in the air. Because they are so small and lightweight, the wind keeps these particles

suspended. The brown haze you see over a city is comprised of these particles. When it settles to the ground due to rain or high humidity, it will immediately attach itself to a larger particle. You know this is true from experience for if it were not, there would be no such thing as a clear day. When larger particles are disturbed by a leaf blower, they return to the ground within a few feet of being raised. You can see from the above "Particulate Matter" link, even PM2.5 is not a viable argument for banning the leaf blower.

Covid-19

Recently, the misery caused by COVID-19, the new scourge for 2020 and 2021, has been falsely tied in part to the leaf blower. It all has to do with noise, not the disease itself. Working at home can be different from what people are used to because of the noise outside their window. I say different because where is there an office that is absolutely silent. Leaf blower noise is just different. Noise from a vacuum cleaner is also atypical from office noise. I very much doubt that vacuums will be banned.

Noise

[Noise](#)²⁰ has long been associated with the leaf blower, but there is a way this noise can be mitigated without an outright ban. The simplest and most obvious thing to do is limit the number of hours during which they can be used.

As for the blower itself, the industry deliberately addressed the noise issue in response to complaints 20 years ago. Millions of dollars have been spent designing, testing, and revising their manufacturing assembly lines, in order to reduce the noise from leaf blowers.

In the case of the gasoline-powered leaf blower, sound level is measured at 50 feet per the industry Standard ([ANSI B175.2](#))²¹. A "Quiet" leaf blower is 65 dB(A) or less, measured per the above Standard. This is at least a seventy-five percent reduction in sound or 12 dB(A), from a typical noisy leaf blower at 77 dB(A).

This much sound reduction is hard to accept as being true for the average person because we cannot comprehend from experience what a 75% reduction sounds like. The best thing to do is to witness an actual leaf blower sound comparison, but I know that it is not easy to arrange this. Today, there is a [video](#)²² of an actual demonstration developed for the comparison of leaf blowers on my website.

Fortunately, because of the industry's foresight, any city that wants to limit the sound emanating from a gas-powered leaf blower can easily determine sound magnitude in the field without testing. The consumer can also determine compliance with local sound limitations at the point of purchase via the attached [label](#)²³. This decal has been on all gasoline powered leaf blowers manufactured in the United States for at least the past fifteen years. If there is no label on a unit, it does not comply.

Even though quiet leaf blowers have been available for a long time, not all leaf blowers are quiet. Therefore, I encourage you to learn more about these quiet blowers and if a ban is in order, [ban only the noisy ones](#)²⁸.

Other perceived leaf blower issues

Almost everything that can be presented, other than noise, can be exposed as a falsehood when attributed to a leaf blower, if you take the time to read the articles at the following links:

[Are automobiles cleaner?](#) ⁹

[What about global warming?](#) ⁵

[Are leaf blowers hazardous to your health?](#) ¹¹

[Greenwich Department of Health](#) ¹²

[Dr. Steel's Report to California Legislature](#) ¹³

[Excessive Dust](#) ¹⁴

[Dust study and comparison.](#) ¹⁵

[What do Doctors say?](#) ¹⁶

[Education](#) ¹⁷

[Suggested Ordinance Content](#) ²⁸

[Will a ban work?](#) ¹⁸

[Leaf Blower vs. Broom](#) ¹⁹

Banning Issues

In some cities, banning gasoline-powered leaf blowers has been very controversial. Lawn care contractors have taken at least one city to [court](#) ²⁴ over a ban. The reason is because it significantly impacts their livelihood.

People generally do not like more rules, especially if the rule costs them money or infringes on their personal lifestyle. Banning the leaf blower, to many, seems like a subjugation to someone else's lifestyle and ultimately is not well received.

Doing what other cities have done may not be the right thing to do. If one is hearing leaf blowers every day, especially in the fall, it is only because people value the aesthetics of their property. The leaf blower is an important part of maintaining that appearance in a city with landscaped homes.

LINKS TO REFERENCES

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