

Reducing Two-Stroke Engine Emissions

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Pop Quiz: Which machine creates the most air pollution/hour of operation: the typical car, gas-powered lawn mower or gas-powered string trimmer?



Answer: To perhaps many readers' surprise, the automobile would very much be the wrong answer. Each of these engines emits carbon monoxide, carbon dioxide, hydrocarbons and ozone precursors—pollutants that harm regional public health and global climate. But operating a typical 4-hp gasoline-powered mower for one hour yields as much of those pollutants as driving a typical car from Louisville to Richmond and back again! And operating a gasoline-powered string trimmer pollutes even more.

(Please note: This article does not address newer, cleaner gasoline-powered or diesel-powered two-stroke engine technology, and is focused on the bulk of two-stroke engines in readers' garages and tool sheds and on the market.)

Gasoline-powered landscaping equipment—as well as many outboard motors, chain saws and leaf blowers, plus some snowmobiles and smaller motorcycles—operate on two-stroke (or two-cycle) engines. These internal combustion engines offer smaller size and lighter weight; however, their poorer combustion efficiency yields much more pollution than do four-stroke engines.

What can you do if you currently use such equipment to maintain your landscaping? Begin by minimizing the need for maintenance, then evolve your methods to be more environmentally friendly. Employ as many of the following preferential practices as appropriate to your circumstances:

1. Fertilize lawns and woody vegetation only in the fall. Contact your Cooperative Extension Service agent for free advice or consult this on-line CES circular: <http://www.ca.uky.edu/agc/pubs/id/id72/id72.htm>

2. Water established landscaping only if it received less than one inch of rain in the previous week. Water thoroughly, once weekly, not in sips, to encourage deeper rooting. Use soaker hoses, rather than sprinklers.
3. Don't mow until your lawn is at least 4" tall, to save time, fuel, money and air pollution—and make your lawn less hospitable to invasive weeds.
4. Convert at least part of your lawn into garden and/or lower maintenance vegetation. Choose native species of flowers, vegetables, shrubs and trees. Deciduous shade trees on the south and west sides of the house lower AC costs, yet don't block the winter sun. Again, consult your local CES agent or <http://www.uky.edu/Ag/Horticulture/homehort2.html>.
5. Use hand-powered equipment, such as a rake, hand-trimmers, reel mower, ax and hand-saw instead of a blower, trimmer, power mower and chainsaw powered by two-stroke engines. Think of them as part of your exercise regimen! Many models now offer ergonomic designs and lighter metals.

(Louisville residents are eligible for partial rebates when they trade in two-stroke engine-powered mowers and trimmers for manual or electric-powered models. See <http://www.louisvilleky.gov/APCD/lawncare/>.)

6. When refueling gasoline-powered equipment, use a funnel to prevent spills. Tighten caps to prevent vapor losses. Store equipment and fuel away from sun and rain. Winterize the engine, rather than allowing fuel and oil to sit in it until the following spring.
7. Follow manufacturer recommendations for operation and maintenance. Use the specified gasoline-to-oil mixture. Clean air filters and change oil, as well as having the engine tuned, regularly. Keep the blades sharpened.

Over 200,000 Americans were injured by mowers last year! Always mow safely. Begin by scouting for debris and toys. Restrict access to the mowing area, especially by children and pets. Dress properly: wear sunglasses or other eye protection, long pants and sturdy shoes or boots, ideally steel-toed. If mowing slopes, consider footwear with cleats. Never try to dislodge debris or adjust the equipment while the engine is running.

For more info, see <http://www.epa.gov/otaq/consumer/19-yard.pdf>