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How Leaf Blowers Are Trying to Kill Us

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Editor's Note: *In Canada, and some other jurisdictions around the world, both at the federal and the provincial levels, the Ministries of Health are different from the Ministries of Labour and/or Environment, so the right hand doesn't always know what the left hand is doing. Laws and regulations that may control noise levels (e.g. Ministry of the Environment) have been developed separately, and in some cases, in isolation, from the health effects of excessive noise levels (e.g., Ministry of Health). In my opinion, this has long been a stumbling block to a cohesive set of policies.*

However, the situation is improved at the municipal level where Boards of Health deal with all three Ministry issues so there is potentially more that can be accomplished at the municipal by-law level.

The potential health/pollution effects that can be (synergistically) additive such that personnel working in one area (e.g. noise control) can gain potential allies working in another, seemingly unrelated area (e.g., air pollution), to better achieve a desired change in by-law regulation.

In this article, Chemical engineer Monty McDonald, the Environment Chair of the Bayview Village Association in Toronto, provides information about the air-born chemical pollution issues relating to leaf blowers. Forming alliances with other professionals and groups that seek the same end-goal- limiting the deleterious effects of leaf blowers- but have differing orientations, can provide a stronger voice when it comes to modernizing municipal by-laws such as this.

Those noisy leaf blowers have it in for us in many ways besides the unhealthy noise levels they subject us to. They are probably the greatest obnoxious noise source in the city of Toronto. The readership of *Canadian Audiologist* is aware of the degree of unhealthy noise they generate; up to 115 dB SPL peak of low frequency sound that can penetrate walls and windows.

Air Pollution from Engine Exhaust

Almost all lawn maintenance contractors use leaf blowers even when there are no leaves on the ground as it saves them time…their goal is to get the grass cut and all the clippings blown off their customers lawns and driveways as quickly as possible so they can move on to the next customer. The clippings usually get blown down the street and the next contractor down the street will blow them back. These machines are driven by highly polluting 2 stroke engines which can be operated in any position even upside down whereas the 4 stroke engines used in most lawn mowers as well as our automobiles run very cleanly but can only run when upright. The first stroke is the power stroke when the fuel is burned in the combustion chamber pushing the piston to run the engine. The second stroke is the exhaust stroke when the piston pushes the products of combustion (CO, CO_2, H_2O, excess air and some unburned fuel) out of the engine. This stroke occurs at the same time as fresh fuel and air is coming into the combustion chamber and some of it mixes with the exhaust. As a result, about 30% of the fuel (gasoline / oil mix) goes out the exhaust and becomes an aerosol for us to breath. I calculate during the 5 spring/summer months when there are no leaves on the ground 1500 homes in my community will have 1000 liters/ each month polluting our atmosphere. During the Spring and Fall cleanups it would be 4 times that number as the machines are used for a much longer time period cleaning up all the leaves on the ground, wedged inside hedges etc.

Many gasoline components are carcinogens (e.g., benzene, butadiene, formaldehyde). The oil companies post signs on all their pumps warning that gasoline causes cancer in laboratory animals and to avoid breathing gasoline vapours. When these carcinogens are used in chemical manufacturing they are identified as regulated substances by the Occupational Health and Safety Act (OHSA) and the workers must be protected and the plant atmosphere must be controlled to very low concentrations, usually 10-20 parts per million in air. A person operating a leaf blower

with its fuel laden exhaust is exposed to 10,000 parts per million or more fuel in air. Therefore, the workers who do not wear carbon filter masks are exposed to dangerous levels of these carcinogens. As a bystander, if you smell the fumes, **you have ingested a big dose...** the smell of most of these chemicals cannot be detected by your nose at levels less than 500 parts per million. The state of California reports that emissions from small engines create more ozone than the millions of cars on the road in that state.

Air Pollution from Dust Generated and Dispersed by the Leaf Blower

Many people do not think of other air pollutants that are just as bad as gasoline. Air from a blower travels at 200 km per hour and pulverizes what it hits into very fine dust, finer than is found in nature. Think what the air comes in contact with on the ground (soil, manure, fertilizer, pesticide residue, moulds, animal excrement. There are all kinds of toxins in street dust: dust from brake linings (asbestos is still used), grease and oil and the most common is carbon black from tire wear which is also a carcinogen. The problem with street dust is it can stay airborne for days. Much of this dust is so fine (less than 10 microns), it gets past the protective cilia in your airway and passes into your lungs, some very fine particles can get into your bloodstream through the lungs. Some health authorities in California claim dust is a worse health risk than fuel emissions

California is away ahead of Canada regulating the use of leaf blowers. One hundred municipalities (including Los Angeles, Santa Barbara, Santa Monica) **have banned their use year round** because the of dust and fuel health hazard)

How About Water Pollution?

Yes! Think of all those grass clippings left on the streets. During rain storms they get washed into the storm sewers and end op decomposing in catch basins eventually get churned up by the turbulence of high flows during rainstorms. All storm sewers flow to our creeks and rivers. These masses of decomposing greenery add to the Biological Oxygen Demand (BOD) in our waterways.

What Should a City Do?

As a start, ban leaf blowers in the summer months (mid-May until October) when there are no leaves on the ground, they are the high smog months and children are out of doors. All homeowners should leave clippings on the lawn as mulch as all gardeners recommend. Use brooms to sweep paved surfaces of clippings. The IDEAL VEHICLE to do this is to insist that your municipality’s Leaf Blower Noise Bylaw should include this ban as well as regulations on reducing noise.