PARTICULATES

Backyard Burning: Smoke Gets in Your Eyes...and Lungs!

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It's Time to Stop Smoking.
Backyard burning is what we're talking about. It can be as bad for your health as cigarettes.

Besides, you can make better use of the leafy leftovers you gather in the yard, instead of sending them up in smoke. Burning is not only hazardous to human health and the environment, it's unnecessary.

This fact sheet explains why backyard burning is a backwards step in the fight against air pollution, and a waste of a valuable resource. It outlines what the government is doing to stop it, and how YOU can help.

Too Close for Comfort

Smoke from burning vegetation is now considered one of the most serious kinds of air pollution in British Columbia. The sources of smoke are many: slash burning in the logging industry, land clearing in construction and agriculture, wood residue burning in the forest-products industry, residential woodstoves...and backyard (or "open") burning.

Throughout BC, it's been a common practice to burn the organic materials (tree prunings, leaves, grass clippings, etc.) we collect when we're gardening or sprucing up the yard. The small fires we light in a barrel, or right on the ground, don't produce as much smoke as, say, a large slash burn or bonfire. But the problem is that backyard burning takes place right where we live — and breathe. Because we are often caught in the smoke plume before it's been diluted, we're exposed to high concentrations of pollutants.

The smoke from your fire can seriously pollute your neighbourhood's air for several hours. In fact, during periods when the wind is still, the hazardous particles and gases in smoke can accumulate to harmful levels for days. Ironically, backyard burning often occurs during calm weather, when the smoke can't be dispersed — and on the weekend, when many people are out for a "breath of fresh

air." Running inside and closing the doors and windows won't protect you, since smoke easily seeps through small cracks and holes.

The nature of the burning itself also contributes to the smoke problem. Often, people burn wet materials or starve the fire of oxygen, producing a very smoky fire. Even worse, they throw in materials like painted wood, plastics and rubber that should never be burned because they release toxic substances.

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What's So Bad about Smoke, Anyway?

It's Unhealthy!

Human beings have been lighting fires and breathing in smoke for centuries, right? So why all the fuss now? Well, scientists have recently discovered that wood smoke is much like cigarette smoke, containing a mixture of tiny particles (called "fine particulates") and gases.

Fine particulates are small enough to be breathed into the deepest reaches of our lungs. They are associated with all sorts of health problems — from a runny nose and coughing, to bronchitis, asthma, emphysema, pneumonia, and even death. Senior citizens, infants and people who already have lung or heart problems are most at risk, but healthy younger adults and children can also be affected.

New research in the US links fine particulates with tens of thousands of deaths annually in that country. Here in BC, fine particulates are now considered the worst kind of air pollution problem in BC — more hazardous than ground-level ozone (the key, unhealthy ingredient of smog) and all other outdoor air pollutants.

Two reports in 1993 and 1995, by Dr. Sverre Vedal of the University of British Columbia have connected exposure to high levels of fine particulates with a significant rise in the number of premature deaths from respiratory and heart disease. It's also linked with more emergency room visits and hospitalizations, as well as more time off work and school.

The harmful gases in smoke — such as carbon monoxide, nitrogen oxides, dioxins, furans, benzo-a-pyrene, phenanthrene and acrolein — can trigger respiratory illnesses, angina, headaches and eye irritation. Some are known to cause cancer.

It Wastes a Valuable Resource!

Here's another reason to stop burning: the stuff we toss into the fire shouldn't be wasted! Instead of going up in a cloud of smoke, leaves, clippings and branches can be reused — to make compost or wood chips (mulch), for example. (See "What You Can Do".)

Smoke Destroys the View!

It's a bright sunny day, until someone lights a backyard fire. A plume of smelly, grey smoke soon

obscures the houses in your neighbourhood. Smoke is very effective at reducing visibility. In fact, it can blot out the landscape so much that road and air travel are hampered, and beautiful vistas are hidden. Wouldn't you rather enjoy clean, clear air?

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What is the BC Government Doing to Put the Lid on Smoke?

Backyard Burning is a Municipal Affair
Backyard burning is under municipal jurisdiction. The provincial government cannot regulate it, but it does offer technical and educational information.

Many municipal bylaws dealing with backyard burning are for fire protection, and often are not intended to protect air quality. Recently, though, several municipalities have passed bylaws that ban backyard burning, or only allow the burning of dry, garden refuse under strict rules and on certain days.

To make it easier for municipalities to pass their own "anti-smoke" bylaw, the Ministry of Water, Land and Air Protection created a model bylaw on (back)yard burning in December 1997. Municipalities can use this model to draft a specific bylaw to limit or prohibit backyard burning. See the Model Municipal Bylaw for Regulating Backyard Burning (PDF: 131 KB / 18 pages).

The ministry has also given educational and technical support to municipalities and the public — on proper burning techniques, wood stoves, backyard burning restrictions or bans, and composting.

It is important to note that, in communities where backyard burning is permitted on specific days of the week, and/or months of the year, the allowable burn times are planned months in advance — long before anyone knows what the weather conditions will be like. If an allowable burn time occurs when the air is stagnant, and smoke will be trapped in the neighbourhood, it's a good idea to avoid burning.

Typically, smoke builds up on cold, calm and clear nights — and during windless, overcast weather. If you must burn, check the "Ventilation Index" first, to see if the local air conditions are appropriate for burning.

Also, keep in mind that the point of stopping burning is to reduce smoke pollution and promote the reuse of garden trimmings. Nothing will be accomplished if everyone just piles up their garden residue until the next allowable burn time, and then burns with a smoky vengeance. (By the way, it costs more to enforce a bylaw that limits burning to certain conditions and "allowable burn times" than it does to ban burning altogether.)

Environment Canada's **Ventilation Index** indicates how readily smoke plumes will break up, due to local weather conditions. Burning should only occur when the index is "good," i.e., when the air flow will disperse the smoke.

The Ministry of Water, Land and Air Protection has set up regional burning "hotlines" that you can call to find out the Ventilation Index for your area, and if wind and weather conditions are favourable for burning. For the hotline nearest you, contact Enquiry BC* or visit our web page entitled Open Burning: Rules Strengthened (http://wlapwww.gov.bc.ca/air/particulates/burning.html).

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The BC Government's Work to Stop Smoke in the Province

The Ministry of Water, Land and Air Protection has moved to control the sources of smoke in BC, and encourage the use of wood and leafy residue as a resource. It has done so by setting regulations, along with taking nonregulatory actions — such as broad programs, technical support and public education. And because motor vehicles are a major source of fine particulates, the ministry has brought in measures to control their emissions, as well.

The BC Government has passed the following regulations:

- *Open Burning Smoke Control Regulation* (April 1993, amended in 1998 and 2000)
  The *Open Burning Smoke Control Regulation* is meant to encourage the reduction and reuse of vegetative debris from large outdoor fires which are usually set for land-clearing, construction or forestry operations. Also, see the *Open Burning Smoke Control Regulation*: Rules Strengthened.

- *Solid Fuel Burning Domestic Appliance Regulation* (August 1994)
  The Solid Fuel Burning Domestic Appliance Regulation specifies particulate emission limits, and labeling and testing requirements for new wood stoves, fireplace inserts and factory built fireplaces manufactured in BC, or sold or imported for use in BC.

- *Wood Residue Burner and Incinerator Regulation* (December 1995, last amended 2001)
  Under this regulation, wood residue (beehive and silo) burners in populated areas (Tier 1) are to be shut down by the end of 2004. Of the original 80 Tier 1 burners, 64 had been shut down by the end of 2001. Eliminating these inefficient burners, which frequently cast palls of smoke over many valleys, will lead to cleaner air in many regions.

In addition, the provincial government has provided $300,000 for an ethanol development program, called Ethanol BC. This project will support the growth of commercially healthy technologies for

producing ethanol, a fuel made from softwood residue. The Canadian Petroleum Products Institute has also committed $100,000 over five years.

The Ministry of Water, Land and Air Protection took part in developing the Canada-wide Standards for Particulate Matter and Ozone in July 2000. By setting targets for acceptable air quality, and agreeing to a set of joint initial actions, BC and the rest of Canada are taking an important step towards reducing the risk that fine particulates (and ground-level ozone) pose to human health.

Along with smoke, vehicle exhaust is a major source of fine particulates. In fact, scientists have recently found that fine particulate air pollution in cities causes more illness and death than smog does.

To reduce fine particulate pollution in the Lower Fraser Valley, the BC Government launched the AirCare ON ROAD (ACOR) testing program in 1999. ACOR targets heavy-duty, diesel trucks and buses — key culprits when it comes to fine particulates and other air pollution. Two mobile teams test the emissions of heavy-duty, commercial diesel vehicles. Vehicles that fail the emissions test must be repaired and re-inspected before they can qualify for insurance renewal.

BC's tailpipe standards for new vehicles (see the regulations on our Vehicle Emissions website), the AirCare vehicle-emission testing program, and the older-vehicle "Scrap-It" program are all working to stop the production of secondary particulates. Secondary particulates are formed due to a chemical reaction involving gases emitted into the air. In this case, sulphur dioxide, nitrogen oxides and hydrocarbons released by vehicles are transformed into sulphates, nitrates and organic carbon compounds, respectively.

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What You Can Do

"Not in my backyard" should apply to backyard burning! Just about anyone who lights a fire contributes to smoke-related air pollution. Below are some important ways you can help clear the air.

- Instead of burning, reuse and recycle as much organic material as possible. Turn your garden leftovers into garden riches: compost and mulch. Leafy materials and small trimmings make great compost. Branches and sticks can be ground up into mulch. (Proper composting will destroy pathogens and insect eggs.) You can do the work yourself at home, or hand the job to community or private services, such as those outlined below:
    - Curbside recycling services are available through solid-waste utilities and collection services in many communities. In some municipalities, your yard residue can be taken to composting facilities where it will be turned into compost and mulch. Call your garbage collection agency for more information.
    - Tree-trimming services are offered by private companies, who will come to your

property and dispose of small or large quantities of land-clearing debris.

- Chipping machines shred branches and other woody materials for use as mulch. They can be rented or bought at nurseries, or hardware and garden stores. To keep costs down, you may want to buy or rent a machine with several neighbours.

- Burn only as a last resort. If you feel you must light a fire (and if local bylaws allow it), remember these important tips:
  - Don't burn when the smoke will be trapped in the area — make sure the Ventilation Index for your region is "good."
  - Burn efficiently. Light a quick-burning, hot fire that produces a minimum of smoke. To do this, don't starve the fire of oxygen and don't burn wet material: make sure the material has been dried for some time, beforehand.
  - Don't burn any garbage, such as plastics, paper and cardboard. Reduce waste at its source by avoiding overpackaging. Recycle everything you can!
  - **Never** burn toxic materials (e.g. tires, plastics, construction and demolition waste, treated and painted wood, and rubber). For information on recycling or disposal options, call the BC Recycling Hotline at 1-800-667-4321 or, in the Lower Mainland, at 732-9253 (R-E-C-Y-C-L-E) (Mon.-Fri., 9 am - 4 pm).
- Spread the news! Tell your friends, neighbours and elected officials about the dangers of backyard burning — and the clean air alternatives. Support government efforts to cut down on smoke from all sources.

After all, if you can't breathe, nothing else matters.