THE CLEAN AIR BYLAWS GUIDE

Andrew Gage and Sagarika Saha

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WEST COAST
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1001–207 West Hastings Street
Vancouver, BC V6B 1H7

phone 604-684-7378 1-800-330-WCEL
fax 604-684-1312

info@wcel.org www.wcel.org

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Introduction

Air pollution. There's a tendency to think in terms of large urban centres – mostly in Eastern Canada – perhaps caused by large scale industrial emitters or by the large numbers of cars on the streets. Local governments may assume that dealing with air pollution is a provincial responsibility, or that their community is too small to have an air pollution problem. They might think that air pollution is mainly an aesthetic or environmental problem that doesn't really affect their community.

Think again. Studies by the BC Lung Association, the BC Provincial Health Officer and others demonstrate that almost as many British Columbians die from air pollution as die in car crashes. The biggest impact of poor air pollution however, is its effect on public health and the quality of life for certain individuals. For example, individuals affected by poor air quality may miss school, work, and sports events or have to increase their visits to the doctor's office or increase their medication, all of which can impair the quality of life. Some of these impacts, such as lost time at work, can also have economic consequences. In addition, air pollution can lead to the loss of simple pleasures such as the enjoyment of one's immediate environment.

Nor is the pollution confined to the larger cities such as Vancouver. Indeed, some of the worst air pollution in the province occurs in Prince George, Quesnel, Golden and other smaller centres, while air pollution in Greater Vancouver has improved as a result of careful regulation by the Greater Vancouver Regional District (GVRD). Even in communities with relatively clean air, the science demonstrates that for many pollutants, there is no safe level – any amount of pollution can be associated with health problems.

What can municipalities do about it? As this Guide shows, across the province, many local governments are looking out for their residents by regulating air pollution. However, other municipalities view air quality issues as a regional issue and are unaware of the range of opportunities to have an impact on air quality.

Part I of this Guide provides background information on air pollution problems facing many municipalities and the range of tools available to local governments. Part II then discusses in detail what local governments can and can't do about air pollution through their bylaw-making powers. Part III highlights some of the municipal clean air bylaws that are already in place around the province and elsewhere and provides examples of model bylaws.

Part I – The Case for Municipal Air Quality Management

Why a Guide about Clean Air Bylaws and local government? In short, because air pollution impacts on individual communities in a number of ways and there are a wide range of things that local government can do about it.

Impacts of Poor Air Quality

The number one impact of poor air quality is the toll it takes on human health. Each day the average adult human breathes more than 11,000 litres of air – so it is hardly surprising that air pollution can have a huge impact on the human body.

Anyone who suffers from asthma knows that smoke or dust in the air can bring on an attack. Less obvious are the impacts of air pollution which are not readily visible or which affect people with heart problems, cancers and other non-respiratory ailments.

The Provincial Health Officer, in his 2003 Annual Report, made the "conservative estimate" that between 25 and 250 people die ***each year*** in the province due to outdoor air pollution; less conservative estimates put the number of deaths as high as 400 or even 640 deaths per year. By way of comparison, about 400 people die each year from motor vehicle accidents. Annually, there are about 700 hospital admissions and 944 emergency room visits in the province due to outdoor air pollution.[1] The Provincial Health Officer concluded that despite different estimates of mortality "the direction of the studies is clear – air pollution is harmful to health, and if reduced/avoided, an improvement in population health can be expected."[2] In addition, a Health Canada report estimated that there were 680 deaths annually due to air quality alone in the Greater Vancouver Regional District.[3]

Obviously individuals living with respiratory problems are the most susceptible to air pollution. The lungs are crucial to the body as a whole, and many pollutants have an effect even on healthy lungs. The elderly, people with cardiac problems, and other people requiring medical attention, are all at risk of problems caused or exacerbated by air pollution.

Moreover, children are also susceptible, because they breathe more air relative to their body size than adults, and their lungs are still developing. There are an increasing number of studies that suggest that poor air quality can cause asthma and other respiratory ailments among otherwise healthy children.

In addition to human health impacts, air pollution has negative **environmental consequences**. Different types of air pollution can affect plant growth, harming agricultural crops and wild areas alike. Air pollution can also negatively affect a wide range of animal species.

In addition to the health and environmental problems, however, air pollution makes a community **less enjoyable to live in**, particularly where the pollution is visible or has an odour. A public awareness of pollution results in **complaints from the public** – complaints that local government politicians have an interest in addressing.

Air pollution can also have **economic consequences**. First, there are economic costs to the health and environmental problems caused by pollutants – from the cost of an extra hospital bed to a day's missed work to an agricultural crop's stunted growth. A recent report produced[4] for the BC Lung Association found that:

1. Even small changes in ambient air concentrations in the Lower Fraser Valley trigger significant changes in health outcomes and their associated dollar value. For example, a 1% improvement in ambient $PM_{2.5}$ and ozone concentrations is predicted to result in $29 million in annual savings in the Lower Fraser Valley in 2010.
2. Health benefits can be cumulative over time. Over a 10-year period, the potential benefit of a 10% improvement in fine particulate matter concentrations in the Western Lower Fraser Valley (an area slightly less than the GVRD) could be on the order of $1.19 billion.

Since ambient air pollution is affected by topography and weather patterns, it is important to monitor and regulate each facility that each contributes to the number of pollutants in a given area. Air pollution can limit economic development with new facilities forced to ensure that new operations do not make the overall levels of pollution unacceptable to the public. New facilities may be forced to adapt to the existing conditions with higher costs to ensure they have minimal air pollution. Ensuring that each facility has low emissions lessens the cost for all facilities.[5]

The BC government's Guide to Airshed Planning states that poor air pollution limits economic development for areas as businesses may choose to locate their businesses where the air quality is better and that, "degradation in visibility or a perceived health risk from poor air quality may have an adverse effect on local or regional tourism".[6] Conversely, some businesses may choose to locate in areas that have less restrictive air quality requirements to minimize their costs for controlling emissions which may seem to provide short term benefits for the business but in the long term will add to the costs of adaptation at a later date because of the burden created from additional pollution.

Clearly there are many reasons for local governments and the public at large to care about keeping air clean.

Further information on the complexities of determining sources of concern

- High concentrations of pollutants or prolonged exposure can be dangerous to human health.[7]
- The percentage of total tonnes of emissions contributed by a source does not always indicate what its effect or toxicity will be.
- Weather and local terrain features (e.g. mountains) will affect where pollutants will travel: for example, the air flow will determine how pollutants travel within each individual airshed and also between airsheds.
- The proximity of the emissions to the local community and, in some cases, the proximity to people that are most sensitive to the effects of air pollution, needs to be evaluated.
- The impact of pollutants in an airshed reflects the source emissions from within the airshed, and in some cases, the emissions from distant sources as well.
- Pollutants which are precursors to other pollutants need to be managed as well.

An introduction to Pollutants of Special Concern

Each community will have its own unique air pollution challenges. However, there are some pollutants that are common to many developed areas. This section outlines a few of these pollutants, their health effects and their sources. The sources of emissions can be varied, but as shown in the 2000 British Columbia Emissions Inventory of Criteria Air Contaminants, several BC industries are significant emitters of a number of a wide range of pollutants.[8]

Particulate Matter (PM)

Particulate Matter, or PM, refers generally to small particles in the air that are capable of being breathed into the lungs. Air emissions involving smoke and dust are obvious examples of PM emissions, although PM can be present in the air even when it is not immediately visible.

In general the smaller the particle, the more dangerous, since it can find its way further into the lung. PM emissions are classified in terms of particle size. Total Particulate Matter or Total Suspended Particulate refers to airborne particles of about 40 micrometres (40 µm) or smaller. Of greater health concern are the particles that are less than 10 micrometres (10 µm) in diameter, known as PM_{10}, and those which have a diameter of 2.5 micrometres (2.5 µm) or smaller, known as $PM_{2.5}$. These smaller $PM_{2.5}$ particles are known as "the fine fraction of PM_{10}" and can penetrate into the lungs and bloodstream, causing breathing difficulties and potentially permanent lung damage.[9]

There is also evidence that PM arising from combustion (burning) and especially the burning of diesel, is more likely to cause health problems than PM that comes from other sources.

When $PM_{2.5}$ is breathed into a lung, it irritates the lung tissue, and aggravates existing respiratory conditions. $PM_{2.5}$ also has an indirect impact on other medical conditions including heart conditions. In a report developed for the BC Lung Association in partnership with BC Ministry of Environment and Environment Canada, the authors point to a World Health Organization study carried out in Europe, which found that,

> "Long-term exposure to current particulate matter concentrations may lead to a marked reduction in life expectancy, primarily due to increased cardio-pulmonary and lung cancer mortality. In addition, increases in lower respiratory symptoms and reduced lung function in children, and chronic obstructive pulmonary disease and reduced lung function in adults were likely long-term health effects from exposure at current particulate matter levels in Europe".

The authors also refer to other studies in US and Canada to conclude that "health impacts also occur at particulate matter levels commonly observed in Canada."[10]

There is a large body of evidence that there is no "safe" level of PM. While low levels of PM will not produce a noticeable impact on the health of healthy adults, other sectors of society such as the young, the elderly and those with existing medical conditions appear to be at great risk even at low levels.

The Canadian Council of Ministers of the Environment (CCME) ratified a Canada-Wide Standard (CWS) for $PM_{2.5}$ of 30 $\mu g/m^3$ (24-hour average), to be achieved by the year 2010 and a CWS for ozone of 65 parts per billion (8-hour average).[11] Given BC's population and levels of industrial activity, there are few BC communities which consistently fail to meet these standards. This does not mean that nothing needs to be done in communities that fall below this standard. The Canadian Council of Ministers of the Environment, in adopting the standards, wrote:

> "There is a need to ensure that the public recognizes that CWS levels are only a first step to subsequent reductions towards the lowest observable effect levels. It would be wrong to convey the impression that no action is required in [areas which meet the CWS] or that it would be acceptable to al-

Example of an open burn. Depending on the material being burned, the range of toxic emissions can be varied.

low pollutant levels to rise to the CWS levels. … Jurisdictions should work with their stakeholders and the public to establish programs that apply pollution prevention and best management practices …"[12]

The CWS for PM and Ozone are designed to be implemented with all jurisdictions committing to continuous improvement, pollution prevention, and keeping-clean-areas-clean programs in areas with ambient concentrations below the CWS levels.[13]

Important sources of $PM_{2.5}$ include any activity which involves combustion. While industrial emissions and vehicle pollution can both contribute to PM emissions, burning by individual land owners can have a major impact on PM emissions. **Residential wood burning** for heating (in wood stoves, fireplaces or outdoor boilers) occurs near people's homes and most often on cold nights when there is little wind, and can have a major impact on air quality in some communities. Similarly, land clearing, the burning of wood waste and leaves and other **open burning** by individual land owners or **prescribed burning** can represent a major source of PM emissions.

The dust from roads or construction can also be a source of PM_{10} as well as residential wood burning, back yard burning, wood waste burning and smoke from forestry management practices of clear cuts, and industrial plant emissions. Railroads and marine vessels are also sources of emissions.[14]

In addition, during some years, forest fires have resulted in major increases in PM levels for some communities in the interior of the province. A recent study examined the number of increased physician visits in two communities that experienced forest fires in 2003: Kelowna and Kamloops. The study found that in Kelowna, which had suffered a greater PM level than Kamloops, there was a greater increase in physician visits because of respiratory problems as compared to Kamloops. The authors of the study concluded that the lower rate of physician visits in Kamloops was likely due to the population being exposed to lower levels of PM.[15]

Finally, PM is also created in the atmosphere when other pollutants such as volatile organic compounds (VOC), nitrogen oxides NO_x, sulphur dioxide (SO_2) and ammonia (NH_3) react with one another through chemical and/or physical reactions.[16]

Nitrogen Oxides (NO_x)

Nitrogen oxides, which include nitric oxide (NO) and nitrogen dioxide (NO_2), are formed whenever fuel is burned. Nitrogen dioxide can irritate the lungs and aggravate existing respiratory problems. There is also some evidence that it may aggra-

vate allergic reactions to airborne allergens. NO_x also reacts with volatile organic compounds (VOCs) in the presence of sunlight to form ground-level ozone – a key component of smog – which also has health implications. NO_x is also a precursor to PM formation.

Motor vehicles, marine vehicles and other fuel-driven transportation are the major source of NO_x in the province. Industries and heating which burns fuel also contribute to NO_x emissions. The upstream oil and gas industry is also a major NO_x source.[17]

Volatile Organic Compounds

Volatile Organic Compounds (VOCs) refer to a wide range of organic chemicals that are reactive. VOCs are an important precursor to ground-level ozone formation. Some are harmless and break down quickly. Other VOCs react with organic tissue causing a range of health effects, from interfering with lung function to being known or suspected causes of some types of cancer. VOCs are released by some types of paints, carpet materials or other synthetic materials, and can cause significant indoor health problems with inadequate ventilation.

Outdoor VOCs can be emitted from dry-cleaning solvents, paints, the evaporation or combustion of fossil fuels, and a range of industrial processes. Approximately half of the VOCs found in Canada are from natural sources, such as trees.[18]

Ground-level Ozone (O_3)

The word "ozone" often makes people think of the ozone layer – which protects the planet from harmful ultra-violet radiation: ozone is a good thing – right? Ozone may be a good thing in the upper reaches of the Earth's atmosphere, but it is a bad thing here at ground level.

Ozone is not emitted directly into the air, but rather is a "secondary pollutant" – one which develops in the air when nitrogen oxides and VOCs react with one another in the presence of sunlight.

Like PM, ozone interferes with the function of the lungs, causing and heightening an inflammation in the lungs, and a decrease in lung function. In addition, ozone causes an increase in respiratory symptoms (coughing, tightness of the chest, aggravating asthma, bronchitis, etc.) and worsens other medical conditions.

Also like PM, there is no safe level of ozone – even extremely low concentrations of the pollutant have a demonstrable effect on the health of a population. Ozone can also cause crop damage and is also harmful to plants and trees, causing some trees to be more vulnerable to disease.[19]

While more stringent air pollution standards have led to an improvement in the air quality in many communities for many pollutants, ground-level ozone is a pollutant which has increased in most urban areas.

Sulphur Oxides

Sulphur dioxide (SO_2) is a colourless gas which has no odour at low concentrations, although it does smell at higher concentrations. SO_2 and other sulphur oxides irritate the lungs, especially in combination with other pollutants. These gases can aggravate asthma or other existing respiratory problems, as well as aggravating heart problems. Sulphur oxides are often the result of burning fuels which have sulphur in them. Most vehicle emissions, and especially emissions from diesel powered vehicles, contain sulphur dioxide. Similarly burning fuel for power generation will give rise to sulphur dioxide.[20] Other emission sources include gas processing, upstream gas operations and smelting sulphur-containing ores.[21]

In BC, SO_2 is a concern because it is a precursor to $PM_{2.5}$ and acid rain. While regulations have had an impact in reducing sulphur from vehicles, the pulp and paper industry is a major emitter of sulphur dioxide, as are various gas refineries and facilities that process fossil fuels.[22]

Heavy Metals

Heavy metals cause a range of health effects and come from a range of sources. Some sources of heavy metals include coal burning, smelters, the manufacture of products that use the specific metals (for example, lead paint), etc. A community which has elevated levels of heavy metal emissions or which is aware of a nearby source of emissions may wish to investigate the health implications closely.

Lead (Pb) is one of the most notorious examples of airborne heavy metal pollution. For many years lead was added to gasoline because it allowed cars to run more smoothly. The lead burned by the cars ended up as air pollution until the public and government regulators became aware of the resulting health problems. Lead affects the central nervous system, resulting in learning difficulties among children. It can also cause kidney and reproductive problems (including miscarriages). Fortunately, with lead no longer used as a gasoline additive, lead is much less common as an air pollutant, although it can still arise from burning coal or other fuel sources that have lead in them.

Other heavy metals which are often airborne and may cause health problems are cadmium (which affects the lungs, may be linked to lung cancer and can affect bone development) and mercury (which affects the central nervous system).

Carbon Monoxide

Carbon monoxide (CO) is a colourless, odourless gas that is created through incomplete burning (combustion). Even at relatively low concentrations it impairs the body's ability to absorb oxygen, and can cause a range of symptoms, including drowsiness, headaches, and impaired thinking and perception. There is also some evidence that it can harm the development of a foetus. At high concentrations, pos-

sible only in an indoor or enclosed environment, it can cause unconsciousness and fatalities.

Sources of CO include motor vehicles, backyard burning, and residential heating, as well as industrial sources. Larger industrial sources can be addressed by improving combustion. Non-industrial sources can be addressed through the maintenance or replacement of older vehicles and stoves and restrictions on outdoor burning.

Total Reduced Sulphur Compounds (TRS)

Total Reduced Sulphur Compounds, or TRS, refer to a range of chemicals with sulphur in them, most notably hydrogen sulphide (H_2S), which have a pungent odour, similar to rotten eggs. Indeed, local governments are likely to have complaints about the smell from TRS well before the levels are high enough to have any known clinical effect, although prolonged exposure to even low levels of TRS may produce headaches and nausea.

While extremely high levels of H_2S can be fatal, such ambient levels will occur only as a result of a major accident in certain types of oil and gas operations (dealing with high H_2S "Sour Gas"). For the most part TRS is viewed as a nuisance more than a health problem.[23]

The major sources of TRS are the pulp and paper industry (especially outdoor effluent treatment) and the oil and gas industry (from the extraction and processing of sour gas).

Greenhouse Gases (GHG)

Greenhouse Gases (GHGs) refer to a range of gases such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), hydroflurocarbons (HFCs), perflurocarbons (PFCs) and sulphurhexafloride (SF_6). The presence of these GHGs in the atmosphere are responsible for raising the temperature of the earth. For the most part GHGs do not have a direct impact on human health, however, given public concern about climate change some local governments may wish to know what they can do about GHGs.

Other toxins

The section above discusses some of the more common types of air pollutants and their health effects. Not surprisingly, volumes have been written about different types of air pollutants and their health impacts. Each community should be aware of any industrial facilities or other sources of air pollution that are likely to produce hazardous emissions. Other examples of toxins include for example: arsenic compounds released through the burning of coal or waste; manganese compounds which can be released from burning coal or from power plants and vinyl chloride which can be emitted from landfills and chemical wastes.[24]

Role of Federal and Provincial Governments

Even if a local government is concerned about air pollution, it may have the perception that the federal and provincial governments are dealing with the issue.

While both the federal and provincial governments do have laws related to air quality in place, there are still many things that a local government can do which will protect air quality without duplicating the efforts of the other levels of government. Because air pollution can affect people and the environment at the local, regional, national and international level, it is beneficial to have government at all levels involved.

The federal government regulates toxins, including air pollution, under the *Canadian Environmental Protection Act*[25] (CEPA). Under the CEPA the federal government can assess whether an air pollutant is toxic – posing a threat to human health or the environment. If a substance is designated as "CEPA Toxic" by the government, then Environment Canada must develop a plan about how that air pollutant will be dealt with. Environment Canada can also create laws governing these toxins and many CEPA regulations directly regulate air emissions, but most of the federal government's recent, most significant regulatory effort has been setting standards for products or processes which produce air emissions and on assisting provinces with development of regulations applicable to sources in their control.[26] "CEPA Toxic" is much broader than substances that are inherently toxic to human health. It also considers potential environmental harm, and includes substances like CO_2 that contribute to global warming. As part of its efforts to monitor air emissions, the federal government compiles inventories and research.

Provincially, air pollution is regulated by the *Environmental Management Act*[27] (EMA). The EMA adopts a 'risk management' approach to environmental protection. This means that for individual point sources for example, there is a higher level of government involvement in industries that government believes are 'high risk' and little or no oversight over 'low risk' industries. Under the EMA:

- Some industries, including pulp and paper mills, waste incinerators, thermal electric power generation, etc., will need to obtain a permit from the provincial government before they can discharge emissions to the environment;[28]
- Other industries will need to follow a "Code of Practice" that places restrictions on how air pollution can occur in that industry; if an industry will be regulated by a code of practice, but one has not yet been developed, facilities will require a permit until the Code is approved by the Minister;
- Any industries that do not require a permit or a Code of Practice are only subject to a general prohibition not to cause pollution, where pollution is defined in the EMA as the "presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment".[29]

The EMA also allows for regulations of non-point sources, including:

- motor vehicle emissions and fuel quality such as the *Gasoline Vapour Control Regulation* (B.C. Reg. 226/95)
- woodstoves (*Solid Fuel Burning Domestic Appliance Regulation* B.C. Reg 302/94)
- prescribed burning (*Open Burning Smoke Control Regulation* B.C. Reg 145/93)

The EMA provides the Minister of Environment with authority to prepare guidelines and standards on the protection and management of the environment, for example, ambient air quality objectives. The EMA also contains provisions allowing the Minister to require area-based management plans, where the need arises. The Minister may designate the area for which a plan must be developed and establish the process that must be followed.

Role of Local Government – building on opportunities to improve air quality

The role that local government will play in improving air quality will depend in part on the sources of most concern to the community served by the local government, but also on the resources and staff that are available to address pollutant release concerns. The sources of air pollution that can impact nearby residents (e.g. wood burning stoves, backyard burning, etc.) are well suited to be regulated locally.

Some local governments are unaware of the strong role that they can have in reducing air emissions. For example, one municipal official interviewed for this Guide expressed surprise that municipalities had authority to act on air emission issues, assuming that this was a federal and provincial issue.

While CEPA and the EMA are very useful tools, they do not address all air pollution problems or local concerns. Also there are many important reasons for local government to deal with air pollution problems, particularly where the gaps in federal and provincial regulation which, while not a problem at the provincial or national level, may be significant to a particular community. For example, various industries are not regulated under the EMA at all as they are considered low impact, such as gravel pits. However, if several of those businesses are located close together, or are close to other sources of pollution, they may have a very real impact on a particular neighbourhood. Multiple pollutant sources may have a cumulative impact, which local governments may be well placed to address.

Local governments could aim to tackle more of the air pollution arising from many smaller polluters, such as backyard burning, residential burning, etc as these provide

additional environmental impacts and toll on human health. In some communities these may be the largest source of air pollution.

For industries which are regulated by the province, there are no hard and fast rules about what is an appropriate emission level. The actual emissions levels included in government-issued permits are based on what the government feels is an appropriate level of risk to the public, together with consideration of available control technology, economic, and social factors and other constraints. It is possible that a local government may disagree with the Province's assessment of what types of risk are appropriate. While local government bylaws cannot authorize pollution above a level set by the government, and while there are other limitations, as we shall see in Part II, it is possible in some cases for a local government to set more stringent or additional requirements to ensure authorized standards are met.

Municipal zoning and land use powers are ideally suited to ensure that pollution sources are appropriately located in relation to residential neighbourhoods, or lands which are sensitive (for health or environmental reasons) to pollution (an issue considered further in Part II). The federal and provincial laws do not generally restrict where a polluting industry can operate.

A local government may have concerns about visibility or odour which are not strictly health or environmental concerns, but which may result in complaints or an impact on tourism. While the province can and sometimes does set requirements around odour for certain industries, the local government may also have a role in regulating such aesthetic impacts. Most importantly, local governments should be aware of the implications of air pollution and how the effects can be minimized. For example, planning decisions are long term decisions and can be difficult to reverse once implemented.

Local government may choose to address air quality issues for these or any number of other reasons. Having decided to do so, however, there are several tools available to a local government.

Municipal Tools for dealing with Air Pollution

This Guide is focussed on the use of local government bylaws to regulate air pollution or to mitigate its effects. Regulation through bylaws is only one tool available to local government, and it is important to understand the other tools which exist and their relationship to one another.

Airshed Planning

As with any sources of pollution, the dispersion of air emissions will be affected by weather and topography.

An airshed is an area in which, due to geographic or weather patterns, air movement (and therefore the movement of air pollutants) is limited. Airshed planning is a multi-stakeholder driven approach and a collaborative process.

Although air pollutants can travel huge distances and affect people and environments in many different ways, the concept of an airshed is intended to identify the geographic area most affected by air emissions in a particular community. An airshed is not tied to a particular local government or political boundary, but rather the realities of where the pollution tends to travel. However, in practice, political boundaries are often considered and used to determine the extent of the management area. For example, the Georgia Basin/Puget Sound airshed deals with transboundary emission management. This means Canadian and US local, regional, state and federal governments, First Nations and other groups (e.g. BC Lung and American Lung Associations) are working together to protect the airshed.

Airshed Planning, or Air Quality Management Planning, is an effort to identify sources of air pollution in a particular airshed and develop strategies to deal with them. Although local governments are involved, Airshed Planning also involves industry, community and environmental groups, First Nations, other levels of government and others in identifying and addressing sources of pollution. Generally, it is envisaged that local governments are just one constituent part of the collective effort needed by community members to contribute towards airshed planning.

Although there are many different ways to carry out Airshed Planning, the process typically involves:

- **Problem identification**: Does current air quality monitoring suggest that there is a problem? What factors or sources are contributing to this problem?
- **Plan development**: What are the most appropriate air-emission reduction measures to achieve local goals, and what are the relative priorities?
- **Implementation and reporting**: How and when will the measures be implemented, and by whom? How often will progress be reviewed and reported upon?[30]

Once developed, an Airshed Plan usually identifies major sources of pollution, goals in respect of those pollutants, strategies for reaching those goals, and indicators that will determine if the goals are being met. The plan will be revisited periodically to determine if the goals are being met and to change the plan if the goals are not being met.

A useful resource is the *Air Quality Planning Tool*, developed for the Ministry of Environment by the Sheltair Group, which describes a step-by-step process for communities that are interested in airshed planning.[31]

Airshed Planning recognizes that local government initiatives are not the only way to improve local air quality. By working with stakeholders (including other levels of government, community groups and industry) a local government can identify what strategies are best implemented by itself or in partnership with other stakeholders.

Bylaws are one part of the tool chest available for Airshed Planning. A bylaw may be a strategy adopted in a planning process, or a way of implementing a strategy that has been adopted.

Conversely, existing and planned bylaws, and other local government initiatives, should be considered in preparing an Airshed Plan. A good Airshed Plan recognizes and works with existing clean air initiatives. Where a bylaw is working well, the Airshed Plan should recognize the impact that the bylaw has had; where goals are not being achieved despite the existence of a bylaw, the Airshed Plan may suggest improvements to the bylaw, or additional or alternative tools that can be used to achieve the plan's goals. See Appendix 3 for further information on communities that either have airshed plans or are currently in the process of implementing them.

Municipal Policies

It is important that a local government lead by example. Many local governments have adopted policies about how they will manage their own lands and equipment in ways that minimizes air pollution. These types of changes do not require changes to bylaws – it just requires the local government to lead by example. Nonetheless, it can have a very real impact on air quality, while demonstrating the local government's commitment to clean air.

Sometimes a municipal policy can be a first step in developing and testing a programme that can later be implemented more widely – through education, incentives or even bylaws.

For example, in the mid-1990s, the Greater Vancouver Regional District (GVRD) adopted purchasing policies that favoured the purchase of a Low Emission Fleet. This is an example of green procurement or "eco-procurement" policies which have a demonstrable impact on air emissions. In a program associated with Fleet Challenge BC, six municipalities including Vancouver, Richmond, Whistler, Delta, Burnaby and North Vancouver will purchase and use up to 80 million litres of blended biodiesel

in their vehicle fleets over the next five years.[32] Similarly, a number of municipalities have retrofitted existing vehicles to emit less pollution. Other municipalities have purchased low emission public transit buses.

An effective green procurement policy can ensure that purchasing decisions favour products or services which, in addition to other environmental factors, help to reduce air pollution. The Federation of Canadian Municipalities' website is a source for further information on the benefits of eco-procurement.[33] The City of Richmond has an Environmental Purchasing Guide for all its staff members, and which forms part of Richmond's environmental policies and guidelines. The Environmental Purchasing Guide helps to encourage the purchase of goods that will minimize air emissions.[34]

The City of Richmond has also implemented an anti-idling policy for all of its employees. In a presentation given to the 2006 Clean Air Forum, a City of Richmond official reported that the anti-idling policy which has a strong educational component to it, had in one year, reduced fuel consumption by 160,000 litres with an estimated reduction of 170 metric tonnes of greenhouse gases.[35]

In most cases, changes in local government policy will not achieve air quality goals by itself (except in those rare cases where the local government has authority over the major sources or owns and operates a major point-source emitter). However, along with bylaws and/or other programmes, these types of policies can be effective.

Educational Programmes

Education and raising awareness are an important part of air emissions reduction. Not only is an informed public more likely to make personal choices that benefit the airshed, but they are also likely to bring social pressure to bear on neighbours not to pollute, and to support a council which takes a leadership role in fighting air pollution.

Examples include:

- The Central Okanagan Regional District and the City of Kelowna run an "I-Go" Programme, which educates commuters about how their choices affect air quality.[36]
- The SCRAP-It program runs in the Lower Mainland AirCare test area, and works to provide options to owners of older, high polluting vehicles that do not pass the AirCare test.[37] Environment Canada has previously held BC vehicle emissions clinics where car owners can have their emissions tested, and to have the engines inspected if there are problems and learn about vehicle maintenance.
- Burn-it-Smart is an educational program on how to use woodstoves more efficiently that has been hosted by a number of communities province-wide.[38] Several municipalities have had programmes to increase awareness as to the alternatives to open burning or backyard burning. Encouraging composting and increasing access to composting facilities may help to reduce the instances

of backyard burning. For example, the Regional District of Nanaimo's website[39] provides information as to alternatives to burning.

These programs can be used both by smaller, more rural municipalities as well as larger urban ones.

Incentive Programmes

Consumers often make choices based on what's in it for them, and many local governments have supplemented their bylaw and education programmes with financial incentives offered to consumers to trade in sources of pollution for cleaner technology.

- Under Kelowna's "Cash for Clunkers" programme drivers can turn in their old polluting cars in return for credits towards various cleaner options, such as a 2 year transit pass (worth $927), a cash credit towards the purchase of a bicycle, or $750 towards the purchase of a new, low-polluting, vehicle.[40]
- The SCRAP-It program offers incentives such as: $1,000 towards a new hybrid vehicle; $500 towards membership in a car sharing co-operative; Translink monthly passes; and West Coast Express 28 day passes as a trade for older, high-polluting vehicles.
- The GVRD and others have focussed on the concept of "Trip Reduction Services" – discounted public transit passes, covered bicycle parking, showers, ride-sharing coordination – as means to encourage commuters to leave their car at home. The GVRD started by offering these services to its own employees through its "Employee Trip Reduction Programme", which was launched in 1996. The programme was subsequently the model for the region's Go Green Choices programme, which encourages other employers to adopt such a programme.[41]
- As part of the Greater Vancouver Diesel Emission Reduction Program, the GVRD is working with Environment Canada and Fraser Valley Regional District in a "Georgia Basin Diesel Emission Reduction Partnership."[42] The Partnership encourages funding proposals for diesel emission reduction projects using verified emission reduction methods such as engine retrofits, engine repowers, use of cleaner fuels and idle reduction strategies. Grants of up to 75% of the project cost (to a maximum of $50,000) are available. The Partnership is anticipated to accept proposals and fund emission reduction projects annually starting in 2006 up until 2008.
- Kelowna, Quesnel, Golden and a number of other municipalities have invited residents to trade in old and inefficient wood burning stoves for a credit towards the purchase of newer stoves which are more environmentally friendly, such as cleaner burning and high-efficiency stoves. The province is currently conducting a community based social marketing study in the Skeena region to look at barriers and benefits to a more efficient woodstove change program.

- The Clean Air Foundation has a "Mow Down Pollution" program in which older gas powered lawn mowers or trimmers are recycled and rebates for new machines are offered or other incentives. Although this is a national program, it is good example how financial incentives can be incorporated with a recycling program and awareness raising program. For further information, see http://www.cleanairfoundation.org/mowdownpollution/program_mdp.asp

For smaller municipalities that may not have the capacity to enforce bylaws, incentives may work better initially, and produce quicker results, with the scope for introducing bylaws at a later stage.

Other programs

Several "chipping and leaf exchange" programs have been set up in the Regional District of North Okanagan. See http://www.nord.ca/services/swr/docs/chipping_leaf_exchange.pdf

Also, Translink reports that the U-Pass program has led to an increase in transit use since September 2003. The program, adopted by Simon Fraser University and the University of British Columbia, provides students with a reduced fare, all access transit pass. The goals of the mandatory U-Pass Program for students includes providing lower cost access to transportation and reducing single occupancy vehicles and congestion.[43]

Part II – The Bylaw Powers Of Local Government

This Part examines the powers that local governments can use in addressing air quality issues. In particular the discussion will focus on the fact that local governments have powers over air emissions through:

1. bylaws that affect land use
2. regulatory bylaws.

The bylaw powers that affect land use are an important tool. Land use policies are constantly evolving over time and allow for a broader community vision to shape planning priorities. By considering the impacts of air emissions, local governments can be strategic in locating sources of air pollution and sensitive industries to minimize the impacts of air emissions. Guidance can also be taken from the "Smart Growth Approach" to land use planning, which advocates a collection of land use and development principles that aim to enhance quality of life, preserve the natural environment, and save money over time. These principles will often reduce urban sprawl, encourage public transit and reduce air pollution.

In addition to land use powers, local governments have law making, or regulatory bylaw-making powers that can impact air quality emissions. The powers of municipalities have recently been changed, and in some cases expanded, under the BC *Community Charter*, which became law in January 2004.

Local Government and Land Use

At first glance there may appear to be little or no relationship between land use planning and air pollution. In actual fact, effective use of land use planning powers can reduce causes of air pollution and minimize the human health impacts. The relationship, however, is not a simple one, and concern about air quality can pull a local government in different directions.

Unlike most of the federal and provincial powers over air quality – which focus on how much pollution is appropriate – the land use powers of local government can be used to determine **where** the development of a polluting industry can occur.

Local governments have extensive powers to determine how land may be used within the boundaries of the municipality or regional district.

A local government has powers to determine what types of development occur and where through:

- **Official Community Plans (OCPs)**, which record a community's vision for future land use
- **Development Permits Areas (DPAs)** which heighten local government's scrutiny of development in certain areas of special concern
- **Zoning bylaws** which restrict the purposes for which a property can be used.

Land Use and Air Quality Management

Air Quality is a big-picture problem. A single car may not cause any real air pollution, but thousands of cars on the roads at the same time can. An oil refinery, while polluting, may not really hurt anyone, unless it's located next to a daycare. Therefore to address air quality problems, a local government cannot focus on individual components such as a facility or a road, but needs to consider how the components fit in at a broader level and develop a vision for the whole community. Airshed Planning tries to develop this type of community-wide vision by engaging and linking different players that have an impact on air pollution in particular. Several regional districts and municipalities are already engaged in air quality management, co-ordinating with different levels of government and other members of the community. In the meantime, however, other local governments already have a number of ways to impact air pollution using planning and land use policies– and these planning processes can and should incorporate consideration of air pollution and other environmental values.

The two main types of local government planning for land use are Regional Growth Strategies and OCPs. These plans, although adopted by bylaw and mandated by the *Local Government Act*, cannot usually be enforced directly. Rather, they help determine what other – more specific and enforceable – bylaws a local government should enact to implement this land use vision.

Regional Growth Strategies and Official Community Plans

Regional Growth Strategies develop high-level coordination between the municipalities that are members of a regional district to address issues such as urban sprawl, transportation, waste management and other regional issues. Regional Growth Strategies can and do deal with a range of issues which can impact on air quality, as

well as providing guidance to municipal governments on measures to include in its own planning.

An OCP can be adopted by bylaw. It is developed by either a municipality or a regional district (in an area where there is no incorporated municipality) and "is a general statement of the broad objectives and policies of the local government respecting the form and character of existing and proposed land use and servicing requirements in the areas covered by the plan".[44] It sets the vision for how the community will grow. Although OCPs do not directly regulate the specifics of land development, those bylaws that do regulate land use must be "consistent" with the OCP.[45] Also, the broad scope of the OCP allows consideration of how different land uses fit together.

OCPs also set out where a local government expects to provide public services, such as schools and parks (many of which are described as sensitive uses to indicate the vulnerability of the people using the services) which should be kept away from major sources of air pollution.

An OCP may set out objectives and policies about how the local government intends to deal with air quality issues. These objectives and policies are not by themselves legally enforceable, but can provide guidance to councilors or board members in making future decisions.

An OCP can also provide guidance as to when rezoning of a property or variances will be considered. There does not seem to be any reason that measures to address air quality could not be a factor to be considered in an application for rezoning. By using a combination of the OCP and the promise to consider future rezoning it is possible to give a strong incentive for industrial actors to agree to put voluntary restrictions on air pollution in place. It also allows for flexibility and ability to develop detailed policy as it is needed. For example, the Quesnel airshed management plan contains recommendations that modeling tools developed for the airshed be used for industrial zoning decisions (i.e. so they can avoid developing areas already subject to degraded air quality).

For example, an OCP could indicate a desire that an area be developed for mixed residential and commercial use, but note that if an industrial land owner were to demonstrate an ability to meet stringent air quality standards, that the local government would be open to considering an application for rezoning to a light industrial zoning. This would mean that industrial use in this mixed-use area would be a possibility, but would need specific consideration by the Council (in the form of a rezoning and an accompanying public hearing) and a demonstrated ability to meet air quality standards. Since the OCP by itself is not enforceable, a better approach might be to require a property owner that is seeking such a rezoning to put a covenant (an enforceable instrument under the *Land Title Act*) in place on its property guaranteeing that the air quality standards would be met. While OCPs offer flexibility, there can be limitations if a local government does not have the ability to properly evaluate applications from industry.

While Community Plans provide direction, a local government can put in place more specific "on the ground" requirements that are enforceable. These include zoning by-laws, which regulate how land is to be used, and development permits, which require local government oversight of development in certain high-risk areas.

Development Permit Areas

While most of an OCP lacks teeth, an OCP can designate development permit areas (DPAs) that are directly enforceable: no development may occur in a DPA until the local government has granted a development permit. For the DPA to be effective, guidelines must also be established, and these may be set out either in the OCP itself, or in a zoning bylaw. In addition, an OCP must have a policy statement of the special conditions or objective justifying the DPA. An individual seeking to subdivide, build or otherwise alter the land must apply to Council for a permit before starting work.

Development permits have been described as "an overlay on zoning with site or area specific guidelines."[46] Unlike zoning, DPAs focus not so much on regulating use, as ensuring that development occurs in a way that recognizes the specific objectives for an area.

Section 919.1 of the *Local Government Act* states that development permit areas can be created for the following purposes (amongst others):

- protection of the natural environment, its ecosystems and biological diversity;
- protection of development from hazardous conditions;
- establishment of objectives for the form and character of intensive residential, commercial, industrial or multi-family residential development.

While the objective of protecting public health and the environment from air pollution seems like a good fit with the purpose of DPAs, it is unclear whether the *Local Government Act* specifically allows DPAs which focus on air pollution. It is our opinion that there is a credible argument that air quality is a "natural feature" which could be protected under a DPA, but local governments will want to exercise caution in using the DPA powers in this way until the courts have ruled on this point. Specifically, DPAs are aimed at protecting areas of special concern. In light of the *Denman Island Local Trust Committee v. 4064 Investments Ltd.* case[47], (in which a Trust Committee attempted to regulate logging on private land through the use of Development Permit Areas) it would be inadvisable for a local government to regulate air pollution generally by establishing a development permit area over large areas of the municipality or regional district.[48] However, the Court of Appeal in *Denman Island* did recognize that the DPA power could be used more narrowly, to protect "specified natural features or areas" rather than "significant tracts of land." While it is arguable that a DPA could specify an area which is used for a sensitive land use and include objectives and guidelines related to air quality (for example DPAs encompassing hospitals, schools, dense residential neighbourhoods), it is not clear whether a court would accept this interpretation of the DPA powers.

Local governments may wish to adopt the recommendations in the BC *Environmental Best Management Practices for Urban and Rural Land Development* (2004 version)[49] which state that best management practices for local governments should be to "recognise air quality concerns in Official Community Plans to avoid incompatible land uses such as polluting sources near sensitive land use such as schools, hospitals and residences."

Development Permit Areas could be used to protect areas that are typically subject to poor dispersion and poor air quality. It is best to identify specific sites or natural features that are likely to be more negatively affected by air pollution due to geographic considerations.

When a DPA is created the council must state the special conditions or objectives which the DPA is intended to address and establish "guidelines" as to how development in the area should be managed.

The guidelines are critical in creating effective DPAs. Local governments do have some discretion to decide whether to grant a development permit, but they do so within the context of the guidelines. If a property owner meets the development permit guidelines, then council must approve the application. If the guidelines do not consider an issue (such as air pollution), then council cannot consider it in deciding whether to issue a permit either. With very stringent guidelines, it may be that a development permit effectively rules out a particular use of land, or allows it only with very strict conditions (which could, in some cases, make a particular use of the land uneconomic).

Public policy considerations

Both municipalities and regional districts have some powers to regulate air pollution and it could be argued that local governments have been given other clear powers to deal with air emissions and public health and that the general terms of the Development Permit powers were therefore not intended to deal with air emissions.

It is unfortunate that the *Local Government Act* does not specifically set out a power to create development permit areas to deal with public health considerations, since the DPA is a tool that could be well suited for dealing with the complex issues around air pollution.

From a public policy point of view, there is a lot to be said for using an appropriately crafted Development Permit Area to address air pollution – particularly in a larger municipality with staff expertise and resources to assess health impacts and ways of mitigating those impacts. Planning decisions have an impact on development, infrastructure use and transportation, all of which have an impact on air emissions. Municipalities are in a unique position to ensure that development applicants provide information which will inform the municipality of potential air emission impacts. However, there can be difficulties in smaller municipalities where a small number of staff may not have the capacity to analyse the information provided by the develop-

ers. Unlike zoning – which must anticipate and prevent any use that gives rise to air pollution in advance – a DPA allows consideration of a particular development on a particular site. It is a process in which the local government can engage directly with the developer to find a solution which addresses the air quality objectives contained in the DPA for a sensitive airshed.

With the right guidelines in place, Council could also restrict and/or negotiate the removal of trees in set-back areas, the location of sources of emissions, and a range of other factors. For example, a DPA could contain requirements that a developer install best available emissions technology and leave it to Council and the developer to negotiate what the appropriate technology is in this particular case. This stands in contrast to a zoning bylaw that would require set-backs, appropriate technology, locations, etc. to be spelled out in some detail in the zoning bylaw before the specific plant is even proposed (although some of this negotiation can take place in negotiations for rezoning a site which otherwise would not allow the polluting activity).

Development Approval Information

An OCP may also specify circumstances or areas under which the local government can require a would-be developer to provide "development approval information." Development approval information is "information on the anticipated impact of the proposed activity or development on the community…" and can include information on transportation patterns, public facilities (such as schools or parks) and the natural environment.[50]

If an OCP requires a developer to provide development approval information, it should also enact a bylaw setting out what types of information must be included, the circumstances under which it will be required and the procedures and policies for requiring the information.[51]

To be useful, a requirement for development approval information must be tied to a development permit area or a suggestion in the OCP that a rezoning amendment may be considered under circumstances which address air quality. The necessary information – which must be prepared at the developer's expense – can be required prior to local government making a decision about a DPA or rezoning; such information is really only of use to the extent that it assists a local government in reaching a decision.

Development approval information can be very useful in understanding the impacts of development on local air quality.

For example, a developer of a project could be asked to prepare:

- dispersion modeling to demonstrate the effect of the proposed development on ambient air quality;
- an assessment of the health impacts of emissions generally or on specific sensitive uses;
- information on different available methods for mitigating air emissions[52];
- modelled changes in traffic and the impacts of those changes on local air quality.

Zoning Bylaws

The *Local Government Act* provides local governments with broad authority to divide land into zones, and to regulate use, density, and aspects of buildings and structures within those zones. The resulting "zoning bylaws" are used to regulate:

- the use of land, buildings and structures,
- the density of the use of land, buildings and structures,
- the siting, size and dimensions of

  (i) buildings and structures, and

  (ii) uses that are permitted on the land, and
- the location of uses on the land and within buildings and structures.[53]

Typically zoning bylaws divide up an area into residential, commercial, industrial and/or institutional zones, although the Smart Growth approach to land use is increasingly pressing for zones which allow a mix of uses in a single zone.

A fundamental purpose of zoning is to avoid conflicts between incompatible uses of property and to ensure that the community develops in an appropriate way. Since air pollution is a potential major source of conflicts between neighbours, in many ways it goes directly to the purpose of the zoning powers. It is clear that a zoning bylaw should always have a statement of intent or purpose for the zones created, as a court will use the statement to interpret the bylaw in case of a dispute.[54]

There are a number of ways in which local governments can use zoning powers to address air quality.

First, the *Local Government Act* expressly states that local government can prohibit a land owner from carrying on particular land uses on a property.[55] Sometimes local governments worry that they can be sued for passing a zoning bylaw that prevents

a land owner from making use of a property in a way that was once legal. In actual fact it is well established that as long as a local government acts in good faith in what it believes to be the interests of the community, and all procedural requirements set out in the *Local Government Act* are followed, a local government can impose a wide range of restrictions on a private property owner without any obligation to compensate the owner.[56]

This sweeping power can be used in various ways. In effect a local government could prevent a particular use of land anywhere in the municipality or regional district by including a prohibition on this use in every zone created by bylaw.

A local government can use this power to separate sensitive uses from polluting ones, simply by ensuring that zones immediately adjacent to sensitive uses do not allow air polluting activities (and vice versa, ensuring that zones adjacent to pollution sources do not allow sensitive uses).

It also seems likely that a zoning bylaw could authorize a property to be used for a particular facility, but only if certain air protection features are in place.[57] For example, a local government could authorize a mechanical pulp and paper mill operation, but exclude a more polluting pulp mill using a chemical process.

In *Sundher v. Surrey (City)* the B.C. Court of Appeal upheld a residential zoning bylaw which prohibited property owners from parking "vehicles with a gross vehicle weight exceeding 5,000 kg" in or nearby structures on the property. The court held that such a bylaw regulated use of the land "by prohibiting the use of the land for parking large commercial vehicles which have given rise [to] complaints of noise and air pollution."[58]

Notwithstanding that some regulation of actual operations can be accomplished through a zoning bylaw, zoning bylaws usually regulate uses that are tied in some way to the structures and development appropriate for the site. *Sundher* suggests that it may be possible to, for example, regulate industries that might want to locate in areas zoned for another purpose.

As discussed zoning could also be used to protect areas that are typically subject to poor dispersion and poor air quality. Potentially, zoning could be used to prevent emitters of the primary sources of pollutants to be located next to each other given that secondary PM is caused by atmospheric reactions of individual pollutants. However, while secondary PM is dependent on atmospheric reaction times, a proactive approach in zoning could nevertheless lead to some reductions in local secondary PM levels.

The zoning bylaw can specify set-backs within a property. A set-back is a specified area which must be kept clear of buildings and structures and can be used to prevent certain types of uses such as parking areas which can be used to regulate the placing of buildings or structures.[59] Thus, a zoning bylaw could state that industrial operations allowed within a zone must be set back a certain distance from the edge of a property, ensuring that neighbours have the benefit of at least a short buffer from the

source of the air pollution. This approach may be more effective in areas that have not been previously subdivided, where there are large properties capable of accommodating a large set-back.

It is also possible to tailor the set-backs so that different types of operations allowed in the zone require different set-backs.[60] For example, an industrial zone might specify a 500 metre set-back for an oil refinery, but a smaller set-back for a dry-cleaning operation. Again, a local government will bear in mind local conditions such as topography when considering setbacks.

While there is a lot of flexibility to use zoning to exclude particular types of uses that cause pollution or to require setbacks for facilities that are likely to cause pollution, it would be difficult to tie a zoning bylaw to particular emission levels. For example, a bylaw that states that a dry cleaning operation can be built on a property, but that emissions from that dry cleaning operation must be kept below a regulated level, might not be valid or at the very least be difficult to enforce.[61]

An important note: Zoning powers can be used to prevent new air quality conflicts; they will not immediately address existing conflicts. This is because if a zoning bylaw is changed to prohibit an existing source of air pollution, the existing use of the land is "grandfathered." The current and future owners of the land will be able to continue using the land for the "non-conforming use" until the property stops being used for that purpose for an extended period of time.[62] However, a change in the intensity of use, where the intensification is so significant the activity is no longer the same may make a difference, particularly if the new use cause "undue, additional or aggravated problems for the municipality and the neighbours compared to what it was before."[63]

There has been debate on whether a zoning bylaw could be used to regulate building use as well as land use. While municipalities could be challenged for regulating building use for unique scenarios, the current case law seems to favour a pragmatic and flexible approach, which balances the needs of the community with that of the land use owner. Given that health concerns are a key concern for the community, this will be one of the balancing factors. While zoning bylaws have an important role in preventing conflict between polluting and sensitive uses of land, they are not the only tool.

An evolving theory of land use: Smart Growth

The "Smart Growth" theory to urban planning, which has been adopted by many environmental organizations, including West Coast Environmental Law, advocates for mixed-use – meaning that the city should allow residential and commercial development in close proximity, ideally on the same property. Smart Growth advocates point out that a community where people can live in close proximity to their work reduces dependence on the automobile, encourages walking and cycling, and, consequently, reduces air pollution.

While Smart Growth can help to reduce air pollution from automobiles, when it comes to industries or infrastructure that create significant air pollution, there are very real health reasons that it may not be a good idea for people to be living, playing and working in close proximity. Even more importantly, facilities such as schools, playgrounds, hospitals or other "sensitive land uses", which involve children, the elderly or the sick, should definitely not be located near to sources of pollution that are likely to make them ill.

Even where human health is not at stake, it makes good planning sense not to locate industries which have trouble with odour control or the potential to emit hazardous air pollutants in close proximity to residential neighbourhoods.

Zoning bylaws and Development Permit Areas play a crucial role in avoiding conflicts between polluting industries and their neighbours. In addition to protecting the public's health, this type of land use planning provides some certainty for industrial facilities that build in areas that are set-back from any residential areas, so that future urban growth will not result in new nearby neighbours complaining about the plant's pollution.[64]

For example, bearing in mind that air pollution exacerbates cardio-pulmonary conditions:

> In 2004 researchers at McMaster University found that residents living in close proximity to major highways had an 18 percent increase in mortality rates over their neighbours. Most of these deaths were the result of heart problems – not respiratory conditions.[65]

Recommendations on land use near major thoroughfares are being revised and incorporated into the pollution prevention section of the *Environmental Best Management Practices for Urban and Rural Land Development*.[66]

A lot of work has been done on how large a buffer there should be between a source of pollution and a sensitive land use. This issue is discussed further below, but the most detailed resource on appropriate buffers is the Air Quality and Land Use Handbook: A Community Health Perspective, published by the California Environmental Protection Agency and the California Air Resource Board.[67]

The difficulty, from a Smart Growth perspective, is that separation of industrial and residential areas will increase the distance that employees need to travel to work, adding to dependence on the automobile. It was in part to avoid such conflicts between different types of land use that urban sprawl and single-use zonings became so prominent in North America in the first place.

There is no easy answer to this tension between the Smart Growth philosophy and the need to separate polluting industries from the public. However, the following comments may be useful:

- Notwithstanding the goals of Smart Growth, most communities will have some industries that will not be suitable near a sensitive land use. The Smart

Growth principles represent a set of tools that need to be applied in a way that work for the community.

- The first priority is to use technology, fuels or other means to reduce emissions levels to a nominal level. In many cases the level of emissions for an industrial facility will be inappropriate for a residential neighbourhood even with best emissions technology in place, or where there is a substantial risk associated with bypass or failure of that technology. However, by reducing the level of emissions it is possible that a facility will require a smaller buffer from sensitive uses. Indeed, some low emissions industries will be able to co-exist with sensitive areas as long as such technology, appropriate fuel sources, and other measures are required.
- Where it is necessary, for health reasons, to set an industrial facility back from residential neighbourhoods or other sensitive uses, a local government should consider how the lands surrounding the facility should be used. In keeping with Smart Growth's emphasis on green space, it may be appropriate to have part of the buffer be treed or kept green. However, if the air quality is poor, these areas should not be open to the public for recreation, as this may itself have serious health consequences.
- Increasingly, modern industries employ relatively few people – so the travel of those few employees becomes a relatively minor issue. What is more significant, from a Smart Growth perspective, is the pressure once a road is built to the industrial site, to open up areas serviced by the road to development – and therefore sprawl.
- There are pros and cons to "clumping" industrial facilities together. On the one hand, the total pollution from the industries will be more concentrated, and therefore more harmful to human health and the environment, than it would otherwise be. On the other, it is easier to provide public transit and other infrastructure to an area rather than a single facility. The road infrastructure established to service this industrial area will be less spread out, and encourage less sprawl, than roads would need to be to service several different industrial areas.

Local Governments and Regulatory Bylaws

In addition to Land Use Powers, local governments have a range of bylaw making powers that could be used to regulate air emissions more directly. These include powers related to nuisances, environmental protection and public health.

In the case of municipalities, most of these powers are now contained in the *Community Charter*.[68] Regional districts are not covered by the *Community Charter*, but have some similar powers under the *Local Government Act*. The discussion below will reference which powers belong to which level of local government.

While historically the courts have interpreted the powers of local government narrowly, in recent years judges are favouring a broader approach, which defers to the decisions of elected local government officials.

The new, broad approach was seen in the Supreme Court of Canada case, *114957 Canada Ltée (Spraytech, Société d'arrosage) and Services des espaces verts Ltée/Chemlawn v Town of Hudson* ('*Spraytech*')[69] in which the Town of Hudson's bylaw to regulate and restricts pesticides was challenged on the basis that it was outside the municipality's authority to issue such as bylaw. In that case, Justice L'Heureux-Dubé speaking for the majority, referred to the "principle of subsidarity" which is "the proposition that law-making and implementation are often best achieved at a level of government that is not only effective, but also closest to the citizens affected and thus most responsive to their needs, to local distinctiveness, and to population diversity". Hudson's pesticide bylaw was held to be valid.

In BC this approach is supported by two of the stated purposes of the *Community Charter*: to provide, 'the authority and discretion to address existing and future community needs, and the flexibility to determine the public interest of their communities and to respond to the different needs and changing circumstances of their communities.'

Supplementing the Environmental Management Act

The basic rule is set out in both the *Community Charter* and in the *Environmental Management Act* itself: a municipal bylaw is invalid if it is inconsistent with a provincial law; however, there is no inconsistency as long as it is possible for a person to comply with both the municipal bylaw and the provincial law.[70] In other words, a local government may adopt additional, or more stringent, standards in its laws, but may not authorize pollution that is illegal under the provincial laws.

This approach has been adopted by the courts, even in the absence of statutory language, such as in cases where the legislation is silent as to what constitutes a conflict. Notably, in *Spraytech,* the Supreme Court of Canada ruled that there was no conflict between the province of Quebec's regulation of pesticides and a municipal bylaw that required permits for local pesticide use.[71] This reasoning applies equally to air emissions.

The *Spraytech* decision means that most clean air bylaws enacted by local governments, then, will not be inconsistent with the *Environmental Management Act*, and the local government has jurisdiction to enact them. It is only if a bylaw is contrary to express legislative authority, or where it is impossible to comply with a bylaw and provincial law, that the bylaw will be struck down.

However, there are also two circumstances in which a conflict may arise with provincial regulation under the *Environmental Management Act*. First, the Act allows the Minister of Environment to declare that a conflict exists between a bylaw and the requirements of the *Environmental Management Act* and its operations.[72] If the Minis-

ter makes such a declaration, then a bylaw that imposed additional or more stringent requirements will become invalid.

Second, the provincial cabinet can "suspend" zoning bylaws to allow a land owner to operate under a permit or order made under the *Environmental Management Act*.[73]

With these exceptions, which will hopefully be relatively rare, it is unlikely that a local government's bylaws will be set aside as conflicting with provincial regulation of air emissions, provided the bylaws and the provincial laws can both be complied with.

That being said, there may be very good reasons that a local government will not want to duplicate the efforts of the provincial government. There are gaps in provincial regulation – sources of pollution which are not regulated at all, the failure to determine the appropriate location of a polluting industry, etc. Local governments may be well advised to consider how to fill these gaps, as well as ways in which it can complement, rather than duplicate, provincial regulation.

Other issues about direct regulation of air emissions

Before turning to other powers, it is worth commenting on two general issues arising from the above discussion.

First, this type of direct regulation has some **advantages over the land use regulations** to regulate air emissions – it focuses on the actual sources and conditions that they can operate under. Land use is limited to defining what particular use can be carried out on the land, and efforts to address air pollution using those tools can result in very detailed definitions of what uses are appropriate.

Direct regulation, whether through regulation for public health, the environment or nuisances, can merely specify the appropriate source requirements and leave it to the land owners to determine how to meet them.

Also, land use powers will not generally catch existing users of the land, which are allowed to continue their operations as "non-conforming" users. By contrast, a bylaw regulating emissions applies to everyone – even if they have a history of causing pollution.[74]

Second, the fact that there are three powers to use in regulating air emissions raises questions about which power to use.

The good news is there is no need to choose one. A bylaw can and should reference more than one power. For example, many air emissions bylaws could be based on both the Public Health and Nuisance bylaw powers.

The choice of which power to use will also be influenced by what air pollutant the local government is seeking to regulate, with what type of bylaw it is planning to use. Air emissions which do not have a known (or reasonably suspected) effect on human health can only be regulated under the environmental protection power (if there is

a known or suspected impact on the natural environment) or the nuisance power (if there is a significant level of odour associated with the emission).

Fundamental Powers of Municipalities

Unlike earlier legislation governing municipalities, which set out a series of very specific municipal powers, the *Community Charter* is organized around a series of very broad "fundamental powers". The *Charter* then goes on to provide more specific powers that fall within these broad fundamental powers.

The fundamental powers are set out in section 8 of the *Community Charter*. The powers listed under section 8 which are most relevant to the regulation of air pollution are the powers to "regulate, prohibit and impose requirements in relation to":

- Public nuisances or disturbances;
- Public health;
- Protection of the natural environment; and
- Buildings and other structures.

Having given municipalities these broad fundamental powers, the *Community Charter* then goes on to restrict them. Section 9 of the *Charter* lists which a municipality cannot regulate without some form of approval from the provincial government. This list includes Public Health, Protection of the Natural Environment, and Buildings and Other Structures, but does not include Public Nuisances and Disturbances. The *Charter* suggests that this provincial oversight is necessary because these powers are ones for which both the provincial government and the municipality have "Concurrent Jurisdiction" – meaning that they both regulate on those issues.

However, for these concurrent jurisdiction powers, a municipality cannot enact a bylaw dealing with these issues unless:

- the provincial government has passed a regulation which specifies when municipalities can regulate in the area or further defines the scope of the municipal authority;
- the municipality has an agreement with the provincial cabinet minister responsible for the issue which allows a bylaw to be enacted on the subject; or
- the responsible provincial cabinet minister has approved the bylaw.[75]

If a bylaw change is simply a consolidation of existing bylaws, or is service related, the Minister doesn't need to approve the change.

Public Health Powers

Given the effect of air pollution on human health, the municipal government's fundamental power over public health is an obvious source of possible bylaws dealing with air pollution. Regional districts have an equivalent power under the *Local Government Act*.[76] Again, a municipality's ability to regulate, prohibit and impose requirements on public health is subject to further restrictions. The province has enacted the "Public Health Bylaws Regulation", which sets out when local governments (both municipalities and regional districts) may enact bylaws under their public health power.[77]

First, the bylaw must be related to "protection, promotion or preservation of the health of individuals; or the maintenance of sanitary conditions in the municipality."[78] Given the wide range of evidence available as to the health implications of PM, Ozone and other substances, even at very low levels, there is little doubt that a bylaw which was aimed at reducing air emissions could meet this test. A reasonable basis for believing that the regulated emissions are having negative health impacts is probably sufficient to meet this test.[79] The *Spraytech* decision would seem to support this.

Second, a copy of the bylaw must be deposited with the Minister of Health.

Third, the local government must have consulted with its medical health officer or the regional health board.[80] This does not imply that the health officer or health board has a veto over a bylaw being considered by the local government; simply that their views on the need for the bylaw and its effects on public health should be sought.

As long as these requirements are met, the public health power could be used by local government to enact a range of bylaws dealing with air pollution. Most of the types of bylaws considered in Part III could be enacted under this bylaw making power. For example, in the preamble to Prince George's *Clean Air Bylaw*,[81] the bylaw refers to the municipality's authority to regulate the protection, promotion, or preservation of health and the maintenance of sanitary conditions in the municipality in order to regulate open burning and fugitive dust control. Bylaws relating to air emissions which do not have a direct impact on public health, such as most greenhouse gases, could not be made under this power.

Environment Powers

Since air pollution harms not only humans but the natural environment as well, a municipality could ground an air emission bylaw on the fundamental power under the *Community Charter* to protect the natural environment. Regional districts do not have a broad environmental protection power of this type.

As with other concurrent powers, some type of provincial government approval is needed before a municipality may enact bylaws using this power. Like the Public Health power, there is a regulation that sets out certain types of bylaws that can be enacted without the need for further government approval; unfortunately, this regulation does not specifically authorize bylaws related to air pollution.[82]

Section 5.1.7 of the 2004 Consultation Agreement between the Union of BC Municipalities, Ministry of Water, Land and Air Protection (now BC Ministry of Environment) and the Ministry of Community, Aboriginal and Women's Services (now Ministry of Community Services)[83] is clear that under s. 9(4) of the *Community Charter*, the Minister of Environment will not grant permission to municipal authorities to enact bylaws with respect to establishing air quality standards. However, it is arguable that as long as a municipality is not establishing an air quality standard, but using a bylaw to lessen the impact of existing emissions, that this may be allowable. Consequently, a municipality enacting bylaws under this power could suggest to the Minister that permission should be granted in respect of a wide range of pollutants in many different ways.

Section 31 of the *Environmental Management Act*[84] provides that GVRD may provide the service of air pollution control and air quality management and, for that purpose, the board of the regional district may, by bylaw, prohibit, regulate and otherwise control and prevent the discharge of air contaminants.

It is worth noting that the 2004 Agreement "establishes the framework by which the parties monitor, review and amend the ministerial regulation over time" and so the use of the power to deal with air quality issues can presumably be revisited.

Nuisance Powers

Under the *Community Charter*, municipalities have the power to regulate for the purposes of protecting and enhancing community well-being in relation to nuisances, and the "emission of smoke, dust, gas, sparks, ash, soot, cinders, fumes or other effluvia that is liable to foul or contaminate the atmosphere".[85] Regional districts have an equivalent power under the *Local Government Act*.[86]

The nuisance powers are not included under "concurrent jurisdiction", meaning that a local government may enact nuisance bylaws without the approval of the provincial government.

The main question is whether and when air pollution will be considered a nuisance. The courts have said this type of bylaw making power does not authorize a local government to define what a nuisance is.[87] In B.C. the courts have said that a local government acting under this power may regulate private actions that could have resulted in a claim in the courts for public or private nuisance.[88]

A public nuisance is any action which interferes with the public's exercise of rights common to all of the public (to, for example, breathe clean air), while a private nuisance involves interference with the use and enjoyment of a person's private property (including to use that land free from fumes or gas). There is clear authority that air emissions, if sufficiently severe, may be sufficient to constitute either a public[89] or private nuisance.[90]

Historically the courts tended to be dismissive of claims that low levels of pollution that did not appear to directly harm anyone should actually be considered a nui-

sance.[91] The courts have also, at least in the context of liability for nuisance, been reluctant to protect individuals who are "hyper-sensitive" to a nuisance[92] – which may raise questions about whether a local government can use the nuisance bylaw powers to protect members of the public suffering with asthma or other respiratory ailments. The concept of public nuisance can change over time, however, and some judges have suggested that the concept is evolving to better address concerns about the environment and, in particular, air pollution:

> The concept of what may constitute a public nuisance is bound to vary with the times and the scope of man's knowledge. In the recent past, society has become aware of the pollution of the atmosphere and the effect of that pollution upon the health and well-being of mankind.[93]

With increasing evidence about the fact that some pollutants can have human health implications at any level, it is possible that the courts would take a fairly broad approach to the regulation of air pollution as a nuisance. However, the courts will need to address this issue in the context of some future challenge to a bylaw.

Also unclear is the extent to which a general nuisance power can regulate sources of pollution which are individually insignificant, but which collectively have an impact on the rights of the public. There is some authority in the context of private nuisance law,[94] and in the context of cases concerning other statutes,[95] that people who collectively cause a nuisance can be held individually responsible. It does not appear that a local government has argued, at least in the context of pollution, that the nuisance powers provided the power to regulate actions which individually did not constitute a nuisance, but which collectively did.[96]

There is no doubt that significant levels of air pollution can be regulated using the nuisance powers. Moreover, despite the general rule that local government cannot define what constitutes a nuisance, the courts will likely give some deference to a local government that believes in good faith and on reasonable grounds that a level of air pollution does constitute a nuisance.

The nuisance power can also be used to regulate air emissions which have a strong odour, such as TRS, but for which the health impacts may be negligible or unclear. It probably cannot be used to regulate greenhouse gases or other emissions which have a global or distant impact.

Historically the nuisance powers were used to regulate levels of emissions that were sufficient, in terms of odour, interference with breathing or irritation of eyes, to cause a noticeable interference with the rights of those affected. With new evidence as to the very real public health impacts of air pollution even at lower levels, it is unclear whether the courts will revise their view of what types of air emissions a local government can regulate under the nuisance provisions.

Buildings and Structures Powers

In addition to the power to regulate land use and air emissions, under s. 8(3)(l) of the *Community Charter* a municipal council may regulate, prohibit, and impose requirements related to buildings and structures. However, like the other fundamental powers listed in Section 8 of the *Community Charter,* these powers are limited. For example, municipalities may only use the building and structure power for "the health, safety or protection of persons or property."[97] Structural requirements that also impact air pollution could satisfy this requirement. For example, the Town of Golden prohibits the installation of new solid fuel burning appliances.[98] Also, the District of Houston requires an inspection and acceptance of the installation of "factory built chimneys and fireplaces and solid fuel burning appliances".[99]

However, regulating the standards for construction of structures may not extend to regulating a structure for its air polluting qualities. The *Buildings and Other Structures Regulation*[100], enacted under the *Community Charter*, sets out the extremely limited circumstances in which a local government is authorized to enact bylaws without further government approval. The *Regulation* permits the establishment of local building standards only in relation to structures that are exempt from the *Building Code*.[101]

Municipalities and some regional districts already enforce the province's *Building Code* on developers through a system of building permits and building inspections. In theory, the Buildings and Structures powers allow municipalities[102] or regional districts[103] to impose additional requirements. However bylaws under s. 8(3)(1) of the *Community Charter* would have to be approved by the Minister of Community Services and one commentator has suggested that the Minister to date has not been inclined thus far to approve bylaws under s. 8(3)(1) of the *Community Charter* that supplement the generally applicable standards in the *Building Code*.[104]

For other buildings, a local government can regulate construction, alteration, repair or demolition only if it does not seek to "establish standards that are additional to or different from the standards established by the Code" or make various other changes to the Code. Since this restriction removes most obvious amendments, for these buildings any regulation will require the authorization of the Minister of Community Services, either through an agreement with the municipality or the approval of the specific bylaw.

Regional districts must have chosen to offer a building inspection service before it can exercise its building and structure powers.[105] Any bylaws enacted by a regional district under this power are subject to the same restrictions, discussed above, as municipal governments.

Other considerations

There are other ways to minimize air emissions. A municipality may decide that education programmes, partnerships with local businesses and incentive programmes would be a more effective approach than creating bylaws. While enforcement is-

sues for bylaws are relevant, it is important for each municipality to consider their constraints when drafting bylaws. For example, instead of an enforcement officer standing by a bus to see if it is idling for more than 5 minutes, it is better to consider whether there should "no-idling" areas or policies.

Similarly, if municipalities use development permit areas for a sensitive airshed, the municipality would have to ensure that it had the capability to analyze industry claims or supporting information that a development would not cause problems contrary to the guidelines of the Development Permit Area. For example, information provided by industry in environmental assessment processes sometimes fail to address key concerns, and knowing what questions to ask takes expertise. On the other hand a ban on backyard burning, or restriction on woodstoves are fairly straightforward.

There will also be a difference in approaches taken for rural versus urban local governments. For example, the GVRD and its member municipalities have committed to an air quality management plan which is part of a bigger sustainability vision for the region.

Reducing air emissions of the other, more toxic, air emissions will often also reduce GHGs. Local governments can also lead by example by reducing their own emissions of these gases. Local governments have an important role to play in developing solutions that both help to reduce local pollutant emissions and GHGs. For example, patterns of urban growth and transportation infrastructure will have impacts on GHG emissions for decades or centuries, and once made, these decisions are difficult to change. Some municipalities are often best placed to deal with issues such as district heating. Often municipalities are directly responsible for GHG emissions such as the release of methane from landfills, and encouraging the reduction of material sent to the landfill. Economically, municipalities could benefit from GHG reduction, e.g. methane capture from landfills can be profitable if used to produce energy. Given that GHG issues are an international, national and local problem, it makes sense for an integrated approach so that every level of government explores what is within their power and pursues opportunities to contribute to GHG reduction.

Changes to the public transit system can also help: Victoria and Kelowna have purchased Hybrid buses – which run on both battery and fuel, thereby reducing emissions of both common air contaminants and greenhouse gases, and saving on fuel costs. In the city of Vancouver, electric trolley buses operate on most major routes.

Conclusion

In conclusion, local governments have strong role to play in helping to reduce air pollution. Local governments do have a wealth of opportunities through their existing powers to create land use bylaws and regulatory bylaws. For example, local governments can assist in reducing air pollution through their existing powers to create regulatory bylaws and bylaws that affect land use. Local governments are often responsible for decisions which have a long term impact on air emissions, such as

transportation decisions. Accordingly, an appraisal of the tools available to local government should assist in creating effective bylaws and policies, in order to provide solutions which will complement all other efforts to reduce air emissions.

Part III – Tools for Local Action: Existing Bylaws

This Guide is intended to provide local governments who want to improve air quality with some direction on what clean air bylaws can look like. This section is intended to summarize and provide links to some of the existing bylaws or models for bylaws that are being used by B.C. local governments to protect their airsheds.

One of the strengths of local government is that it can develop solutions that address local problems. Consequently, while the bylaws discussed below should be looked at as examples of what can be done, there are no one-size-fits-all solutions to air pollution. What works in one community may be inappropriate in another. Each local government will need to consider the needs of its community and tailor these approaches to those needs.

Nonetheless, there are certain types of bylaws and practices which municipal governments have used to reduce air pollution.

Zoning and Land Use Bylaws – Best Practices

Because zoning bylaws are unique to the geographic, historic patterns of development and circumstances of each community, it is not possible to provide a model bylaw. However, there are resources on the types of set-backs that health professionals suggest be maintained between major sources of pollution and sensitive land uses.

As referred to in Part II, the most detailed discussion of air pollution sources and set-backs is the April 2005 *Air Quality and Land Use Handbook: A Community Health Perspective* jointly published by the California Environmental Protection Agency and the California Air Resources Board. This document, available at www.arb.ca.gov/ch/landuse.htm, discusses in detail the emissions of several different sources of air pollutions and develops specific recommendations on how far sensitive land uses should be set-back from them. One caution about this excellent resource: It includes some discussion about implementing these setbacks through zoning and other legal tools based on the law of California and that may or may not apply in British Columbia.

The B.C. Ministry of the Environment's *Environmental Best Management Practices for Urban and Rural Land Development in British Columbia: Air Quality BMPs and Supporting Information* is a similar discussion document.[106]

Regulation of Point Source/Industrial Emissions

While most local governments leave the regulation of large industrial emitters to the provincial government, as discussed above, there is a precedent for the joint jurisdiction between the province and local government in dealing with such industries.

An unique example of this type of regulation in B.C. is used in the Greater Vancouver Regional District (GVRD). The GVRD's situation is different than other local governments, however, in that the *Environmental Management Act* specifically empowers the GVRD to enact bylaws related to air quality as well as to play a key role in enforcing the *Environmental Management Act*.[107] For this reason, the GVRD does not experience the problems of concurrent jurisdiction that most local governments would need to deal with in enacting bylaws.

Nonetheless, the GVRD has passed an Air Quality Management Bylaw which requires anyone who is carrying out an "industry, trade or business" which emits "air contaminants" to obtain an approval or permit from the Regional District's staff. The Bylaw also sets out regulations for particular industries which, if followed, will exempt that facility from the general requirements of the Air Quality Management Bylaw.[108]

The GVRD is currently in the process of reviewing its bylaws and may make changes in the future.

Wood burning appliances

Residential wood heating– particularly in the form of wood stoves, fire places and outdoor boilers– can be a major source of Particulate Matter and other air emissions. Indeed, because burning tends to take place in residential areas and on cold nights – often when there is little wind – the health implications of these forms of heating can be severe.

In a 2005 survey commissioned by the BC Government, BC residents were questioned about their wood burning habits. The survey was combined with the results of previous surveys to determine that residential wood burnings in BC contribute 65,579 tonnes of Carbon Monoxide; 10,623 tonnes of $PM_{2.5}$ (and a similar amount of PM_{10}); and 14,860 tonnes of Volatile Organic Compounds, among other pollutants, to the atmosphere per year.[109]

Some local governments have chosen to ban the installation of woodstoves in new construction altogether; however, the more common approach to regulating wood burning appliances has focussed on requiring that the stoves meet stringent standards for air emissions. Many of the new stoves certified by the Canadian Standards Agency (CSA) and the United States Environmental Protection Agency (EPA), burn

much more cleanly than older stoves, producing less air pollution.[110]

Golden's *Solid Fuel Burning Appliance Bylaw*[111] bans the installation of wood stoves in new developments. In relation to the appliances that are already polluting the airshed, Golden's bylaw requires that when any existing stoves are replaced, the replacements will need to meet the CSA and EPA standards for particulate matter. Golden has supplemented this bylaw with public education and a rebate programme under which property owners can turn in existing stoves and receive a credit towards the cost of a CSA/EPA stove.

Prince George's *Clean Air Bylaw*[112] has also restricted the installation of new wood burning appliances. Unlike Golden, however, Prince George has not banned the installation of new wood stoves. Instead, the Prince George Bylaw requires that:

- no person operate a wood burning stove when there is an air quality advisory in effect, except if the building has no other source of heat;
- no person operate a wood burning stove in a manner that will cause air pollution likely to impact on human health or interfere with the use and enjoyment of property;
- a person may only burn wood in a wood burning stove and is specifically prohibited from burning garbage or "noxious material"; and
- all new stoves must meet the EPA requirements.

While the second requirement – that the stove be operated so as to not affect human health or use of property – appears difficult to enforce in a meaningful way, the attempt of the Prince George Bylaw to restrict what is burnt and when demonstrates some of the flexibility that can be brought to designing clean air bylaws.

The City of Quesnel's *Buildings Regulations Bylaw 1550*[113] requires a permit for the installation of solid fuel burning appliances, and that a building official when doing a framing inspection, is authorised to review combustion air for solid fuel furnaces, fireplaces and chimneys.

Finally, Environment Canada has released a "Model Municipal Bylaw for regulating Wood burning Appliances."[114]

Residential backyard or open burning bylaws

As recently as 1977 the Ontario Court of Appeal wrote:

> Nuisances of a minor character arising from the ordinary use and occupation of residential property, such as the burning of weeds and the making of repairs, if performed reasonably and not to an excessive degree, are not actionable.[115]

While the court was writing in the context of liability for nuisance, and not the regulation of nuisances by local government, there are still many people who see nothing wrong with burning weeds, wood, leaves, waste, or garbage in one's backyard.

However, this type of backyard burning is typically not a clean burn – it's a low temperature burn that creates lots of particulate, as well as other air pollutants that can have a severe impact on human health. Often the waste contains garbage, plastics and other materials that produce even more toxic substances when burned. Particularly where the burning is carried out in a residential neighbourhood or near other sensitive land uses, the effect can be very real. And when many land owners are burning at once, the collective impact becomes even more significant.

In many communities burning is also used to clear land, which further adds to the emissions from outdoor burning.

There are some provincial rules around outdoor burning under the *Open Burning Smoke Control Regulation*,[116] a regulation under the *Environmental Management Act*.[117] The *Regulation*:

- prohibits burning debris closer than 100 metres from another person's residence or 500 metres from a school (when in session), hospital, or similar facilities;
- lists certain substances, such as domestic waste, tires, plastics, paints, etc. which cannot be legally burnt; and
- sets out a code of practice which gives further direction as to how burning should be done.

The *Open Burning Smoke Control Regulation* represents a minimum level of regulation for bylaws. The *Regulation* is not generally enforced in relation to backyard burning and the Ministry of Environment expects and encourages local governments to supplement these requirements with their own bylaws.

The Ministry of Environment's 1997 *Model Municipal Bylaw for Regulating Backyard Burning* is available on the Ministry's website.[118] This model bylaw sets out three main options for regulating backyard burning.

The first is to ban it altogether. The model bylaw text states:

> This is particularly suitable for municipalities with high population density where the risk to air quality from burning yard residue can be significant and the cost of alternative debris management can be clearly justified. Banning backyard burning will not only improve air quality but will also encourage people to deal with debris in a more responsible and productive manner.

The second and third options seek to restrict burning to circumstances where other disposal systems for the waste are not readily available. While this provides more flexibility, it also requires a more complicated system of regulation, monitoring and enforcement to be effective.

The second option creates a system of permits administered by the local government's Fire Chief. It also provides direction to the Fire Chief about when permits should be granted. Many municipalities have adopted this system.

The third option does not require permits, but sets restrictions on what can be

burned, where and how.

The Ministry's model bylaw sets out language which can be used to adopt any of these three options.

A local government may choose different aspects of more than one of these options. For example, the North Okanagan Regional District's *Open Burning - Fire Regulation Bylaw*[119] bans open burning for most of the year, but allows the Fire Chief to issue permits at two times of the year.

The Regional District of Central Okanagan has a *Smoke Control Bylaw 773,*[120] which regulates campfires, open burning and wood burning appliances. The bylaw specifies what is permitted burning material, such as seasoned, untreated lumber. The bylaw also specifies that only solid-fuel burning appliances that meet the emission standards of the CSA can be installed. Further, wood burning appliance fires must be maintained so that any nuisance (defined as the emission into the atmosphere of smoke by any means which disturbs the comfort or convenience of persons in the vicinity) is only for two minutes except for 15 minutes after the re-firing of the appliance. However, this exemption is only allowed once during a two-hour period. For open burning, the bylaw also specifies the times that burning may take place, where it will take place and when fires are prohibited.

Prince George's *Clean Air Bylaw*[121] restricts open burning to certain parts of the city and restricts all burning when an air quality advisory is in effect.

Many municipalities prohibit the burning of commercial waste, plastics or other toxic materials, and regulate the type of backyard burning that can take place and when it can take place. Other municipalities that have used fire protection and safety bylaws to assist with air pollution reduction measures.

Some examples of municipalities that have used fire protection and safety by-laws:

Bylaw	Nainamo's *Fire Protection and Control Bylaw 1991 No.* 3879	City of Saanich's *Fire Prevention Bylaw, 1997, No. 7755,*	City of Fernie *Fire Protection and Life Safety Bylaw, 2029*
Main Points	This bylaw sets out that backyard burning permits are required and regulates outdoor cooking fires, limiting these to two hours in duration. In addition, the Fire Chief has the ability to ban all open air burning, in the event that poor atmospheric conditions affect smoke dispersal.	This bylaw requires a permit from the Fire Chief for all open fires and has smoke opacity standards, although further amendments are recommended to fully limit air pollution.	This bylaw requires fire permits for backyard campfires and specifically prohibits the burning of vegetation, household scrap paper as these materials and others that create "dense smoke, particulates which cause respiratory difficulties, and/or offensive odours." In addition, the bylaw prohibits fire pit users to ensure that smoke or sparks do not create a nuisance or health or safety hazard to neighbours or other properties.
Website (as at July 30, 2006)	http://www.nanaimo.ca/uploadedfiles/Bylaws/3879.pdf.	http://www.gov.saanich.bc.ca/municipal/clerks/bylaws/fireprev7755.pdf	http://fernie.ihostez.com/contentengine/launch.asp

Recognising that fires are a major source of particulate matter, means that by using bylaws to prevent fires, municipalities would also be taking preventative steps to reduce air pollution and health effects from PM exposure. In general, by implementing these types of bylaws, especially when enforced and complemented with public education, local governments can significantly restrict harmful air pollution from backyard and other open burning.

Vehicle Emissions/Anti-Idling Bylaws

Motor vehicles – especially diesel vehicles - create a significant amount of the air pollution in many communities. While it can be difficult to regulate the use of cars and trucks for travel, a growing number of health advocates and local governments are focussing on idling vehicles. The popular belief that it's more efficient or easier on the engine to keep a car running is simply not true for modern cars: idling cars do not burn as efficiently as moving cars and therefore produce more exhaust. An idling car is emitting air emissions that concentrate in one place for no good reason. When many cars are idling in one area – parents leaving their cars running outside a school while they wait for their children, for instance – the impact on both human health and the environment begins to add up.

In a review of the health effect of vehicle idling, Transportation Canada writes:

> Studies have shown that vehicle idling can strongly influence outdoor air quality at the local or community level. A study of fine particulate matter levels in a community located beside a bus terminal in Massachusetts (Levy 2001) showed elevations in combustion byproducts that corresponded to morning and evening rush hours and minimal concentrations during low-traffic periods. … Exposure studies at a school in New York City suggest that traffic around schools can strongly influence outdoor air quality (Kinney et. al. 2002). In a Connecticut study, the levels of fine particulate matter around a school during school days was nearly three times higher than the average daily levels for outdoor air in that community (Wargo and Brown 2002). Idling diesel fuelled buses emit higher concentrations of soot and fine particulate matter than when moving. Air concentrations of these pollutants are highest when buses are queued in a line (Wargo and Brown 2002). These results show the significant influence of idling buses and vehicles on air quality around a school.[122]

A number of municipalities have adopted anti-idling bylaws, including North Vancouver,[123] Gibsons,[124] and Whistler.[125] In addition, Natural Resources Canada and the Greater Vancouver Regional District have both developed model anti-idling bylaws.[126] Recently, the City of Vancouver Council approved a *Motor Vehicle Noise and Emission Abatement* bylaw which targets anti-idling and will apply to all motor vehicles.

Typically anti-idling bylaws specify a maximum amount of time (1 minute or 3 minutes are typical) which a vehicle can be left idling. Natural Resources Canada in conjunction with the Greater Toronto Area Clean Air Council have developed a "primer" for municipalities on anti-idling bylaws called "Crack Down on Idling".[127]

Fugitive Dust Control

Dust can be a major source of different types of particulate matter. Many municipalities are implementing bylaws and other measures to control dust from roads, road cleaning, construction and other activities.

One source of road dust, particularly in communities in the interior, is the dust created from sand and other materials spread on winter roads. The BC Ministry of Environment has suggested a series of best management practices[128] (BMPs) for dust from these types of sources. These practices can guide a local government's management of roads and other practices that give rise to emissions. To the extent that the same issues arise for private land owners and operators, the BMPs could also form the basis for a local government bylaw.

Some local governments have supplemented these non-regulatory solutions with bylaws. For example, Prince George's *Clean Air Bylaw*[129] requires anyone sweeping roads or parking lots to use appropriate dust suppressing liquids. It also prohibits road and parking lot sweeping during an air quality advisory issued by the city, as well as introducing some general requirements not to allow dust to escape from a property in a way that is likely to cause human health problems.

Part IV – Conclusion

With increasing scientific evidence on the health implications of air pollution, local governments are doing their best to protect the health of their constituents. The approaches available to local governments range from planning at an airshed level, to programmes focussed on educating individuals and providing incentives for them to do the right thing, to bylaws that require individuals to improve their air quality emissions.

This Guide has focused on the powers of local governments to enact bylaws, and the examples of what is already being done using these powers. It is clear that there is an invaluable role for local governments in dealing with air quality. The goal for local government is to manage and reduce opportunities for air pollution. Doing so not only directly affects the health of the local community, it also affects the health of the neighbouring communities and beyond. By focussing on the needs of the particular community, as well as those non-point source and community specific problems that it is difficult for the province to address, local government bylaws can result in important improvements to the local airshed.

Appendix 1 – Further information for model bylaws

These websites were available as at August 17, 2006.

Elements of a model municipal bylaw for regulating wood burning appliances

- See http://www.ec.gc.ca/cleanair-airpur/975A1778-B583-4E2A-9369-81800C3AC8C2/Model_By-Law.pdf

Elements for a model anti-idling bylaw

- See http://oee.nrcan.gc.ca/communities-government/transportation/municipal-communities/reports/model-bylaw.cfm

Elements for a model bylaw regulating backyard burning

- The Ministry of Environment's 1997 *Model Municipal Bylaw for Regulating Backyard Burning* is available on the Ministry's website at: http://www.env.gov.bc.ca/air/particulates/pdfs/bylaw.pdf and further information is also available at: http://www.env.gov.bc.ca/air/particulates/bbsgiyea.html

Appendix 2 – Example of a model bylaw

Fugitive Dust Control model bylaw (Based on Prince George's Bylaw 7721)

WHEREAS in accordance with the Community Charter, [SBC 2003] CHAPTER 26, the City/Municipality of… is empowered to regulate in regard to the protection, promotion, or preservation of the health of individuals and the maintenance of sanitary conditions in the municipality;

AND WHEREAS the Medical Health Officer responsible for public health matters within the municipality has been consulted;

AND WHEREAS a copy of this Bylaw has been deposited with the Minister of Health Services;

Now, the City/Municipality of…… enacts as follows:

Part 1

1. This bylaw may be cited for all purposes as "Fugitive Dust Control Bylaw number…."

Part 2 Definitions

In this Bylaw:

"Authorized Person" –means any person designated by the [name municipal officer] of the City/Municipality of …for the purposes of this bylaw

"Demolition and Construction Wastes" includes but is not limited to waste materials resulting from the demolition or construction of buildings such as pipe, concrete, asphalt, lumber, stumps, roofing material, masonry, wire, treated wood, particle board, paint, drywall, tar and asphalt products.

"Dust Suppressing Liquids" means water or a water based solution used to control the generation of fugitive dust.

"Fugitive Dust" means dust generated by sweeping and maintenance operations on highways, parking areas and other paved surfaces.

Part 3 Regulations and Prohibitions

1. No person shall sweep or maintain any highway or off street parking, loading or storage areas except with the use of equipment using fugitive dust control procedures, or dust suppressing liquids.
2. When dust suppressing liquids are used they must be applied to the swept or maintained areas prior to and during sweeping or maintenance operations in amounts sufficient to minimize the generation of dust.
3. No sweeping or maintenance operations shall be conducted in such a manner as to cause or significantly contribute to the cause of injury or damage to human health, plant or animal life or property, so as to reasonably interfere with the enjoyment of life or property.
4. No person shall undertake any sweeping or maintenance of highways or off street parking, loading, or storage areas at any time when an air quality advisory is in effect, unless approved by an Authorized Person on the basis that dust suppression measures satisfactory to the Authorized Person will be taken to control fugitive dust.
5. All off street parking, loading, and storage areas, demolition sites, constructions sites, and highways must be maintained so that dust does not escape in such a manner as to cause or significantly contribute to the cause of injury or damage to human health, plant or animal life or property, so as to unreasonably interfere with the enjoyment of life or property.

Part 4 Offence

1. Any person who contravenes any of the provisions of this bylaw commits an offence punishable upon summary conviction, and is liable to a fine not less than $50.00 and not more than $500 and the costs of prosecution.

Part 5 Date of Commencement

1. This Bylaw is in force from the day following the date of its adoption

Read …..

Adopted…..

Appendix 3 – Other resources

The following websites were available as at July 31, 2006.

Glossary of Terms

Glossaries of some of the terms in this Guide are available at the following sources:

- Environment Canada's primer on Air Quality in BC http://www.pyr.ec.gc.ca/air/primer_e.shtml
- Regional District of North Okanagan http://www.nord.ca/airquality_glossary.php
- R.J. Williams and K.K. Bhattacharyya, "Guide to Airshed Planning in British Columbia" 2004. http://www.env.gov.bc.ca/air/airquality/pdfs/airshedplan.pdf

Part I

Additional Resources on Health Implications of Particular Pollutants

The following websites may be of interest to those looking for more information on air pollutants and their health implications:

General:

- http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/effe/index_e.html
- http://www.deq.state.ne.us/Publica.nsf/0/a5d1f72da7bb964f06256aea0060cc40/$FILE/ATTU65LP/01-102.pdf

- http://www.cpha.ca/cleanair/
- http://www.ec.gc.ca/pdb/npri/npri_online_data_e.cfm
- http://www.bc.lung.ca/pdf/bcstate_of_the_air_report2006.pdf

Air Quality in BC:

- http://www.bc.lung.ca
- http://www.healthservices.gov.bc.ca/pho/pdf/phoannual2003.pdf
- http://www.env.gov.bc.ca/air/airquality/index.html
- http://www.gvrd.bc.ca/air/index.htm

Health implications of road traffic:

- http://www.hc-sc.gc.ca/iyh-vsv/environ/traf_e.html

Health implications of wood smoke:

- http://www.hc-sc.gc.ca/iyh-vsv/environ/wood-bois_e.html

Further information for Air Quality management plans/initiatives already in existence

GVRD	www.gvrd.bc.ca/air/planning_plans.htm
FVRD	www.fvrd.bc.ca/FVRD/Services/Air+Quality
Quesnel	www.cariboord.bc.ca/PublicInfo/public_info_intro.htm
Williams Lake	wlapwww.gov.bc.ca/car/env_protection/air_quality_reports/index.html#wl
Bulkley Valley Lakes District	www.bvldamp.ca
Kelowna	www.city.kelowna.bc.ca/CM/Page556.aspx
Prince George	www.city.pg.bc.ca/city_services/utilities/airquality/management/
Whistler	www.whistler.ca/files/PDF/Engineering_PW/Energy_Plan_pdf
Sea to Sky	wlapwww.gov.bc.ca/sry/p2/air_quality/seatosky_rep.html
North Okanagan Regional District	www.nord.ca/airquality.php#4
Cariboo	wlapwww.gov.bc.ca/car/env_protection/index.html
Regional District of Okanagan-Similkameen	http://www.rdos.bc.ca/index.php?id=13

Further information on communities with air quality reports

- Merritt http://www.env.gov.bc.ca/air/airquality/pdfs/merritt_aq_report.pdf

Other resources and examples of education programs:

- http://www.bvldamp.ca/
- http://www.ncap.kics.bc.ca/
- http://www.idlefreebc.ca/onboard/index.php

Although this Guide has focussed on regulating air emissions which have a direct health impact, many of the complaints that local governments receive from the public may involve chemicals with a questionable health impact, but which have a pungent odour. For those municipalities, the BC Ministry of Environment's Final Report on Odour Management in B.C., which discusses Best Management Practices for managing odour, may be of interest. This publication may be viewed on-line at http://www.env.gov.bc.ca/air/airquality/pdfs/odour_mgt_final_june13_05.pdf.

Part II

Further information on **concurrent authority** from the BC Ministry of Community Services:

- http://www.mcaws.gov.bc.ca/charter/advisory_materials/concurrent_regulation.htm

Endnotes

1 Office of the Provincial Health Officer, "Every Breath you take" B.C. Ministry of Health 2003, p. 57-60.

2 Ibid., p. 61.

3 Health Canada, "Estimated Number of Excess Deaths in Canada Due To Air Pollution" August 30, 2004. Available at: http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2005/2005_32bk2_e.html (as at July 24, 2006).

4 RWDI Inc. "Health and Air Quality 2005 - Phase 2: Valuation of Health Impacts from Air Quality in the Lower Fraser Valley Airshed" July 2005, p. vi.

5 For further information on the socio-economic factors for improving air quality, see a report prepared for the Greater Vancouver Regional District: Crane Management Consultants Ltd, "Socio-Economic Considerations Of Cleaning Greater Vancouver's Air". August 2005. Available at: http://www.gvrd.bc.ca/air/pdfs/cranereport_socioeconomic.pdf (as at July 30, 2006).

6 By R.J. Williams and K.K. Bhattacharyya for the Water, Air and Climate Change Branch Ministry of Water, Land and Air Protection Government of British Columbia, "Guide to Airshed Planning in British Columbia". March 31 2004. p3. Available at: http://www.env.gov.bc.ca/air/airquality/pdfs/airshedplan.pdf. p. 3.

7 Environment Canada "A primer on Air Quality in British Columbia" (2004). Available at http://www.pyr.ec.gc.ca/air/primer_e.shtml (as at July 31, 2006).

8 http://www.env.gov.bc.ca/air/airquality/#inventories (as at August 16, 2006).

9 See BC Ministry of Environment report "Fine Particulates: What They Are and How They Affect Us" last updated February 2002. Available at http://www.env.gov.bc.ca/air/particulates/fpwtaaht.html (as at August 1, 2006)

10 SENES Consultants Ltd, 'Development of Options for a New Provincial PM2.5 Air Quality Objective. Phase I Guide of Criteria in other Jurisdictions, and Recommendations for British Columbia', December 2005, p. 46-47.

11 Achievement of $PM_{2.5}$ CWS based on annual 98th percentile value averaged over three consecutive years. Achievement of ozone CWS based on annual 4th highest daily maximum value, averaged over three consecutive years.

12 CCME. Canada-Wide Standards for Particulate Matter (PM) and Ozone. Endorsed by CCME Council of Ministers, June 5-6, 2000, Quebec City, at p. 6.

13 Ibid. p. 4 and p. 6.

14 For example, see http://www.ec.gc.ca/cleanair-airpur/Pollutants/Criteria_Air_Contaminants_and_Related_Pollutants/Particulate_Matter_(PM)/Main_Emission_Sources-WS9A24D6D1-1_En.htm (as at August 15, 2006).

15 Moore D., Copes R., Fisk R., Joy R., Chan K., Brauer M. 'Population health effects of air quality changes due to forest fires in British Columbia in 2003: Estimates from physician-visit billing data'. *Can J Public Health* 2006; 97(2): 105-8.

16 SENES Consultants Ltd, "Development of Options for a New Provincial $PM_{2.5}$ Air Quality Objective. Phase I Guide of Criteria in other Jurisdictions, and Recommendations for British Columbia". December 2005, p. 13.

17 See for example http://www.ec.gc.ca/cleanair-airpur/Upstream_Oil_and_Gas-WSEBE19790-1_En.htm (as at August 15, 2006).

18 Ontario Medical Association "OMA Ground Level Ozone Position Paper" Available at: http://www.oma.org/phealth/ground.htm#pollutants (as at August 17, 2006).

19 http://www.ccme.ca/ourwork/air.html?category_id=99 (as at August 17, 2006)

[20] Coal burning is most notorious as a source of sulphur dioxide. To date there have been few coal burning plants in BC, but with the current drive by government to diversify energy production, some private companies have been exploring the possibility of coal fired power plants.

[21] See Natural Resources Canada's website at: http://www2.nrcan.gc.ca/es/es/sdi/English/index.cfm?fuseaction=SDI.Article&ArticleID=5.3 (as at August 16, 2006).

[22] See 2004 data for sulphur dioxide on Environment Canada's National Pollutant Release Inventory. Available at http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

[23] There are some studies emerging that suggest that relatively low levels of H_2S can have an effect on brain function and development, but it remains unclear whether these effects occur at the levels emitted by most industrial operations. For further information on the toxicity of H_2S see the Canadian Centre for Occupational Health and Safety's website: http://www.intox.org/databank/documents/chemical/hydrosul/cie313.htm (as at July 28, 2006).

[24] See the US Environmental Protection Agency website which details 33 pollutants most commonly found in the air, available at: http://www.epa.gov/ttn/atw/nata/pollinf2.html (as at August 16, 2006).

[25] *Canadian Environmental Protection Act* 1999, c.33.

[26] For example, there are CEPA regulations limiting sulphur content in fuels (which has an impact on sulphur dioxide) and setting air emissions standards for new vehicles. These regulations improve air quality indirectly by regulating the production of fuel and vehicles, rather than by regulating the actual emissions. A regulation which would directly regulate Greenhouse Gases is currently under consideration. Note that $PM_{2.5}$ and PM_{10}, Ozone, and the precursors to PM_{10} have been designated as CEPA Toxic.

[27] *Environmental Management Act*, [SBC 2003] Chapter 53

[28] For example, Schedule 1 of the *Waste Discharge Regulation* B.C. Reg. 320/2004 sets out the prescribed industries, trades, businesses operations and activities.

[29] EMA Section 1(1)

[30] R. Williams and K. Bhattacharyya. "Guide to Airshed Planning in British Columbia". (Victoria, B.C.: Ministry of Water, Land and Air Protection, 2004), p. 13.

[31] Sheltair Group. Air Quality Planning Tool. (B.C. Ministry of Environment, Jul 2005). Interactive version available online at http://www.airqualityplanning.ca/ (as at August 16, 2006).

[32] See http://www.wd.gc.ca/mediacentre/2005/mar30-01a_e.asp (as at August 16, 2006).

[33] See http://www.sustainablecommunities.ca/Tools/Eco-Procurement/ (as at August 16, 2006).

[33] See http://www.richmond.ca/services/environment/policies/purchasing.htm (as at August 16, 2006).

[35] See presentation notes available online by Gerry Hay, "Idle free in Richmond: Saving fuel and emissions" March 30, 2006. Available at: http://www.fraserbasin.bc.ca/programs/basin_wide.html (as at August 16, 2006).

[36] See http://www.kelowna.ca/CM/Page898.aspx (as at March 27, 2006).

[37] See http://www.scrapit.ca/incentive_choices.htm (as at August 16, 2006).

[38] For example, see http://burnitsmart.org/english/communities/workshops_2005.html (as at July 30, 2006).

[39] See http://www.rdn.bc.ca/cms.asp?wpID=1266 (as at July 31, 2006).

[40] http://www.kelowna.ca/CM/Page464.aspx, (as of March 27, 2006); programme expires in March 2007.

[41] Discussed in: Regional Municipality of Peel. Transportation Demand Management Study Report. 2004, at p. C-1 to C-4. Available at: http://www.region.peel.on.ca/planning/transportation/pdfs/TDM%20Study%20Report%20June%202004.pdf (as at August 16, 2006).

[42] http://www.gvrd.bc.ca/air/emission_reduction.htm (as at August 16, 2006).

[43] See http://www.translink.bc.ca/Transportation_Services/Fares_Passes/u-pass_faq.asp (as at August 16, 2006).

44 *Local Government Act*, R.S.B.C. 1996, c. 323, s. 876 (LGA).

45 To date the courts have suggested that this is not a stringent test.

46 West Coast Environmental Law, "Smart Growth Guide to Local Government Law and Advocacy" 2001, p. 39.

47 *Denman Island Local Trust Committee v. 4064 Investments Ltd.* 96 D.L.R. (3d) 253 (B.C.C.A.),

48 This is not to say that it might not be legal for a local government to regulate in this way; however, the law is uncertain enough that we do not recommend that a local government adopt this approach at this time.

49 This document is being led by the Environmental Stewardship Division of the B.C. Ministry of Environment for final approval and release. At present, the draft June 2004 version is available online. See http://wlapwww.gov.bc.ca/wld/documents/bmp/urban_ebmp/EBMP%20PDF%201.pdf (as at August 16, 2006)

50 LGA, above at note 44, s. 920.1.

51 Ibid.

52 To avoid duplication of effort, local governments could work with the province to obtain or interpret air quality information.

53 *LGA*, above at note 44, s. 903 (1).

54 *Douglas Developments Ltd. v Surrey (City)*, 2003 BCSC 130, [2003] B.C.W.L.D. 219, 34 M.P.L.R. (3d) 314 (B.C. S.C. [In Chambers] Jan 24, 2003).

55 *LGA*, Ibid., s. 903(4). (Although the situation may be different for public utilities).

56 *LGA*, Ibid., s. 914. The case law provides that a local government cannot designate private land for a public use (ie. turn private land into a public park or public road) without compensation; however, compensation is not required as long as any private use of the land remains open to the land owner (and this can be as restrictive, for example, as private campground, private recreational site): *Canada Mortgage and Housing Corporation v. North Vancouver*, 77 B.C.L.R. (3d) 14 (BCCA), leave to appeal refused, [2000] 2 S.C.R. vi.

57 Although not related to air pollution, the case of *Petro-Canada v. North Vancouver (District)* (2001), 150 B.C.A.C. 150, seems to be on-point. In that case Petro-Canada challenged a zoning bylaw which authorized gas stations or gas bars only if they had a full service pump (in addition to optional self-service pumps). The B.C. Court of Appeal rejected Petro-Canada's argument that the services to be provided at a pump were not related to use, but rather imposed conditions on operations on the site, holding that the requirement of a full service pump "involves regulation of the manner in which the property is used." Since air emissions have a greater impact on neighbours than whether a property provides a full service option, it seems likely that a local government can differentiate between uses that have different impacts on local uses. However, there are few cases on point, and it might still be argued that this type of zoning is more about regulating operations than use.

58 *Sundher v. Surrey (City)*, 148 D.L.R. (4th) 250 (B.C.C.A.).

59 See W. Bulhozer "British Columbia Planning Law and Practice" Lexis Nexis Canada Inc. 2001 paragraph 7.57, p. 7-24.1

60 *LGA*, above at note 44, s. 903(3).

61 It is possible that a court might characterize such a bylaw in terms of "use" of the property that is not likely to disrupt neighbours, in which case such a bylaw might be upheld. However, even if it were, such a bylaw would be difficult to enforce, as it would require constant monitoring of emissions levels and would be dependent not only on the use of the property, but on maintenance and operation of equipment. It would raise complex questions as to the implications of an occasional or one-time violation of the bylaw. Moreover, there is also an argument that the emissions levels would be seen not as regulation of use, but of regulation of air pollution, in which case such a bylaw would be struck down.

62 *LGA*, above at note 44, s. 911.

63 See *Saint-Romuald (Ville) v Olivier*, 2001 SCC 57, [2001] 2 S.C.R. 898, 204 D.L.R. (4th) 284 (Sep 27, 2001).

64 This is not to suggest that pollution of sparsely inhabited areas is acceptable; however, there are numerous examples of conflicts between old industrial facilities and new urban developments which could have been avoided through appropriate planning.

65 Strauss, S. "Death rate higher near busy roads". Globe and Mail, August 6, 2004, p. A9.

66 See note 49, above.

67 www.arb.ca.gov/ch/landuse.htm (as at August 16, 2006).

68 *Community Charter*, S.B.C. 2003, c. 26.

69 *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)* 2001 SCC 40, 2 S.C.R. 241, 200 D.L.R. (4th) 419. See also *Croplife Canada v. Toronto (City)* [2005] O.J. No. 1896 (Ont. C.A. May 13, 2005) at para 16-17 for a recent discussion of a shift in this approach.

70 *Community Charter*, s. 10 (although the Charter does not apply to Regional Districts, the case law supports the view that this approach applies to them as well.); *Environmental Management Act*, s. 37(1), (5).

71 See note 69, above. See also *Squamish (District) v. Great Pacific Pumice Inc.* (2003), 229 DLR (4th) 93 (BCCA) (no inconsistency between the BC Mines Act and a bylaw prohibiting the storage of pumice on site) and *Great Canadian Casino Co. v. Surrey (City)*, [1999] 3 WWR 13 (BCSC), reversed on other grounds (unreported, Oct. 19, 1999, Vancouver Registry CA 024617, CA 024621) (no actual conflict between the *Lotteries Act* and Surrey's regulation of lotteries, as it is possible to comply with both regimes). *Windset Greenhouses (Ladner) Ltd. v. Delta (Corp.)* (2003), 16 BCLR (4th) 297 (SC) seems to reach the opposite conclusion where the court decided that bylaws dealing with the regulation of fuel sources conflicted with the province's *Agricultural Waste Control Regulation*. Interestingly, the court characterised this bylaw as not seeking to regulate pollution and also did not consider for example, the relevant sections of the *Community Charter*, the *Environmental Management Act* or the Supreme Court's approach in the *Spraytech* decision. It is our opinion that *Windset* is almost certainly distinguishable.

72 *Environmental Management Act,* above at note 27, s. 37(5).

73 *Environmental Management Act*, ibid., s. 37(6). Interestingly, cabinet does not have this power if the provincial regulation takes the form of a Code of Practice – an increasingly common way of regulating certain industries.

74 *Princeton (Town) v. Hepner* (1989), 47 M.P.L.R. 10 (BCSC).

75 *Community Charter,* above at note 68, section 9(3).

76 Under s. 523(1) of the LGA, above at note 44, "Subject to the Health Act, a board may, by bylaw, (a) regulate and prohibit for the purposes of maintaining, promoting or preserving public health or maintaining sanitary conditions, and (b) undertake any other measures it considers necessary for those purposes." This power, like the municipalities' power, is subject to section 9 of the *Community Charter* – the Concurrent Jurisdiction provisions: s. 523(2).

77 *Public Health Bylaws Regulation*, B.C. Reg. 42/2004, s. 2.

78 Ibid., s. 2(1); there are other topics listed which local governments can address, but no others that can generally be viewed as relating to air pollution.

79 It seems that the link between health and the bylaw does not need to be proved in any case. In *Spraytech*, (above at note 69) the Supreme Court of Canada considered an anti-pesticide bylaw enacted by the Town of Hudson. In finding that the pesticide bylaw did deal with matters of health, the Supreme Court relied upon international law's precautionary principle – a principle that a risk to health or the environment does not need to be proven before government takes action – noting that: "In the context of the precautionary principle's tenets, the Town's concerns about pesticides fit well under their rubric of preventive action." (para.32). This approach seems to replace a more restrictive approach to a similar power over matters of health, which required evidence of a significant level of actual harm, adopted by the Ontario Superior Court of Justice in *Weir v. R.* (1979), 102 D.L.R. (3d) 273 (Ont. S.C.J. , Div'l).

80 A medical health officer is a municipal officer appointed under the *Health Act*, R.S.B.C. 1996, c. 179, s. 26, 28, while a Regional Health Board is a Board created under the *Health Authorities Act*, R.S.B.C. 1996, c. 180, s. 4.

81 *City of Prince George, B*ylaw No.7721, 2005. Available at: http://www.city.pg.bc.ca/cityhall/bylaws/bylaw7721.pdf (as at July 30, 2006).

82 *Spheres of Concurrent Jurisdiction Regulation – Environment and Wildlife Regulation*, B.C. Reg. 144/2004. The Regulation deals with matters that include protection of water courses, the regulation of pesticides and measures to prevent the introduction of invasive species.

83 See Consultation Agreement Between Ministry of Water, Land and Air Protection Ministry of Community, Aboriginal and Women's Services Union of British Columbia Municipalities. Available at : http://www.mcaws.gov.bc.ca/charter/advisory_materials/concurrent_regulation.htm (As at August 13, 2006).

84 [SBC 2003] Chapter 53.

85 *Community Charter*, above at note 68 s. 8(3)(h), s. 64.

86 *LGA*, above at note 44, s. 725.

87 See *Re: Britain Steel Fabricators and New Westminster (City) Bylaw 3869* (1963), 39 D.L.R. (2d) 676 (B.C.C.A.); *Weir v. R.* (1979), 102 D.L.R. (3d) 273 (Ont. S.C.J., Div'l). *Prestige Video Productions (1982) Ltd. v. Victoria* (1982), 39 B.C.L.R. 263. Courts are likely to show some deference to municipal council's determination of what constitutes a nuisance, but it must not be unreasonable.

88 *Christensen v. Highlands (District)*, 2000 BCSC 196, 9 M.P.L.R. (3d) 150. By contrast the Ontario Superior Court of Justice, in *Weir v. R*, ibid., suggested that only a public nuisance can be regulated through this type of power.

89 "It has long been recognized that the public has a right to unpolluted air. Noxious odours from a paper mill, a landfill site, a copper smelting works and from second-hand smoke are a public nuisance. Further, the discharge of stones, dust and vibration from a quarry, and the discharge of "acid smuts" from the chimney of an oil depot, that affect an entire community, are a public nuisance.": M. Faieta et al. Environmental Harm: Civil Actions and Compensation. (Toronto: Butterworths, 1996), p. 46-47).

90 "The interest in the beneficial use of land protected by the action of nuisance is a broad and comprehensive notion. … [H]armful interference may be manifold: it may consist … in disturbing the comfort, health, and convenience of the occupant by offensive smell, noise, smoke, dust …": Fleming's Law of Torts, 9th ed., at p. 465-6, cited with approval in Christensen, above at note 88.

91 Complaints which are only aesthetic in nature, for example, do not constitute a nuisance: *Christensen*, above at note 88. In relation to private nuisance in the context of common law liability, see *Pugliese et al v. National Capital Commission* (1977) 3 C.C.L.T. 18 (Ont. C.A.), affirmed but varied (1979), 25 N.R. 498 (S.C.C.), quoted below at note 115.

92 *Pinewood Recording Studios Ltd. v. City Tower Development Corp.*, 31 C.L.R. (2d) 1, [1997] B.C.W.L.D. 47 (B.C.S.C. Nov 22, 1996).

93 *Weir v. R.*, above at note 87, para. 25.

94 "It is no defence that the act of the defendant would not amount to a nuisance unless other persons acting independently of him did the same thing at the same time.": Salmond on Torts, 10th ed., pp. 228-31, cited with approval in *Russell Transport Ltd. v. Ontario Malleable Iron Co. Ltd.*, [1952] O.R. 621 (Ont. H.C.).

95 *Reference Re ss. 193 & 195.1(1)(c) of Criminal Code (Canada)*, [1990] 1 S.C.R. 1123 at para. 6, concerning the need to address the public nuisance of solicitation for the purpose of prostitution individually, rather than collectively.

96 One example of a bylaw which arguably did regulate individual actions that resulted in a collective nuisance was discussed in *R. v. Taylor* (1909) 14 B.C.R. 235 (S.C.). In that case a bylaw making it illegal for individuals to constitute for long periods of time in a crowd, thereby blocking a public thoroughfare, was held to be a valid use of the nuisance powers.

97 *Community Charter*, above at note 68, s. 53. Somewhat surprisingly, an equivalent restriction does not

seem to be in place for Regional Districts.

98 See note 111. See http://www.town.golden.bc.ca/upload/dcd20_1150_Solid_Fuel_Burning_Appliance_Bylaw.pdf (as at August 22, 2006).

99 District Of Houston Bylaw No. 906, 2005, A Bylaw Of The District Of Houston For The Administration Of The Regulations Of The British Columbia Building Code And The British Columbia Plumbing Code. Available at: http://houston.ihostez.com/contentengine/launch.asp (as at August 22, 2006).

100 B.C. Reg. 86/2004.

101 The Regulation allows local governments to regulate structures which do not fall within the definition of "building" under the Code or which are exempted under s. 1.1.2.2 of the Code. The definition of "building" is "any structure used or intended for supporting or sheltering any use or occupancy" – an exceptionally broad definition not limited, for example, to structures which actually house people.

102 *Community Charter*, above at note 68, s. 8(3)(l).

103 *Local Government Act*, above, note 44, ss. 693.1 and 694.

104 William. A Bulhozer, "Broad Municipal Powers under BC's Community Charter" in Municipal Law 2006 Update. Continuing Legal Education Society of BC p 2.1.6

105 *Local Government Act*, above, note 44, s. 693.1(1).

106 See note 49, above.

107 *EMA*, above at note 19 s. 31(1).

108 *Air Quality Management Bylaw No*. 937, 1999, Greater Vancouver Regional District. See http://www.gvrd.bc.ca/air/pdfs/aqbylaw.pdf. (As at August 17, 2006)

109 Residential Wood Burning Emissions in British Columbia, Revised May 17, 2005 http://www.env.gov.bc.ca/air/airquality/pdfs/wood_emissions.pdf (as at August 17, 2006).

110 For example see Natural Resources Canada website on high efficiency stoves: http://burnitsmart.org/english/high_efficiency/index.html (as at August 17, 2006).

111 Town of Golden, Bylaw No. 1150, enacted March, 2005. See http://www.town.golden.bc.ca/upload/dcd20_1150_Solid_Fuel_Burning_Appliance_Bylaw.pdf (as at July 30, 2006). As above at note 98.

112 As above at note 81.

113 http://www.city.quesnel.bc.ca/DocumentBank/Bylaws/FinalBldgBylaw1550.pdf (as at July 30, 2006).

114 http://www.ec.gc.ca/cleanair-airpur/975A1778-B583-4E2A-9369-81800C3AC8C2/Model_By-law.pdf (as at July 24, 2006).

115 *Pugliese*, above at note 91.

116 B.C. Reg. 145/93.

117 Above at note 27

118 *Model Municipal Bylaw for Regulating Backyard Burning* (Ministry of Environment, 1997), p. 4-5. See http://www.env.gov.bc.ca/air/particulates/pdfs/bylaw.pdf (as at July 31, 2006).

119 *Open Burning – Fire Regulation Bylaw* No.1915, 2004. Available at http://www.nord.ca/publications/bylaws/1915_open_burning.pdf (as at July 31, 2006).

120 http://www.cord.bc.ca/docs/bylaws/consolidated%20Bylaws/Consolidated%20Smoke%20Control%20Bylaw%20773.pdf (as at July 30, 2006).

121 See note 81, above.

122 Dennis Stefani and Asish Mohapatra. Public Health Implications of Traffic Density and Vehicle Idling on Air Quality: Report to Climate Change Central - Anti-idling Campaign, July 2003. Available at http://oee.nrcan.gc.ca/transportation/idling/material/reports-research/idling-health-effects.cfm, (as at August 16, 2006).

[123] See http://www.cnv.org/server.aspx?c=3&i=320 for summary and http://www.cnv.org/bylaws/bylaws/7697.doc (as at August 16, 2006) for the actual text, which is an amendment of an earlier bylaw.

[124] *Town of Gibsons Anti-Idling Bylaw* No. 1010, 2005. Available at http://www.gibsons.ca/pdfgibsonsbc/gibsonsBylaws/AntiIdlingBylaw1010Gibsons.pdf (as at August 15, 2006)

[125] *Parking and Traffi*c Bylaw No. 1512, 2001. Available at http://www.idlefreebc.ca/resources/index.php (as August 15, 2006).

[126] See Appendix 1 for further information.

[127] See http://oee.nrcan.gc.ca/communities-government/transportation/municipal-communities/reports/model-bylaw.cfm (as at July 30, 2006).

[128] See http://www.env.gov.bc.ca/air/airquality/pdfs/roaddustbmp_june05.pdf (as at July 30, 2006).

[129] See note 112 above.

Notes

West Coast Environmental Law is BC's legal champion for the environment. West Coast empowers citizens and organizations to protect our environment and advocates for the innovative solutions that will build a just and sustainable world.

West Coast Environmental Law
1001 – 207 West Hastings, Vancouver, BC
CANADA V6B 1H7
phone: 604.684.7378 or 1 800 330 WCEL
fax: 604.684.1312 email: admin@wcel.org
www.wcel.org

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environmental law