

**PRINCE GEORGE AIR QUALITY
MANAGEMENT PLAN
-PHASE TWO-**

Prepared by the Prince George Air Quality Implementation
Committee

November 2006

AIR QUALITY MANAGEMENT PRINCIPLES AND OBJECTIVE

Preparation and implementation of the Management Plan should be guided by the following principles:

Acceptable air quality is everyone's right; protecting air quality is everyone's responsibility.

Acceptable air quality is an important contributor to a healthy community and a sustainable economy.

Achieving acceptable air quality requires that local, provincial and federal government agencies work together. Public and industry involvement is also necessary.

The objective of the Management Plan- Phase Two is:

To achieve and maintain acceptable air quality by reducing the emission of those air contaminants that are causing unacceptable air quality, and by preventing future air quality problems from developing.

To achieve this objective most effectively, the management agencies must:

1. Set priorities with achievable goals for emission reductions;
2. Take a staged approach to implementing the management actions;
3. Monitor the effectiveness of the plan and research future needs;
4. Anticipate and take steps to prevent new air quality problems from developing;
5. Find funding to carry out the plan; and
6. Obtain input from the public, industry, health professionals and environmental groups.

BACKGROUND

The Prince George City Council and the Fraser-Fort George Regional District Board approved the "Prince George Air Quality Management Plan (PGAQMP)-Phase One", hereafter referred to as 'the Plan', in 1998. The fundamental motivation for creating the Plan was overwhelming evidence that poor air quality in the Prince George airshed was negatively impacting the health and quality of life of our residents. The Plan's implementation is the responsibility of the Prince George Air Quality Implementation Committee. This committee is a multi-stakeholder group (representatives from government, industry, the public, and the University of Northern British Columbia (UNBC)), which meets on a regular basis to discuss how best to implement the Plan- Phase One and future phases of the Plan.

The Plan- Phase One identifies measures to improve air quality in the Prince George airshed, in particular to achieve acceptable levels of fine particulate matter. It contains 28 recommendations for actions to reduce and manage pollutant sources, including industrial emissions, road dust, and residential sources such as open burning and woodstoves. The Plan also addresses land use planning issues, poor air quality episode management, and the monitoring and research required to measure progress and to identify future management needs. Some of the recommended actions have been completed or are being implemented.

To continue efforts at improving air quality in Prince George, the Air Quality Implementation Committee is creating this document (Phase Two) of the Prince George Air Quality Management Plan. This Plan brings forward recommendations that have been identified as ongoing in the Phase One-Progress Report and a number of new recommendations that have been identified. This Plan is the bridge between Phase One, the completion of the Source Modeling Study being conducted by the PG Research Working Group, and Phase Three. This work is estimated to take approximately two years, and at that time the committee will begin its work on Phase Three that will take into consideration the information learned from the completed Source Modeling Studies.

PHASE TWO MANAGEMENT RECOMMENDATIONS

QUALITY OF LIFE

| ODOUR MANAGEMENT ACTIONS

Industrial Sources

1. The Committee work with the Research Working Group to prepare an odorous emissions inventory that can be used to identify source contributions.

FINE PARTICULATE MANAGEMENT ACTIONS

Dust from Street Sanding, Paved and Unpaved Areas and Other Sources

2. The City expand its program to use winter abrasives that generate less fine particulate matter;
3. The City and the Ministry of Transportation conduct an early sweep (late February/early March) of arterial roads.
4. The City do more frequent sweeping of municipal streets and additional dust control on unpaved high traffic routes, to further reduce dust levels;
5. The Committee request the Ministry of Transportation to implement similar measures on provincial highways within the City;
6. The management agencies request the property owners of Willow Cale Road to set a schedule for hard surfacing the portion of the Willow Cale Forest Road between Penn Road and Boundary Road;
7. The management agencies request that the roads in vicinity of BCR Industrial Way set a schedule for hard surfacing all gravel roads;
8. The City require paving or the use of other materials which decrease dust of all traffic areas permitted for new or redeveloping industrial and commercial developments.

Industrial Sources

9. Complete the Source Identification and Apportionment Study to further define priorities for reducing industrial and non-industrial emissions.

COMMUNITY AND REGIONAL PLANNING

10. Air quality considerations be incorporated into the Prince George Official Community Plan, including transportation efficiency and alternative transportation, and into the Regional District Community Plans during the next plan reviews;
11. Recognizing that land use planning decisions involve many inter-related factors, request local government to designate land as needed for heavy industry so as to direct future air pollutant sources, especially those emitting fine particles and their precursors, to areas out of the airshed, including those recommended in the 2002 Industrial Lands Study. Land use designations and/or zoning categories are needed to distinguish those sources from insignificant heavy industrial emission sources. Review and update the 2002 Industrial Lands Study.
12. Conduct an airshed boundary study to assist with determining air quality effects from open burning and other air pollution sources within and outside the City of Prince George.

PREVENTION OF AIR QUALITY PROBLEMS

13. MOE evaluate the acceptability of new sources of air contaminants, especially particulate matter (PM₁₀ and PM_{2.5}), total reduced sulfur (TRS), sulphur dioxide (SO₂) and nitrogen oxides (NO_x), based on use of the "lowest achievable discharge rate";
14. The Prince George Air Quality Implementation Committee and the City promote reductions in vehicle emissions (such as the Anti-Idling campaign) and request Environment Canada to conduct a diesel mobile emission-testing program;
15. The City incorporate air quality issues into its transit decision-making;
16. The Prince George Air Quality Implementation Committee develop and promote public awareness and education of air quality issues. This should include brochures, media campaigns and updated web site info.

MANAGEMENT OF POOR AIR QUALITY EPISODES

17. MOE require owners of the most significant fine particulate sources to provide plans for temporarily reducing emissions during air quality advisories (See Glossary);

18. The feasibility of predicting fine particulate episodes be analyzed by the Prince George Air Quality Research Working Group, and any feasible methods be suggested to the Prince George Air Quality Implementation Committee for implementation.

LOCAL HEALTH CONCERNS

FINE PARTICULATE MANAGEMENT ACTIONS

Open Burning

19. The City ban all open burning including yard and garden waste, noxious materials, land clearing and logging debris on all properties in the City of Prince George;
20. The City ban recreational fires on all properties in the City of Prince George;
21. The Regional District continue to advise residents of the hazards of open burning, and the availability of facilities to reuse, compost or properly dispose of burnable materials at the Foothills Boulevard Regional Landfill;
22. MOE and the Regional District develop strategies to reduce open burning of Mountain Pine Beetle and land clearing debris in areas surrounding the City.

Wood Burning Appliances

23. The City promote the proper use of wood burning appliances in the City and enforce any nuisance caused by woodburning;
24. The Regional District require that any new or replacement wood burning appliance meet the standards in the B.C. *Solid Fuel Burning Domestic Appliance Regulation*;
25. The City and Regional District provide public education opportunities on wood burning appliances, upgrade programs (stove exchange) incentives, and Bylaw implications.

CLIMATE CHANGE

GREENHOUSE GAS MANAGEMENT ACTIONS

26. The City of Prince George complete all Milestones of the Partners for Climate Protection Program;
27. The Regional District continues to advance its Landfill Gas Management Plan to pursue beneficial use options of landfill gas.

MONITORING AND RESEARCH

28. The Prince George Air Quality Research Working Group review published literature (e.g. MOE PM2.5 Study, UNBC Research Projects, projects leading to reduction in industrial emissions, etc.) on the topic of health and air quality, and, if appropriate, assist in any work that is being conducted;
29. The Research Plan (2004) be funded and coordinated by the Prince George Research Working Group. Completion of the Source Modeling Study should be set for 2008. The research plan entails:
 - Emission Inventory Assessment
 - Fill data gaps/improve assessment
 - Update Emissions Inventory
 - Model source impacts
 - Cost/benefit evaluation of source reductions by the Implementation/Steering committees
30. The Monitoring Working Group to upgrade equipment as planned.

APPENDIX A: GLOSSARY OF TERMS

Acceptable Air Quality is:

“The level of a particular air contaminant that meets an ambient air quality objective.”

An Air Contaminant is:

“An airborne substance that, when present in the air in sufficient concentrations, is capable of causing human health and other harmful environmental effects”

Air Quality is:

“The physical and chemical characteristics of ambient (outside) air that determine its acceptability for human use and environmental protection. Air Quality is generally defined by numerical criteria for individual contaminants, based on human health or other environmental studies. Air quality includes smell and taste as well as the chemical composition of air.”

An Air Quality Advisory is:

“ A notice issued by MOE indicating that an ambient air quality objective has been exceeded, or is predicted to be exceeded, and that current meteorological conditions are predicted to continue for the next six hours or more. Notices are issued to advise the public to heed those precautions that are appropriate to the pollution levels, and to advise or require industry and other source owner, including the public, to take appropriate emission reduction measures.”

Air Quality Management is:

“Administrative activities carried out to implement an air quality management plan, including amendment of permits for industrial and other point contaminant sources, establishment of by-laws and other local and regional regulatory controls on mobile and area contaminant sources, and public education on ways to reduce and eliminate use of air contaminants in everyday activities”

An Air Quality Management Plan is:

"A blueprint for managing community development and for controlling air contaminant sources so as to improve or maintain air quality for the protection of human health and the environment in an airshed"

An Ambient Air Quality Objective is:

"A numerical, non-legal guideline defining an acceptable level of an air contaminant in ambient air. Various levels (A, B and C) are used to define various endpoints (or protection criteria) and degrees of protection. Different averaging periods (1-hour, 24-hour, annual) are also used to indicate the exposure period that is most critical to preventing each defined effect. For example, if protection of vegetation from reduced growth rates is the endpoint, then the Level A, 1-hour SO₂ objective must be attained."

An Episode is:

"A period of unacceptable air quality, when ambient levels of a particular air contaminant exceed an ambient air quality objective or objectives. For example, a PM₁₀ episode is defined in this airshed as two or more consecutive days of exceedance of the 24 hour, Level B objective."

Lowest Achievable Discharge Rate is:

"A comparable jurisdiction's most stringent authorized discharge limitation, unless such limitation is demonstrated to be unachievable, or the most stringent discharge limitation that is achieved in practice, whichever is most stringent." (MELP Standards and Guidelines Policy - October 7, 1997)

Open Burning is:

"The combustion of materials, including garden and lawn clippings and tree prunings, without control of the combustion air, and without a stack or chimney to vent the products of combustion to the atmosphere. Open burning does not include use of barbeques."

Permitted Emission Sources are:

"Releases of contaminants under MOE *Environment Management Act* emission permits, including mostly industrial sources."

PM₁₀ is:

“Fine particulate matter with a maximum particle diameter of 10 microns (μm = one millionth of a meter). Includes particles that are inhalable into the lungs.”

PM_{2.5} is:

“Ultra-fine particulate matter with a maximum particle diameter of 2.5 μm : the main particulate component of woodsmoke and vehicle emissions.”

The Prince George Airshed is:

“The mass of air contained within the municipal boundaries of Prince George and the immediate surrounding communities of the Regional District, and particularly that air mass contained and affected by the natural topographical features at the confluence of the Nechako and Fraser Rivers”

NO_x is:

“Nitrogen oxides, which include nitric oxide (NO) and nitrogen dioxide (NO_x), and are formed during combustion of fuels from reaction between oxygen and atmospheric nitrogen gas (N₂)”

SO₂ is:

“Sulphur dioxide, formed from burning of material containing sulphur and includes the incineration of TRS during combustion of fuels, and pulping chemicals, and the flaring of hydrogen sulphide during oil and gas processing and refining”

TRS is:

“Total reduced sulphur, which includes hydrogen sulphide, dimethyl sulphide and disulphide, and methyl mercaptan, is formed in the absence of oxygen during pulping processes and released primarily from effluent disposal, and is entrained in oil and gas deposits and released during transport, gas processing and oil refining.”

VOC is:

“Volatile organic compounds, or carbon containing compounds, are hydrocarbons that form gases when released from combustion, industrial processes, and evaporation of liquid fuel. Natural biological sources release most of the VOC, although man-made sources may predominate in urban airsheds. Some VOC have direct health and environmental effects, other compounds react with other atmospheric gases to promote ozone and PM_{2.5} formation.”

Wood burning is:

“Combustion of a solid wood fuel.”