

Our Partners

The Ministry of Environment would like to thank these agencies without whose support the study could not take place:

- The Golden and District Air Quality Committee
- The Town of Golden
- Louisiana Pacific Wood Products Ltd.
- Environment Canada
- Golden District Golf and Country Club
- Interior Health
- Golden and District Hospital
- Rocky Mountain School District No.6
- Canadian Pacific Railway

Want to get involved? Contact the Golden and District Air Quality Committee at kwhern@cablerocket.com or visit www.goldenairquality.com.

For More Information

Provincial Government

Water, Air and Climate Change branch web site <http://www.env.gov.bc.ca/air/particulates/index.html> or contact one of the following ministry regional offices directly:

Nelson (250) 354-6355, Cranbrook (250) 489-8540
Or toll-free through Enquiry BC 1-800-663-7867

Federal Government

Initiatives in British Columbia, the Georgia Basin and the weather office services, visit the following web site:
<http://www.weatheroffice.pyr.ec.gc.ca/wxhealth/airquality/>

Credits:

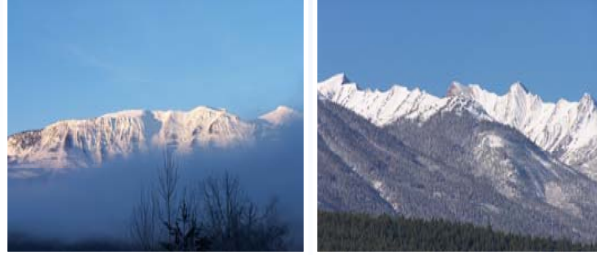
¹ British Columbia. Provincial Health Officer. (2004). *Every Breath You Take...Provincial Health Officer's Annual Report 2003. Air Quality in British Columbia, a Public Health Perspective*. Victoria, BC Ministry of Health Services.

Sources:

Fine Particulates: What They Are and How They Affect Us. BC Water, Air and Climate Change Branch. Andrea Careless and Natalie Suzuki. 2002.

<http://www.env.gov.bc.ca/air/particulates/fpwtaht.html>

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All other non-credited photos- Chris Marsh



Understanding Air Quality in Golden, B.C.



INTRODUCTION

You look out your window on a cool, calm winter morning and see a thin layer of what appears to be cloud hovering over the valley below. You look around and wonder what's causing this haze; is it the residential wood smoke? Is it from industrial emissions? Is it from our cars and trucks?

The reality is that there are many sources that contribute to the state of the airshed. They all release particulate matter pollution into the air, creating hazards to human and environmental health and a visual blight on our scenic communities.

It's time to clear the air, but before taking action to control particulate matter, we need to understand the nature of the problem. This brochure will introduce you to particulate matter and the study that is underway in Golden, B.C.

Inside you'll find:

- A description of particulate matter: what it is, where it comes from and why it can adversely impact health.
- An overview of the comprehensive study that the Ministry of Environment (MOE) and its partners are undertaking to understand the sources of particulate matter. The long term objective of this study is to develop a plan that will guide us all in improving the environment for a healthier and even more beautiful Golden, British Columbia.
- A list of references on air quality should you want to learn more.

Ken Schroeder

What is Particulate Matter?

The term may sound complicated but it actually just refers to very small particles that can come from a variety of different sources. These particles may be solid or liquid, have different chemical composition and behave differently in the air. Particulate matter (PM) is often referred to as either PM₁₀, PM_{coarse} or PM_{2.5} which is in reference to its size.



PM_{2.5} is composed of very small particles that are 2.5 microns or less in diameter. Sources of PM_{2.5} include smoke from the burning of wood, garden or household waste, slash burning, woodstoves, vehicle exhaust, industrial smoke stacks and some chemical reactions.

PM₁₀ refers to particulate matter that is less than 10 microns in diameter and includes PM_{2.5} as a subset. The coarse portion is comprised of particles that are between 2.5 and 10 microns in diameter and include sources such as road dust, pollen, construction, mining and other human activities.

Why Do We Need to Understand Sources of Particulate Matter?

Most health experts agree that, due to its small size and ability to penetrate deep into the

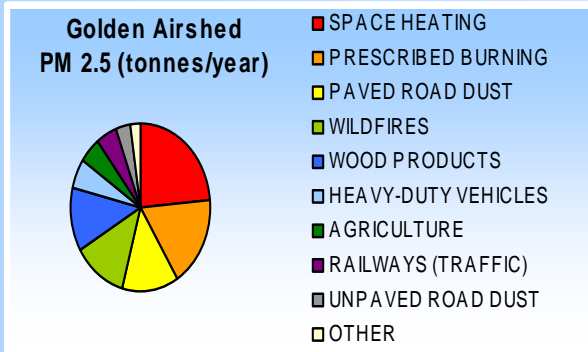
PM_{2.5} is the particulate size most associated with negative health effects.

lungs, PM_{2.5} is the size most associated with

negative health effects. In 2003, a BC Lung Association panel reviewed studies of air contaminants such as nitrogen oxides, sulphur, carbon monoxide, ozone and PM that were thought to cause cardio-respiratory health effects. The panel noted that in parts of B.C., the levels of PM_{2.5} were in the range where health effects may be expected. Also noted were the associated risks of angina, heart attacks, pneumonia and lung cancer, as well as increased symptoms and hospital visits by people with lung conditions such as chronic bronchitis or asthma.¹

The Source Apportionment Study

The source apportionment study is running concurrently with the regular air quality monitoring network to glean more detailed information about particulate matter in the air. "Source apportionment" is a term used to describe the process of identifying the sources of air pollutants and their

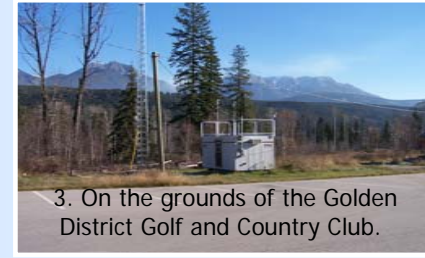


relative contributions. Its purpose is to identify human-generated emission sources and their contribution with greater certainty. This will be done by using technologically advanced instrumentation that residents in the Golden area will notice in the following three monitoring sites:

1. Near Golden and District hospital.



2. South of the Canadian Pacific Railway switching yards.



3. On the grounds of the Golden District Golf and Country Club.

The data collection phase will likely end in the Spring of 2007 and should provide enough information for scientists within the B.C. Ministry of Environment, Environment Canada, and research labs at universities to assess the sources of PM in Golden.

Why Golden?

Golden is an ideal site for the development of a model source apportionment study for several reasons.

1. Its topography (i.e. valley bottom), climate and meteorological characteristics are typical of many interior B.C. communities.



Jon Wilsgard

2. Historical PM₁₀ and PM_{2.5} levels are well above the provincial average.
3. Main emission sources (e.g. woodstoves, open burning, transportation,

rail yards, wood processing and road dust) are typical for interior communities.

4. There is strong community support for the development of an airshed management plan in Golden.

What is an Airshed Management Plan?

First, let's look at what we call an airshed. The most obvious example of an airshed would be a mountain valley, that limits the influence of winds and air circulation, typical of many communities in British Columbia.



The movement of air within an airshed is not constrained by political boundaries, but it is often hindered by terrain such as mountains and by weather conditions. This means that air pollutants released within the airshed tend to linger.

There's strong community support for airshed management planning in Golden.

An airshed plan is a tool communities can use to ensure that air quality is protected. It can be used to map out how the community can continue to grow and develop, while maintaining or improving its air quality. In addition, an airshed plan can integrate with other ongoing planning processes to help ensure that co-benefits of all planning processes are understood and optimized.

The results of the source apportionment study will help the community make informed decisions about particulate matter sources in the Golden airshed and assist it in developing an airshed management plan.