

## AIR QUALITY COUNCIL CO-AUTHORS SCIENTIFIC PAPER

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Air is invisible and, as with all things unseen, is easy to ignore or take for granted. Sometimes, trying to describe the effects of air pollution reminds me of the 'germ theory'. It took a long time for scientists to convince people that wound infections and certain contagious diseases were linked to invisible things called bacteria. In more recent years, it has taken scientists a long time to convince people that regularly breathing cigarette smoke, first or second hand, runs counter to the precious biological life support systems we're gifted with at birth. Of course, knowledge is not always enough to invoke change, but it is an important first step.

Science is a wonderful tool that can help us observe the unseen. It is indispensable in the normal course of learning how to respect and protect the cycles and systems of life. Basically, science is a movement from questions, to hypothesis, to experiments, to conclusions....and, often, back to more questions.

The Air Quality Council (AQC) has lots of questions. What is the nature of the Alberni Basin Airshed? How does our air move in this region on, for example, a daily or seasonal basis? What are all the sources of pollution in our airshed? What is the make up of that pollution? What are the health effects? How can we reduce pollution? How can we keep clean areas clean? What kinds of air quality concerns do other communities have?

One of the AQC's first experiments was set up to answer the question, "Do different areas in Port Alberni have different levels of fine particulate matter pollution?" We decided to set air samplers out in six different areas and operate them for a month in Nov.-Dec./04 and a month in Feb.-Mar/05. One of our members, Warren McCormick, is an air quality specialist from the Ministry of Environment. He was able to secure funds for the lab analysis of the samples and 5 of the air sampling units. Another of our members, Larry Cross, is the environmental manager at Catalyst (then Norske) who, through Catalyst, offered to fund the sixth monitor. The rest of us offered to do the work, which involved going to our specified site every other day, collecting the used filter, installing a new one, recalibrating the sampling machine, changing the battery, dropping off samples to courier away and picking up fresh filters.

The data analysis from this study points to a number trends. For example, during the cold, dry sampling period of 2005 we found that residential areas can have consistently higher particulate matter pollution due to smoke from wood stoves. Sites near highways showed higher ambient levels at all times, most likely due to vehicle exhaust. During one 24 hour sampling period, someone in a yard near one of the monitors fired up a burn pile causing extremely high readings. Pollution spikes like this one can trigger serious health effects, especially in those who are more sensitive due to, for example, asthma.

This study also verified two important concerns that the AQC has had for a number of years:  
1) The one piece of monitoring equipment that we have in Port Alberni, a relatively large fraction particulate matter (PM) monitor, is not situated in a good area to measure community wide levels of particulate matter.

2) We have no weather monitoring equipment in Port Alberni which greatly reduces the usefulness of air quality data. For example, during one of our sampling days we discovered elevated levels of lead in the air. Where did it come from? Knowing the strength and direction of the wind that day could be a big clue.

Having our concerns embedded in a scientific document goes a long way to having them addressed. There has already been action taken that may result in an upgrade of the existing PM monitor, the purchase of new PM monitoring equipment and the placement of weather monitoring equipment in town.

I'm still amazed at what you can do with a question, some hard work, and the expertise to pull it all together. We ended up with a scientific paper co-authored by Port Alberni's AQC and the Ministry of Environment. This paper serves to inform our community and has already been used to inform others in the field of air quality management. It is the beginning of becoming better informed about the air around us, how it behaves, and how we might best behave with respect to it.