



Air quality protection priorities lead SCCAS down new paths

By Jools Andrés, Executive Director
Sunshine Coast Clean Air Society

The Sunshine Coast Clean Air Society has had a busy 2014. We worked to identify our values and priorities in June at our Strategic Planning Session and have made progress in translating ideas and ideals into action.

Early in the year we lost a valued director when Louis Legal resigned from his role on the board; he held the position for a dozen years, since its inception in 2002. It is our good fortune that Mr. Legal is still very much involved in many of our initiatives, and you shall see some of that in the contents of this newsletter. We are grateful for his expertise and energy.

During the year we pursued several funding sources to ensure that we can continue to bring quality education and programming to Sunshine Coast residents. Our Wine Tasting fundraising evening, a labour-intensive, volunteer-driven event held last April, raised \$4,300. We have also been granted funds from the District of Sechelt (\$1,000) for social media advertising campaigns, and the Sunshine Coast Regional District (\$1,150) for our upcoming "Be the Change" symposium. (See the notice on the right side of this page.)

In late November we received \$11,500 from BC's Ministry of Environment for the 2015 Wood Stove Exchange Program. The SCCAS board stresses best solutions by replacing old wood-burning stoves with electric heat pumps, or electric, pellet, or gas appliances. Director Ryan Logtenberg has initiated a helpful Home Heating Buyer's Guide on our website, which will continue to develop over time. See page 4 for more.

Finally, in August the SCCAS submitted a Project Overview Application to the BC Clean Air Research Fund (BC CLEAR) for \$20,000 to establish ongoing air quality data collection through monitoring. In late October we were informed that the BC CLEAR Selection Committee accepted the project overview and invited us to continue to Phase II of the application process, due on January 15, 2015. Stay tuned for updates.

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Symposium Organizing Committee sets meeting dates

"Be The Change"

In May 2014 the Society was awarded \$1,150 from the Sunshine Coast Regional District Rural Areas Grants-in-Aid program to support design and facilitation of a Health Impact Symposium that demonstrates how behaviour changes can improve air quality and public health. As of this writing, planning for the event is in the early stages.

The working title for the symposium is "Be The Change." It is based on the famous Mahatma Gandhi quote, "You must be the change you wish to see in the world."

The Symposium Organizing Committee includes Joe Harrison, James Pawley, Elizabeth McNeil, and Valerie Thorsteinson; Louis Legal is the team leader and the first meeting is set for late January.

As described in Mr. Legal's article on page 2, accomplished air quality meteorologist and UBC professor Dr. Douw Steyn will anchor our symposium with a keynote address. (Title and topic specifics tba.)

The confirmed venue and date is the Seaside Centre on April 25, 2015. More information will be posted on our website and social media channels as details are formalized.

Our projected budget of \$2,500 needs quite a bit of topping up to meet our modest goals. In addition to administrative and material costs, volunteers are in place in high schools to encourage student involvement in creative projects designed to bring about lifestyle choices that improve air quality. So, our hat is out—donations of any size are welcome.

Contact our treasurer Valerie Thorsteinson (click for email link or input valeriethor@hotmail.com).

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*donations
welcome*



Baseline Air Quality Data Collection for Howe Sound project in planning stages

Sunshine Coast Clean Air Society director Joe Harrison and former director Louis Legal met with Dr. Douw Steyn at his University of British Columbia office in mid-October. Dr. Steyn is an accomplished air quality (AQ) meteorologist and Professor of Boundary Layer Meteorology, Mesoscale Meteorology, and Air Pollution Meteorology at UBC. He has earned the Killam Teaching Prize (2010) and the Canadian Federation of Earth Sciences Mentorship Medal (2011), among other prestigious awards. According to Dr. Steyn, "My research is primarily driven by an interest in the polluted atmosphere, particularly at the regional scale. I conduct both field measurement and numerical modelling studies in order to pursue these interests."

The following report was submitted by Louis Legal, with editorial assistance from Joe Harrison and Jools Andrés. It has been adopted as a position paper of the SCCAS.

The purpose of our visit was to discuss the recent SCCAS project overview application to the Fraser Basin Council for a \$20,000 grant from the BC Clean Air Research Fund program (BC CLEAR). Our grant proposal indicated that we want to identify and document background (or baseline) pollutants as well as emission sources in Howe Sound and along the Sunshine Coast. Our covering letter to BC CLEAR noted that we would be seeking Dr. Steyn's assistance in a larger air pollution research study down the road. (The overview application was successful and SCCAS has been invited to continue with the more detailed phase of the application.) We also wanted to invite Dr. Steyn to speak to our April 25, 2015 Clean Air Health Symposium, funded in part by the Sunshine Coast Regional District; he kindly accepted our invitation.

Dr. Steyn was very helpful in providing us with ideas and suggestions for possible AQ research and other endeavours on the Sunshine Coast. These are outlined below.

Air Pollution and Health

Recent studies have established that there is a causal link (not just an association) between air pollution and

lung cancer. Analyses of these studies showed a nearly linear relationship between exposure to fine particulates and lung cancer. There is no evidence of a threshold below which there is no risk (see *Nature*, September 11, 2014).

Dr. Steyn identified three important recent references regarding air pollution and health:

World Health Organization
"Air quality deteriorating in many of the world's cities"

Geneva, May 7, 2014

In April 2014, WHO estimated that in 2012 outdoor air pollution was responsible for the deaths of 3.7 million people under the age of 60 worldwide. The reference also states that PM2.5 (particulate matter with a diameter of less than 2.5 microns) "is considered to be the best indicator of the level of health risks from air pollution." Forty five microns (one micron or one micrometre = 10⁻⁶ metres) is close to the eye's limit for resolving items. An average human hair is about 50 microns, but it varies from 20 microns (flaxen hair) to 150 microns (course black hair).

Online readers: click red type to link to articles.



James E. Hansen
"World's Greatest Crime Against Humanity and Nature"
Columbia University, March 10, 2014

James Hansen is a strong proponent of nuclear energy and provides a powerful argument in his article to pursue this option, especially through North American cooperation with China and India.

Luce Irigary and Michael Marder
"Without clean air, we have nothing"
The Guardian, March 17, 2014

Irigary and Marder present a more philosophical argument. For example, they state, "The fight over appropriation of resources will lead the entire planet to an abyss unless humans learn to share life, both with each other and with plants."

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AQ research - from page 2

Air Quality Monitoring

Air quality generally can be defined in terms of PM2.5 particulate matter and in terms of ground-level ozone.

Dr. Steyn discussed some of his work in the Fraser Valley involving ground-level ozone and indicated that there is a strong correlation between PM2.5 and ground-level ozone. Ground-level ozone results from the action of sunlight on nitrogen oxides (NOx) and volatile organic compounds (VOC). NOx are generated mostly from combustion engines and predominate in urban areas such as Metro Vancouver. VOCs occur from mostly natural sources and proliferation is predominately a rural phenomena originating from vegetation. The oil industry is also a source of VOCs.

On the Sunshine Coast wood burning and other incineration (open burns) are likely the most important sources of particulates in winter. Ground-level ozone may be important in the region on hot summer days when vehicular traffic is fairly high. B.C.'s Ministry of Environment supports PM2.5 and PM10 measurements at Trail Bay Centre in Sechelt. In addition, volunteers continue weekly filter changes on monitoring equipment in East Porpoise Bay.

Howe Sound Pulp and Paper does not measure ground-level ozone directly, but it does measure its precursors, NOx and VOCs. Visible evidence may be a good surrogate indicator for both PM2.5 and ground-level ozone pollution.

Hopefully, support for instrumentation to measure background pollution and to develop a meteorological database will become available through funding programs. The SCCAS will be looking to the Sunshine Coast municipalities (the Town of Gibsons, the District of Sechelt, and the Sunshine Coast Regional District) as well as the B.C. Ministry of Environment through BC Clean Air Research (BC CLEAR) and Environment Canada for this help.

Dr. Steyn showed us some output from modelling studies of ground-level ozone in the Fraser Valley. Ozone trajectories from the Lower Fraser Valley are shown to penetrate into eastern Howe Sound toward Squamish. This may explain an observed increase in ground-level ozone in Squamish in recent years.

Modelling is a very complex process requiring

multiple data sources as inputs. A good database of PM2.5 and ground-level ozone levels as well as wind and other meteorological information is needed. Presently these inputs don't exist on the Sunshine Coast.

UBC resources in terms of expertise (grad students) and computer power would be required to undertake any modelling research on the Sunshine Coast.

Airshed Management Plans

The Sea to Sky AQ management strategy has just undergone its five-year review. There are a number of good recommendations that the SCCAS should consider. See <http://seatoskyairquality.ca/sea-to-sky-air-quality-management-plan-review-final-report-2014/> pages 60-69.

Louis Legal is a retired meteorologist (Environment Canada). He holds a Masters in Natural Resources Management, Economics and Management from the University of Manitoba. A Sunshine Coast resident, he is an active community volunteer. He was a member of the SCCAS board of directors from 2002 - 2013.

Keep informed...

Attend our AGM

February 22, 2015, 2 pm

Stalashen Club House - 1585 Field Road, Wilson Creek

Guest speaker: Dr. Paul Martiquet, Sunshine Coast Medical Officer, Vancouver Coastal Health

Topic: Local Air Quality and Your Health



...get involved.

Membership in the Sunshine Coast Clean Air Society is FREE!



Our 2015 Wood Stove Exchange program is now underway

Funding for our 2015 Wood Stove Exchange program came through right in time for some added winter warmth. Unfortunately, our Burn It Smart workshop couldn't be scheduled before the holidays; we are planning this educational event for early in the new year.

Those upgrading an old, non-EPA-compliant wood heating appliance to a highly efficient, low emissions option may qualify for a \$250 rebate. If you purchased a stove on the Sunshine Coast, ask your vendor. (Vendors must be on the Sunshine Coast, from Langdale to Earl's Cove.) Once they contact us we will issue them a voucher that must be completed and signed by you and the vendor. (Signatures are a strict requirement of government rebate programs.) Send the voucher in the mail to the Sunshine Coast Clean Air Society (address on voucher) and we send you a cheque!

We do our best to be prompt, but it does take a week to



ten days to process once we receive the signed voucher.

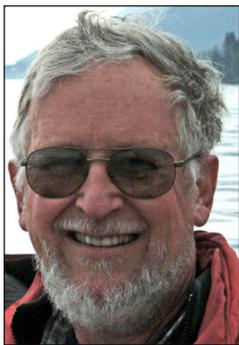
Although technology has improved emissions levels and fuel efficiency tremendously in the past two decades, wood smoke in any amount can be harmful to the environment and health. Alternatives such as electric heat pumps (not covered in the WSE program), propane or natural gas heaters, or electric wood pellet burning models are wiser choices. If you do choose to continue heating with wood, opt for a catalytic wood stove with an emissions rating of 2.5 grams/hour or under. In this way will you significantly reduce air pollution—as well as your heating costs.

Check our website and social media channels for information on the 2015 Wood Stove Exchange program and the upcoming Burn It Smart workshop.

The provincial Wood Stove Exchange program is funded by the BC Ministry of Environment and overseen by the BC Lung Association. The program will end May 31, 2015.

SCCAS board welcomes new member

Profile: Dr. James Pawley



James Binfield Pawley, PhD, Professor Emeritus of Zoology, University of Wisconsin Madison, grew up on a chicken farm in Cloverdale. His interests and talents led him to a career of using engineering principles to improve the quality and utility of instrumentation used for imaging biological specimens at high resolution.

He obtained a BSc in Electrical Engineering from Carnegie Mellon University (1966), followed by a PhD in biophysics at the University of California Berkeley (1972). His thesis work on early developments of the scanning electron microscope (SEM) related to specimen charging and the micro-dissection of biological specimens.

At this time people were beginning to worry about air pollution, especially the particles emitted by coal-burning power plants. In his post doctoral work at University of California Davis Dr. Pawley developed new methods to analyze the elemental distribution of these particles after they were deposited in lungs. He then had a year at University College London develop-

ing live-time stereo SEM imaging and, more importantly, meeting Christine, his wife-to-be. He returned to Berkeley where he spent two years building a special chamber to allow frozen biological specimens to be fractured and coated, then imaged directly in the SEM. He again relocated, this time to the University of Wisconsin Madison, to take a position as Assistant Professor in Zoology and Physicist-in-Charge of the High-Voltage Microscopy Laboratory, an National Institute of Health facility.

The lab was central to several improvements in the instrumentation and techniques used for viewing biological specimens. Dr. Pawley eventually organized and edited three editions of the *Handbook of Biological Confocal Microscopy* (1989, 1995 and 2005,) and later the book *Biological Low-voltage Scanning Electron Microscopy*.

For over two decades, Dr. Pawley's teaching has concentrated on explaining the importance of the biological factors that both enhance and limit human activities, and since 1996 this teaching has been increasingly focused on the causes, effects, and

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James Pawley - from page 4

possible responses to global warming.

The major parameter limiting life in the natural world is the climate and this is being changed by a global increase in temperature caused by human activities that have introduced a variety of greenhouse gasses into the atmosphere. Unlike the problems related to destruction of the ozone-layer by escaped refrigerant gases, global warming cannot be controlled by simply changing our use of a few chemical compounds. The energy produced by burning fossil fuels drives not 9% of economic activity but over 99%. Replacing this energy flow from renewable sources will require much greater efforts. "It is hard to imagine a larger problem," says Dr. Pawley.

In the US and around the world, regulations initially designed to protect the atmosphere started out being aimed at exactly the sort of noxious chemical additives that the Sunshine Coast Clean Air Society opposes. More recently, however, it has become clear that although CO2 is not noxious in the same way that smog is, its ability to modify climate now represents a much more potent threat to human comfort, or indeed to survival on planet Earth. He hopes that the SCCAS will play a role in responding to this challenge.

On Tuesdays beginning January 13, 2015, Dr. Pawley can be found at Capilano College's Sechelt campus teaching "Energy Makes the World Go Round," a six-week course for the layperson that explains what energy is and why we should care about it, how and why CO2 affects climate, and other topics to assess options and opportunities for using energy wisely. Contact [Capilano University](#) (click for hyperlink) for details.

Get social with us

Join us on social media to exchange ideas, keep tabs on our activities, and check out trends and news among our those in our wide-ranging networks. You will likely find tips on changing your clean air habits and—once in a while—a contest, or even a joke or two.

We are always seeking ways to make our website a dynamic, go-to source of information. A Home Heating Buyer's Guide is in the process of being formulated that will offer visitors up-to-date information on heating technology and how it relates to improved air quality.

Click on the links at the bottom of this newsletter to connect with us. We welcome suggestions, article submissions (subject to editorial review), and offers for volunteering at our events.



don't take your clean **Air** for granted...

Clean air means...

- **lower asthma rates**
- **fewer lung-related diseases**
- **increased enjoyment of the outdoors**
- **a healthier planet**

SCCAS

mission statement

To educate our community on the importance and benefits of clean air and thus to enhance the quality of life for future generations.