

SOURCES OF WOOD SMOKE IN THE COMOX VALLEY

Recent reports such as the Georgia Strait Air Zone Report 2011-2013 and a few years of State of the Air Reports from the BC Lung Association, confirm that the Comox Valley has very high levels of fine particulates called Particulate Matter 2.5 or PM 2.5.

The health impacts of fine particulates are well known. There are literally thousands of studies that indicate they are harmful in a multitude of ways. People in the Comox Valley are not exempt from these known health impacts.

The primary source of PM 2.5 in the Comox Valley is known to be wood smoke. There is no industrial activity in the valley and most cars emit tiny amounts of PM2.5.

The three main sources of the wood smoke are:

- Open Burning (from land clearing and forestry)

- Backyard Burning (except in Comox and Courtenay where it has been mostly banned)
- Residential wood heat.

The first of these, open burning, falls under provincial jurisdiction. The latter two are primarily under the control of local governments. The latter two also occur closest to where people live, play and breathe.

As air knows no boundaries, it is important that all governments work together to address the problem.

The provincial government is currently working on changes to their regulations governing open burning.

It is time for local governments to work together to address the sources they have control over through a combination of regulation and education.

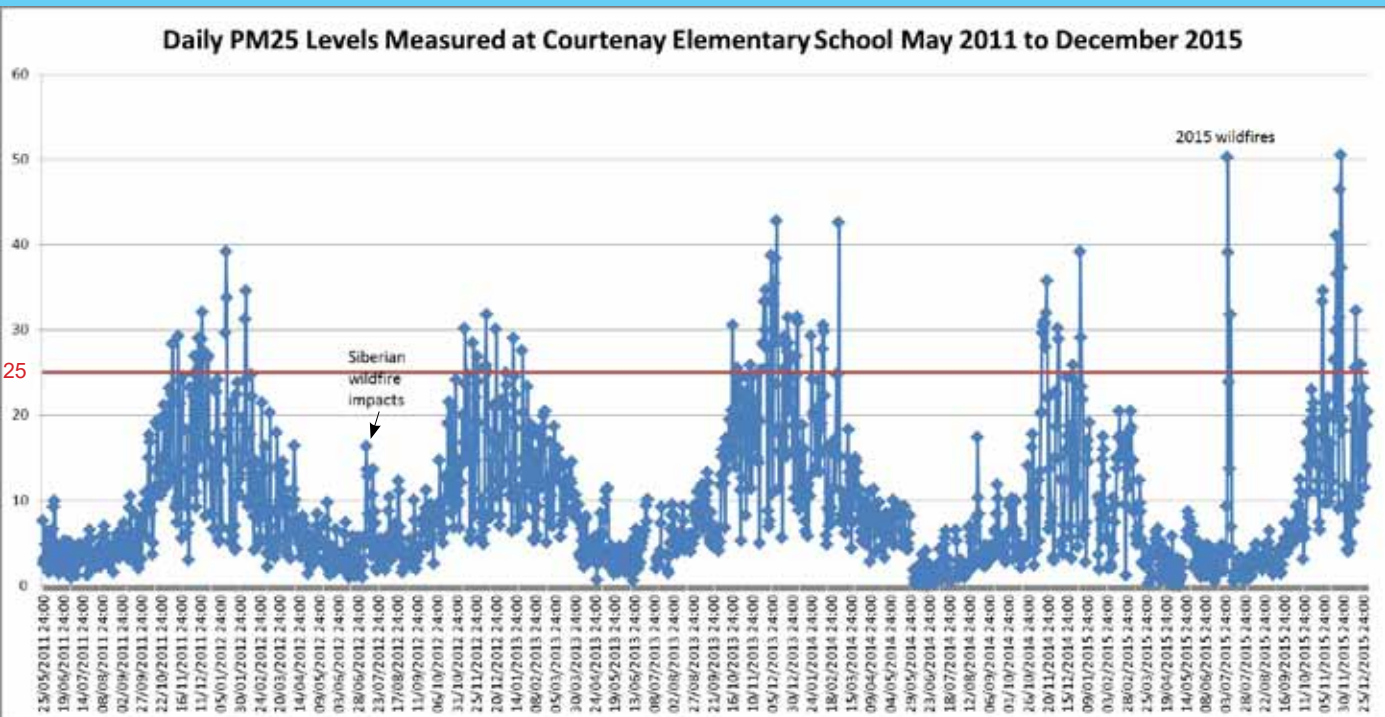
The data is in; it is time to act.

Wood smoke is a cold season issue in the Comox Valley

The graph below, provided by BC Air Quality Metereologist, Earle Plain, reflects daily measurements in Courtenay from May 2011 to December 2015. The pattern highlights that wood smoke is prevalent for 4 to 5 of our colder months.

The one notable exception was the wildfire in the summer of 2015.

The red line represents the BC Air Quality objective for daily measurements (25 micrograms per cubic metre, averaged over 24 hours).



BC AQ Objective for 24-hour average is 25

HOURLY PM 2.5 READINGS SHOW CLEAR WOOD STOVE SIGNATURE

The following charts are taken from the BC Government's site for air quality readings at Courtenay Elementary School. The grey areas have been added to highlight evening readings.

The charts show hourly PM 2.5 readings for two different five days periods.

These readings show a typical "woodstove signature". During the day, PM2.5 readings are low. However, each evening, they spike.

This is the time that people typically light their stoves. Cooler evening air temperatures keep the smoke closer to the ground.

Any open burns on the other hand typically die down at this time (open burning is also less common in winter months).

The BC Air Quality Objective for PM 2.5 is 25 micrograms/cubic metre (25 $\mu\text{g}/\text{m}^3$) averaged over 24 hours (as shown by red line).

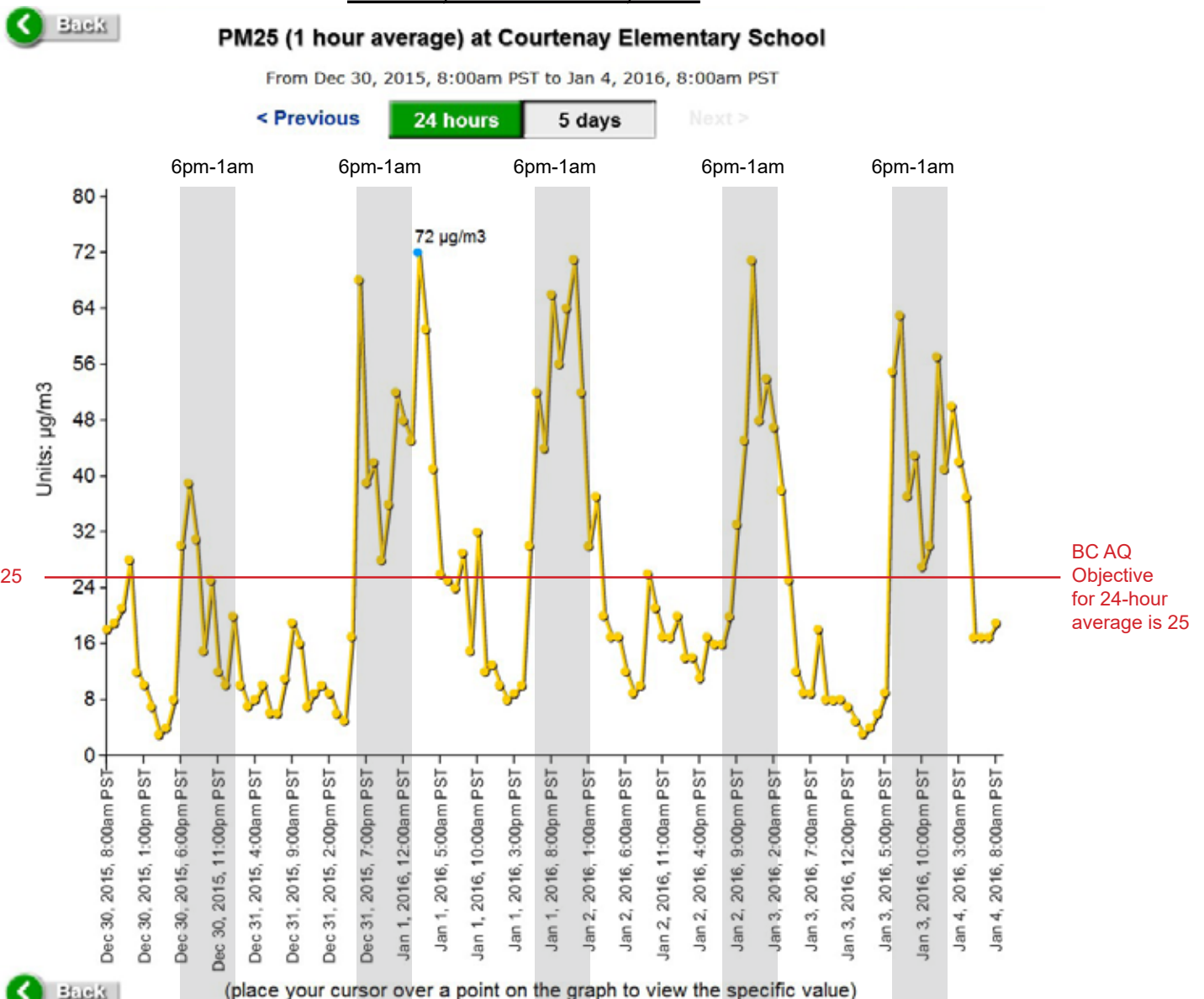
As the day time levels are generally low, it brings the 24 hour average down.

But as the graphs show, for 6-8 hours every evening, hourly readings are well over 25. In Courtenay, evening readings are often in the 40-70 range.

So even on days we do not exceed the 24 hour average of 25 $\mu\text{g}/\text{m}^3$, most winter evenings we are well above this amount.

Nonetheless, in 2015-16, Courtenay exceeded the 24 hour average of 25 $\mu\text{g}/\text{m}^3$ 21 times.

Dec. 30, 2015 to Jan 4, 2016



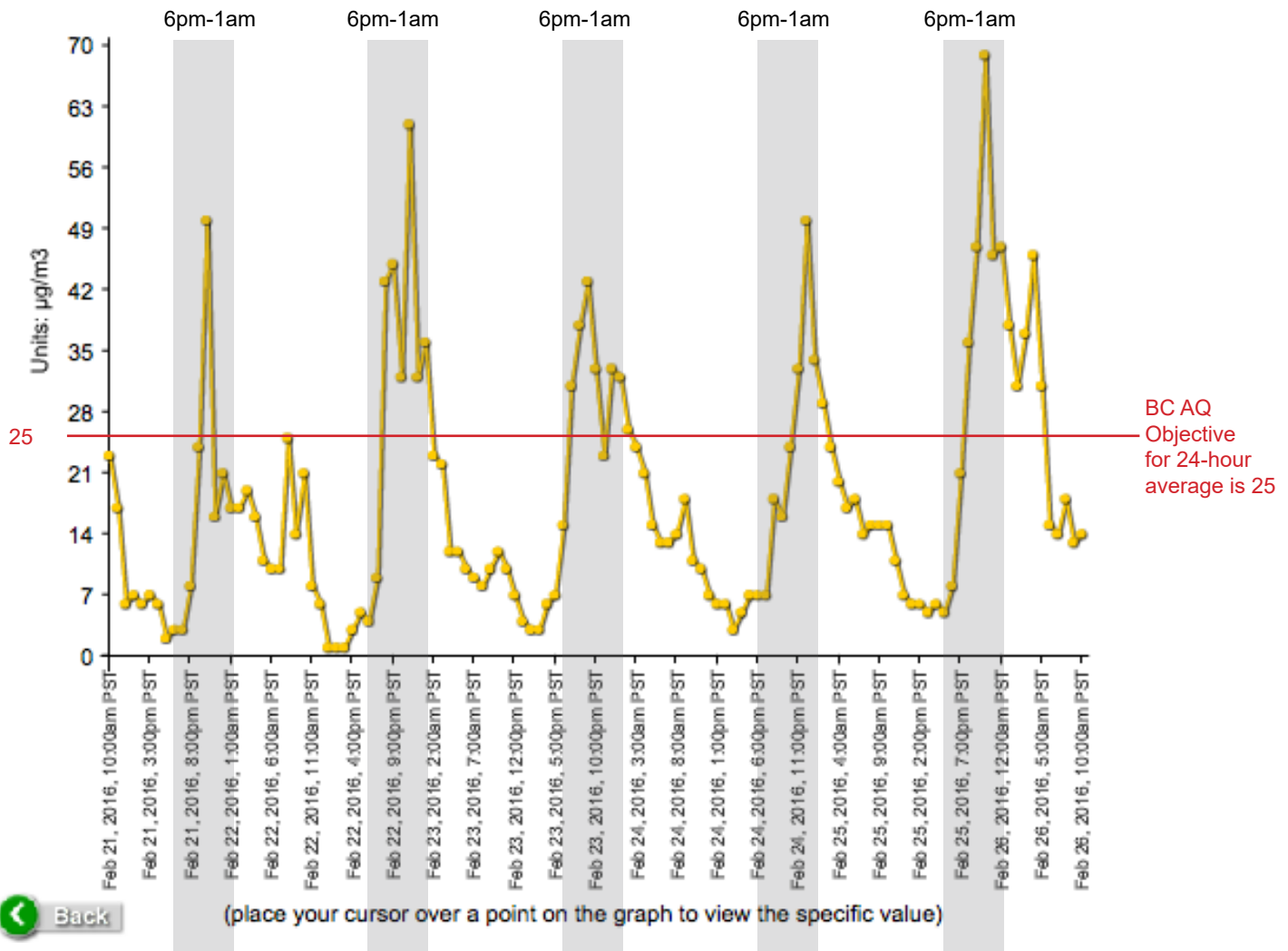
Feb. 21 to Feb. 26, 2016



PM25 (1 hour average) at Courtenay Elementary School

From Feb 21, 2016, 10:00am PST to Feb 26, 2016, 10:00am PST

< Previous **24 hours** 5 days Next >



www.bcairquality.ca/readings/index.html

Patterns in fine particulate concentrations since 2012 indicate that air quality degrades during the cold season.... The other major source of wood smoke during the cold season is residential wood stoves. Emissions from woodstoves are released directly in residential areas where people live and play.

Analysis of air quality data during the winter months clearly show a typical woodstove signature (i.e. they contribute to the problem).

Earle Plain, Air Quality Meteorologist, BC Government

One of the largest sources of particulate matter in B.C. is residential wood burning.

Particulate matter is considered the air pollutant of greatest concern to human health in B.C.

BC Healthlink

<http://www.healthlinkbc.ca/healthfiles/pdf/hfile65e.pdf>

No Industrial Sources in Comox Valley

Dr. Charmaine Enns is the medical health officer for North Vancouver Island with an office in Courtenay, a popular retirement community. She says the annual wintertime combo of wood heat and weather inversions creates spikes in particulate matter in the area from November to February when valleys are capped shut by a layer of cold air. "If you can see it and smell and taste it, it's out there."

With no industrial sources nearby, it's clear that burning wood at home is the cause. "In the winter months, it's really about what's coming out of your chimney," says Enns. "It's understanding the fact that there is no healthy level of air pollution. And exposure over time does impact chronic disease progression."

From "Wood Smoke Under Fire", Vancouver Sun, Feb. 8, 2016



This document has been prepared by Breathe Clean Air Comox Valley.

We are a group of citizens concerned about air quality in the area and how it affects our health and the health of our families.

If you would like more information, email breathecleanaircv@gmail.com or find us on Facebook.

MOBILE STUDY HIGHLIGHTS CONCENTRATION IN RESIDENTIAL AREAS

A mobile monitoring study conducted by the University of Victoria in 2008-2009 in Comox Valley highlights the prevalence of wood smoke on various days and times.

The highest concentration (in dark areas) occur in different residential

Dec. 8, 2008



Feb. 3, 2009



neighbourhoods, indicating wood stoves as the primary wood smoke source.

Smoke emissions from large-scale open burning outside of the municipal boundaries would generally show a more even impact pattern over the entire area.

Jan. 9, 2009



Mar. 6, 2009

