

TRENDS ANALYSIS: AIR QUALITY

FALL 2014



What does this measure & why is it important?

This indicator tracks annual average hourly readings of fine airborne particulates (referred to as PM_{2.5}). Six monitoring stations track PM_{2.5} levels in the region, though not all of them have been active for the full five years. Data were acquired from the BC Ministry of Environment's [air data archive](#) and processed using Ministry of Environment guidelines.

Sources of fine particulate matter include wildfires, residential wood burning, agriculture and unpaved roads. High concentrations of PM_{2.5} can have negative effects on human health and the environment. Because the particles are small enough to enter the deepest part of human lungs, PM_{2.5} can cause respiratory problems and contribute to cardiovascular disease. Fine particulates can also impair visibility, affect the climate and damage property (BC Lung Association, 2013).

What are the trends & current conditions?

Average particulate matter readings were higher in 2013 than in 2012 at all stations for which sufficient data were available. A comparison of average daily readings (Figure 1) shows that differences between the two years were most pronounced during the winter months, especially November and December. This may correspond with higher levels of wood smoke in the air, since November and December of 2013 were an average of 1.8 and 3.4 degrees cooler, respectively, than the same months in 2012. Smoke from wood-burning heating appliances is a significant air quality concern across much of BC.

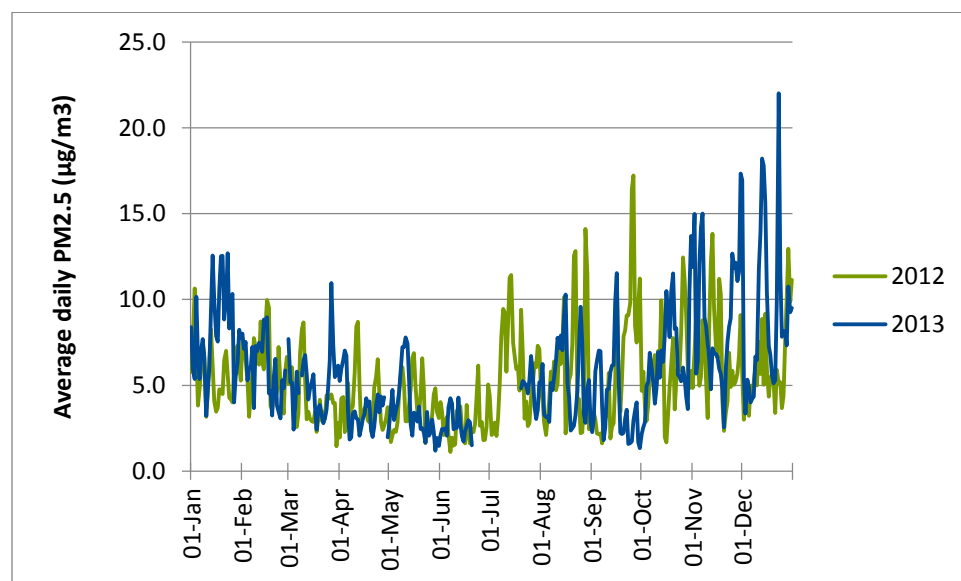


Figure 1: Daily average PM_{2.5} readings (µg/m³) in 2012 and 2013, average of 4 Basin-Boundary stations
Source: BC Ministry of Environment (2014)

In 2013, the community with the lowest recorded levels of PM_{2.5} was Nelson, at 3.9 micrograms per cubic metre. The highest readings were recorded in Castlegar, through caution should be exercised when comparing Castlegar readings to the remainder of the region. The Castlegar station uses new technology that is not yet in place at other sites. The new instruments tend to record higher PM_{2.5} levels than older instruments. All annual average values were below the provincial air quality objective of 8.0 (Figure 2).

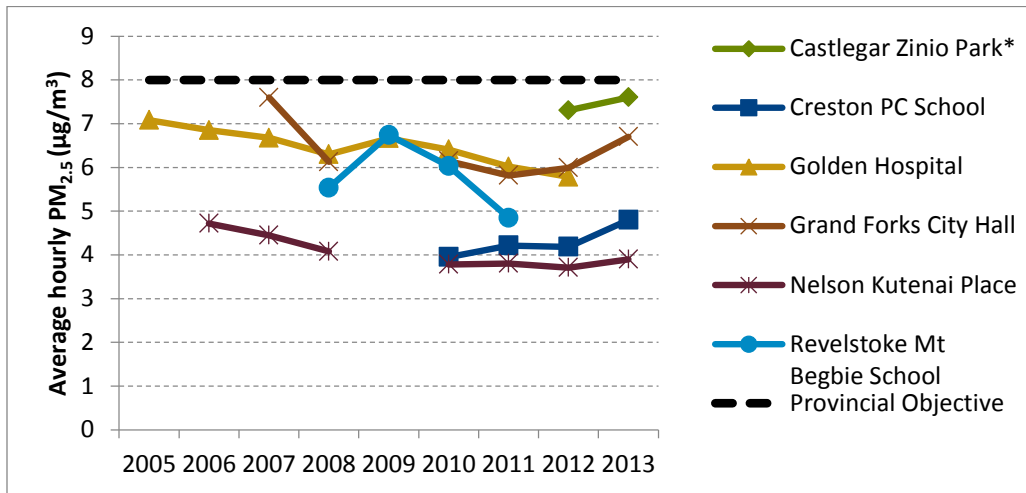


Figure 2: Annual average hourly PM_{2.5} readings (µg/m³) at monitoring stations in the region (*The Castlegar station relies on new technology that typically records higher readings than the old technology)
 Source: BC Ministry of Environment (2014).



The Columbia Basin Rural Development Institute, at Selkirk College, is a regional research centre with a mandate to support informed decision-making by Columbia Basin-Boundary communities through the provision of information, applied research and related outreach and extension support. Visit www.cbrdi.ca for more information.

References

BC Lung Association. (2013). State of the Air 2012. The Lung Association of British Columbia. Retrieved from: <http://www.bc.lung.ca/airquality/stateoftheair-report.html>

Ministry of Environment. (2014). BC Air Data Archive [Database]. Retrieved from: <http://envistaweb.env.goc.bc.ca/>