Kamloops Air Quality Roundtable
Statement on Purple Air Network
October 5, 2017

The Kamloops Air Quality Roundtable received a presentation on the Purple Air Network from Dr. Michael Mehta, Professor of Geography, Thompson Rivers University on December 5, 2016. It is an air quality monitoring network using relatively inexpensive laser particle counter sensors that upload information about particulate matter (PM) using Wi Fi to the Purple Air Map. See http://www.purpleair.org/

The Kamloops Air Quality Roundtable acknowledges that the **Purple Air Network**, with 36 sensors located around the Kamloops airshed, could **provide value as follows**:
- The network of sensors can provide information about the spatial and temporal variability of PM in our airshed, from which the location or sources of PM may be inferred.
- This spatial and temporal variability could supplement the government air quality monitoring networks in BC.
- The network can be used as an education tool in citizen-science and school programs, provided the known limitations stated below are understood.
- The network can increase awareness of air quality issues.

The following are the current **known limitations of the Purple Air Network sensors**:
- The sensors are low resolution, low accuracy instruments. They are not a replacement for a high quality standard Federal Reference Monitors using the beta-attenuation technique to measure particulate mass concentrations.
- The sensors are optically based instruments that use changes in the optical properties of air containing particulate matter to *infer* concentration. Therefore they are sensitive to changes in particulate make-up (forest fires, vs road dust, vs Domtar's recovery boiler for instance, and often respond to humidity as well). They also do not use size selective inlets, therefore all particle sizes are passed through the detector rather than just the size-fraction being measured, which may skew particulate readings.
- The lifespan of the sensors, and how they are affected by humidity and very cold temperatures is unknown.
- Due to these reasons and their unproven accuracy the sensors cannot be relied upon for regulatory matters.

The following are the concerns with **how Purple Air Network data is collected, interpreted and communicated**:
- There are concerns about how the network of sensors are being used and how the data are being interpreted given the limitations of their sensors.
- Real-time, instantaneous measurements are not meaningful compared to 24 hour averages, and may lead to panic or poor decisions about exposure among the public, citizen scientists, school children and their parents, or health professionals.
- The communication of the purpose of the Purple Air Network of sensors, the instantaneous readings, and the erroneous/unproven claim of how they are better than government monitoring network can lead to confusion and distrust among the public.
- The Purple Air Network uses American Air Quality Index values that may lead to confusion and erroneous health messaging. American AQI values are different than the Canadian Air Quality Health Index. On the Purple Air Maps, the actual concentrations of $PM_{2.5}$ are in smaller font and are inconspicuous.

The Kamloops Air Quality Roundtable looks forward to continued collaboration with the Purple Air Network on the appropriate use of these monitors, as well as learning more from the Ministry of Environment, who are currently testing the devices.