

March 20, 2018

Dear: Municipal Leaders and Staff Members,

**Re: Spring Dust Season and Air Quality Considerations**

Northern Health is reminding municipalities about seasonal air quality impacts that affect the health of all residents in our communities. Municipalities play an important role in overall airshed management planning and can set policies, goals and bylaws regarding local outdoor air quality and emissions.

**Air Pollution and Health – A Short Background**

Air pollution affects the entire population and is considered a full body pollutant. It affects many systems in our bodies and has been linked to a wide variety of illnesses. Even more concerning is that these effects occur at lower pollution levels than were previously understood. They are experienced more by children, the elderly and those with respiratory conditions or chronic illness.

The most concerning air contaminant in Northern BC is particulate matter (PM) which consists of small solid or liquid particles floating in the air where they can be breathed into the airways and lungs. Generally, smaller particles are more harmful to health than larger particles because they can move deeper into the respiratory tract. For this reason, fine particles which have diameters less than 2.5 micrometers (PM<sub>2.5</sub>) are linked to more serious health effects than larger particles. Elevated PM<sub>2.5</sub> levels are typically associated with wood burning, industry emissions, vehicle exhaust, wildfires, and other combustion sources. Stagnant weather conditions that temporarily trap cold air and pollutants in valley bottoms exacerbate the problem<sup>1</sup>. PM<sub>10</sub> includes PM<sub>2.5</sub> particles as well as coarse particles less than 10 micrometers in diameter and are often associated with dust and pollen. The coarser particles tend to stay in the upper parts of our respiratory tract, such as the nose and throat and are more of a concern for children, the elderly and those with respiratory conditions<sup>2</sup>. There is new evidence in BC that suggests an association between coarse particles and death in communities effected by road dust<sup>3</sup>.

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<sup>1</sup> BC Lung Association (2017) "State of the Air" [Online]. Available: <https://bc.lung.ca/sites/default/files/State%20of%20the%20Air%202017%20-%20merged.pdf> [2018, January].

<sup>2</sup> HealthLinkBC (2014) "Particulate Matter and Outdoor Air Pollution" [Online]. Available: <https://www.healthlinkbc.ca/healthlinkbc-files/outdoor-air-pollution> [2018, January].

<sup>3</sup> K.Y. Hong et al. "Seasonal ambient particulate matter and population health outcomes among communities impacted by road dust in British Columbia, Canada" *Journal of the Air and Waste Management Association* 2017 Sep; 67(9): 986-999.

It may be surprising to learn that many communities in Northern BC exceed the provincial objectives for particulate matter on a regular basis<sup>4</sup>. Find more information regarding provincial Air Quality Objectives and Standards on this [web page](#)<sup>5</sup>.

#### Northern BC typically experiences four air quality 'risk seasons':

- Summer: wildfire smoke
- Winter: residential wood burning
- Fall: slash burning smoke
- **Spring: road dust**

#### **The Role of Municipalities**

While industrial sources are largely managed by the Ministry of Environment and Climate Change Strategy (ENV), municipalities play a very important role in managing other sources of air pollution through their operations, planning, bylaw and education programs. Given the season, we provide further information on spring road dust below, but ask you to also visit [NH's Air Quality web page](#)<sup>6</sup> for other topics like residential wood smoke and consider air quality throughout the year.

#### **Spring Road Dust**

In 2017, there were approximately 20 days for which road dust advisories were issued across northern BC. The dust advisory days can start as early as late January and often extend into May. Generally, they result from the drying up of winter traction materials and mud tracked onto roadways which gets kicked up into the air. This dust contains both PM<sub>10</sub> and PM<sub>2.5</sub> and is harmful to health, especially since this particulate matter is not only comprised of dust particles, but also of heavy metals and organic compounds originating from the wear of brakes, tires and motor exhausts<sup>7</sup>. This dust may also reduce visibility for roadway users and leads to elevated concentrations of inhalable particulate. A dilemma faced by municipal planners and road managers is the trade-off between ensuring the safety of the travelling public and addressing air quality issues associated with dust from traction materials<sup>8</sup>. Ideally, roads and parking lots will be cleaned after the risks from ice and snow have passed, but soon enough that the remaining grit and dirt don't pose dust challenges. We are pleased to provide some suggestions below that may assist in managing road dust issues in your communities:

#### Road maintenance crews, contractors and business owners:

- Concentrate street cleaning on priority or sensitive areas first (healthcare facilities, residential care homes, school zones, playgrounds, areas of high traffic, etc)
- Utilize street sweeping methods that reduce the amount of dust generated (use filtration, wet the surface or take advantage of rainy periods)
- Restrict road, parking lot and sidewalk sweeping on air quality advisory days

<sup>4</sup> BC Lung Association (2017) "State of the Air" [Online]. Available:

<https://bc.lung.ca/sites/default/files/State%20of%20the%20Air%202017%20-%20merged.pdf> [2018, January].

<sup>5</sup> BC Ministry of Environment and Climate Change Strategy "Air Quality Objectives and Standards" [Online]. Available:

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/air/air-quality-management/regulatory-framework/objectives-standards> [2018, March].

<sup>6</sup> Northern Health "Air Quality and Your Health" [Online]. Available:

<https://www.northernhealth.ca/YourHealth/EnvironmentalHealth/AirQuality.aspx> [2018, January].

<sup>7</sup> AIRUSE (2016) "Technical Guide to Reduce Dust Emissions in Southern Europe" [Online]. Available: [http://airuse.eu/wp-content/uploads/2013/11/R28\\_AIRUSE-TechGuide-road-dust-emission-reduction.pdf](http://airuse.eu/wp-content/uploads/2013/11/R28_AIRUSE-TechGuide-road-dust-emission-reduction.pdf) [2018, January].

<sup>8</sup> BC Ministry of Water, Land and Air Protection (2005) "Best Management Practices to Mitigate Road Dust from Winter Traction Materials" [Online]. Available: <https://www.for.gov.bc.ca/hfd/library/documents/bib95657.pdf> [2018, January].

- Timing is everything – watch local weather forecasts to anticipate when to sweep (ideally damp or rainy days) and when to hold off (warm, dry, windy days, which will put more dust in the air)
- In consultation with expert information<sup>9</sup>, select specific traction materials that produce less dust, reduce the quantity of traction material applied to roads and/or use dust suppression agents on gravel roads where possible

Public education or community outreach campaigns:

- Advise community members to not drive on shoulders and to reduce speeds when driving on gravel
- Give community members enough notice so they can remove vehicles from roadways when street cleaning is taking place
- Spring is a great time of year to get back into active transportation like walking or bike riding – we can all promote this multi-purpose population health message

Bylaws, planning and municipal initiatives:

- Recommend or require hard-surfacing of gravel roads or entrances to unpaved lots
- Cover truck loads and/or decontaminate trucks leaving work areas
- Use vegetative buffers where possible (tall grass, shrubs and trees can actually help to displace dust out of the air)

Again, we would like to take this opportunity to remind our partners the role they play in air quality management and to let you know we are here as a health resource. We thank our communities and municipal partners who are taking pro-active measures in air quality management and other important health priorities. Please consider and share this information with residents, road maintenance contractors, facilities or infrastructure managers, and businesses in your district.

If you would like more information about air quality management activities and initiatives in the north, please consider registering for the **2018 North Central BC Clean Air Forum** being held in Prince George on June 4<sup>th</sup> and 5<sup>th</sup>. Stay tuned for updates on the [Prince George Air Improvement Roundtable's web page](#)<sup>10</sup>.

Yours truly,



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<sup>9</sup> BC Ministry of Water, Land and Air Protection (2005) "Best Management Practices to Mitigate Road Dust from Winter Traction Materials" [Online]. Available: <https://www.for.gov.bc.ca/hfd/library/documents/bib95657.pdf> [2018, January].

<sup>10</sup> Prince George Air Improvement Roundtable (PGAIR) [Online] (2018) <http://www.pgairquality.com/clean-air-forum-2018> [2018, March].