

*Contributed by the BVLDAMP*

BVLD Airshed Management Plan  
“If you can breathe, you can  
make a difference.”  
Article #6 of 8



Road dust is one of many sources of fine particulate identified by the Bulkley Valley-Lakes District (BVLD) Airshed Planning Process as contributing to air quality in the airshed. Although most other sources of fine particulate in this area tend to come from combustion sources (smoke), this one is unique in that it exists by virtue of living in Northern British Columbia where both unpaved roads are relatively common, and where a need exists to provide traction and prevent ice build up on area road networks over many months each year. Dedicated road maintenance operators throughout the airshed work diligently to ensure our roads are safe to travel on while balancing visibility and health related hazards that can be caused by road dust.

The Ministry of Water, Land and Air Protection monitors particles 10 micrometers and less in diameter (PM10) in the communities of Smithers, Telkwa, Houston and Burns Lake, and also monitors particles 2.5 micrometers and less in diameter (PM2.5) in Houston. Although particles from road dust and smoke sources fall into both PM10 and PM2.5 categories, typically road dust will include a higher percentage of larger particles. By contrast, smoke will include a higher percentage of smaller particles.

Directly related to the size of a particle is the amount of time that particle will stay in the air before settling to the ground. In other words, the larger the particle is, the faster it will fall to the ground. As a result road dust tends to have a more localized effect on air quality compared with impacts from smoke related fine particulate.

The tendency for road dust effects to be more localized is confirmed quantitatively by monitoring data. For example, high levels of PM10 and very low levels of PM2.5 during springtime will be recorded in Houston where both types of monitors are located side by side. This suggests road dust as the dominating source of fine particulate during those times. Further qualitative evidence exists by noting that quite frequently in springtime when roads are no longer icy, there is very noticeable dust (both visually and by taste) along roads when vehicles pass by, while just a short distance away these effects are non-existent. This problem is not unique to the BVLD airshed, and is one that is being addressed throughout the interior of British Columbia.

### **Types of Road Dust**

There are two main kinds of road dust in this Airshed: the kind that comes from unpaved roads and the kind that comes from traction material applied to paved roads. The issue is further complicated by the fact that dust from unpaved roads can be tracked onto paved roads by passing vehicles. Thus, to reduce impacts from road dust as well as keep our roads safe, a number of different strategies are used by road maintenance operators.

### **Balancing Safety with Visibility and Health Concerns**

Throughout the BVL D airshed, numerous techniques are used by road maintenance operators to ensure that roads are safe for travel and that the potential for health impacts from road dust are minimized. This balancing act is not easy given the delicate timing involved with springtime weather conditions. During our discussions with road maintenance operators as part of this planning process, we learned that the operators are committed to improvements and are very creative with whatever resources they have available. Here are a number of strategies and techniques favoured by local road maintenance operators:

- Use of traction material made from breaking up larger rocks-this creates more angular particles that provide better traction than the more rounded material typically available from gravel pits
- Screen particle size and/or use washed traction material to eliminate very large and very fine particles from being applied to roads
- Dust Control-Application of calcium chloride ( $\text{CaCl}_2$ ), magnesium chloride ( $\text{MgCl}_2$ ) or lignosulphonates (all three in liquid form) -these materials bind to fine particulate on roads thereby decreasing the amount of fine dust
- Anti-Icing-Application of  $\text{CaCl}_2$  or  $\text{MgCl}_2$  prior to roads becoming icy/snow-these salts help to lower the temperature at which water freezes (ie. below  $0^\circ\text{C}$  instead of at  $0^\circ\text{C}$ ) and reduces the amount of traction material needing to be applied
- De-Icing-Application of  $\text{CaCl}_2$  or  $\text{MgCl}_2$  on already icy/snowy roads-these salts help lower the temperature at which ice and snow melt (ie. below  $0^\circ\text{C}$  instead of at  $0^\circ\text{C}$ ) and reduces the amount of traction material needing to be applied
- Sweeping and/or vacuuming-this reduces the amount of dust on the roads
- Prior to sweeping or vacuuming roads, apply water (or coordinate with rainfalls)

### **BVL D Airshed Management Planning Process**

As with all identified major sources of fine particulate in the airshed, the planning process has developed goals, indicators and strategies for road dust as outlined below:

- **Goal:** to reduce or eliminate air quality episodes attributable to road dust
- **Indicator:** identify number of days with potential to be episodic (greater than  $25 \mu\text{g}/\text{m}^3$  for 24 hours) vs. how many days actually were episodic, based on road dust
- **Strategy:** To work cooperatively with road maintenance operators on practical and proactive approaches to road dust management

By continuing to work together on reducing impacts from all sources of fine particulate including road dust, the overall quality of life in the BVL D airshed can and will be improved for all who live and breathe here.

Next week's article will focus on Backyard Burning of garbage, grass, garden and tree trimmings.

**If you can breathe, you can make a difference**

For more information about the BVL DAMP, contact the facilitators at Footprint Environmental Consultants, at 847-1672, drop by the office at 102-3423 Fulton Avenue in Smithers (appointments appreciated), or visit our website [www.bvldamp.ca](http://www.bvldamp.ca) .