Used Oil as Dust Suppressant

ACCEPTIBLE INDUSTRY PRACTICES

May 2012

In Alberta, used lube oil and undrained oil filters are classified as hazardous waste (Waste Type 201) or hazardous recyclables.

The responsibility for compliance rests with the producer of the used oil and the owner of the road on which the oil is to be applied.

Good dust suppressants are products for which the benefit from their use exceeds associated cost.

Alberta Environment and Sustainable Resource Development has regulated used lubricating oils and undrained lube oil filters since the early 1990's. In Alberta, used lube oil and undrained oil filters are classified as hazardous waste (Waste Type 201) or hazardous recyclables. As such, these wastes/recyclables have to be directed to approved hazardous waste management or recycling facilities.

Used oil can also be applied to roads as a dust suppressant, provided that it meets the quality criteria identified in the attached guidelines and that written permission is given by the authority or person responsible for the road. Most road oiling occurs in rural Alberta where alternative dust suppressants or recycling opportunities are not available. Properly done, road oiling of unpaved roads in rural areas is economical and effective in suppressing dust with minimal adverse health and environmental impacts.

Waste Oil as a Dust Suppressant

Used lube oil is a hydrocarbon-based dust suppressant used to control airborne particulate matter from unpaved roads. Used oil raises some environmental concerns due to its heavy metal content. However, the abandonment of lead as an additive to gasoline and as a constituent of solders has lead to a significant drop in the concentration of this metal in used motor oils. Also, when compared with alternative dust suppressants, used oil is not alone in terms of its potential to create adverse environmental impacts when its quality or application to roads is not controlled.

Current Practices

Road oiling in Alberta uses about 10 per cent of all used oil available for recycling. This activity does not require an approval under the *Environmental Protection and Enhancement Act*. However, Alberta Environment and Sustainable Resource Development has developed and provides interested parties with guidelines that identify quality and operational requirements when used oil is applied to roads for dust control.

The responsibility for compliance rests with the producer of the used oil and the owner of the road on which the oil is to be applied. This owner is often the local municipality. The Energy Resources and Conservation Board has a similar guideline applicable to oily wastes used as dust suppressants.

Good dust suppressants are products for which the benefit from their use exceeds associated cost. This cost-benefit assessment is affected by the sporadic oversupply of used oil and, often, a decision on the use of a given dust suppressant is a difficult one based on balancing opposing factors.

Environmental and Economic Impacts

There are alternative dust suppressant agents available in the market. However, they are often more expensive than used oil and also have the potential to adversely affect the environment.

Often, they are not as effective in controlling dust. The table that follows identifies and compares relevant factors associated with four of the most common dust suppressants available in the market.

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Comparison of Dust Suppressants

Dust Suppressant	**Advantages**	**Disadvantages**	**Quantity** (L/km)	**Cost/km.year**
Water and wetting agents	No environmental impacts	- Short term - Frequent application - Erosion	6 000	$17 000 to $40 000
Calcium chloride	Effective in areas with relative humidity greater than 30%	- Water supplies - Soil salinization and reclamation - Plant life - Aquatic species	15 000	$2 500 to $7 000
Lignosulfonates	Effective	- Moderately toxic to plant life and rainbow trout	20 000	$2 500 to $7 000
Oil-based (asphalt emulsions, used oils, crude oil, etc.)	Effective	- May have adverse impact on vegetation, soil, or water supplies	15 000	up to $7 000

Summary

A brief review of information emphasizes the following:

- Road oiling is an effective, economic, and environmentally-sound means of controlling dust on unpaved roads.
- The supplier of the oil and the person responsible for the road should ensure compliance with AENV's *Guidelines for the Application of Used Oil to Road Surfaces*
- When quality and proper procedures are neglected, there is potential for adverse impacts regardless of the type of dust suppressant used.
- Alberta Environment and Sustainable Resource Development does not interfere with the practice of road oiling, unless adverse health and environmental impacts are identified.

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GUIDELINES
FOR THE APPLICATION OF USED OIL
TO ROAD SURFACES

1. The application of used or waste refined oil:

   - In the manufacture of pavement;
   - On any land for the purpose of road construction, repair, or dust suppression is authorized subject to the requirements specified in the preceding document.

2. No person shall mix used or waste refined oil with any material in the manufacture of pavement, or dispose of any used or waste refined oil on any land for the purposes of road construction, repair, or dust suppression, unless the used or waste refined oil meets the specifications identified in the table below.

3. A representative sample of the used oil should be collected and tested for the parameters identified in the table below:

Used or Waste Oil Specifications for Dust Suppression

Constituent/Property	Allowable Level
Flash point (closed cup)	61° C minimum
Total arsenic	5.0 mg/L maximum
Total cadmium	3.0 mg/L maximum
Total halogens (as Cl)	1000.0 mg/L maximum
Total chromium	6.5 mg/L maximum
Total lead	50.0 mg/L maximum
Total polychlorinated biphenyls	0.5 mg/L maximum
Total zinc	1000.0 mg/L maximum

4. No person shall apply used or waste refined oil on any land for the purposes of road construction, repair, or dust suppression unless:

   a. The used or refined oil meets the specifications of the preceding document;

   b. The location of proposed application is more than 25 meters from surface water or a domestic water supply source;

   c. The application rate will not result in a visible runoff of oil beyond the travelled portion of the road or other land;

   d. The owner of the land or the person responsible for the road to which the oil is to be applied has given permission;

   e. Application is limited to two times per calendar year.