TRAFFIC AND SAFETY INFORMATIONAL SERIES FREQUENTLY ASKED QUESTION #19

HOW DOES A COUNTY MAKE DECISIONS ABOUT DUST CONTROL ON GRAVEL ROADWAYS?

Road dust consists of fine particles small enough that they feel like powder when rubbed between the fingers. This dust can be an annoyance to residents along unpaved roadways, especially in rural areas, and can be a safety hazard if it reduces visibility at intersections and curves. Additionally, when large quantities of these fine particles are lost to a roadway in the form of dust, the roadway begins to deteriorate, with washboarding, ruts, potholes, and other problems developing.

Fugitive dust is a term defined by Section 567-20.2(455B) of the Iowa Code as any airborne solid particulate matter emitted from any source other than a flue or stack. The Iowa Administrative Code further specifies that fugitive dust does not include dust generated by farming operations and dust generated by ordinary travel on unpaved roads.

In Iowa, gravel roadways are typically maintained by a county secondary roads department and a county engineer. Dust palliatives (i.e., dust control materials) may be applied to reduce dust by either wetting the roadway surface or providing a surface coat to reduce the effects of tire/surface interactions. A dust palliative is any material (e.g., water, calcium chloride, magnesium chloride, lignin sulfate, asphalt binder [MC-70], or other products such as sugar beet extract [Molex]) used to control dust on unpaved roadways. Waste oil is no longer allowed as a dust control agent because it may contain polychlorinated biphenyl (PCBs), dioxin, or other contaminants.

WHAT ARE THE POLICIES ON DUST CONTROL?

Many Iowa counties have approved dust control policies that specify procedures for public dust control applications and a permitting process for private application of dust palliatives. These policies may specify the conditions under which a county may apply dust palliatives for reasons of safety.

The application of dust control materials can be expensive, and counties typically cannot afford widespread county-financed dust control applications. Applying dust control materials, in fact, might absorb the entire secondary road budget. Therefore, counties do allow the general public (with proper permits) to apply dust control agents on unpaved county roads next to their property. As required by the Section 319.14 of the Iowa Code, a permit must be acquired from the appropriate county or counties, usually through the county engineer’s office.

WHAT ARE THE GUIDELINES ON DUST CONTROL MEASURES?

The minimum length of dust control application varies from county to county, but it is usually between 150 and 300 feet. For a given section of roadway, two dust control applications are often recommended to ensure that the treatment lasts a full season.

Permit deadline dates for dust control applications may also be part of an approved dust control policy. For a roadway on the border of two counties, both counties will often be required to approve the dust control permit. The county or counties may require the resident to mark the location of application with flags so that the segment can be identified, the roadway crowned, and the necessary rock material added.

Some dust control applications and permits may require grading. Permittees may be required to repair any potholes or other deterioration at their own expense.

WHAT MATERIALS ARE ACCEPTABLE FOR USE IN DUST CONTROL?

A list of approved dust control materials and specifications should be obtained from the county within which the roadway of interest is located. The vendor of the material used may be required to provide a laboratory analysis of the material to the county, and contractors that apply dust control materials may have to meet certain qualifications. Some examples of dust control materials a county could approve include the following:

- **Calcium chloride**. Calcium chloride absorbs water vapor from the air and water from the roadbed. This process allows traffic to compact the roadway. Calcium chloride is usually sprayed as a water solution with a specified percentage of the chemical. The county may also specify application widths and rates.
- **Magnesium chloride**. Magnesium chloride is a chemical similar to calcium chloride, but it is applied at different percentage and rate specifications.
- **Lignin sulfate (tree sap)**. Lignan sulfate is sprayed on the roadway surface and then mixed with the top few inches of the roadway surface. Remixing may be required. Specifications may also require the unmixed form of lignin sulfate to have a certain percentage of solids and residual sugars. Application widths and rates may also be specified.
- **MC-70**. MC-70 is a road oil or bitumen product. Federal regulations prohibit using bituminous products mixed with petroleum distillates. However, this product meets current Iowa Department of Transportation (Iowa DOT) specifications. It is blotted with sand or limestone chips immediately after application to clean up any excess pooling.

FACTORS CONSIDERED FOR DUST CONTROL

Individual counties may have a traffic safety program in place to treat some fraction of the county's roadways with dust control materials. Such programs require that a minimum average daily traffic (ADT) level must be met (e.g., 200 to 250 ADT), coupled with an average traffic speed. Iowa DOT traffic volume estimates may be used in identifying treatment locations, or special traffic counts may be collected by the county engineer. Counts are usually taken during a 7- to 10-day time period to avoid the effect of special events or repeated travel by drivers trying to inflate the traffic count.

Dust control may also be applied for specific traffic safety reasons at intersections, bridges, curves, hills with limited sight distance, driveways, or other locations specified by the county engineer. Residents may also extend these treated areas at their own expense.

County-funded dust control measures may also be applied on park and recreational roadways, roadways leading to a quarry, and construction detours and haul roadways. Established or implied detours with high levels of traffic may also be treated in compliance with local, state, or federal requirements.

HOW MUCH DOES DUST CONTROL ACTUALLY COST?

The current cost for a dual application of calcium chloride on a 400-foot by 24-foot section of roadway by a private contractor is $300 to $475. The cost per application for different dust control materials can vary. Calcium chloride, for example, is about $0.75 per linear foot for a 20-foot wide application. For an MC-70 application of the same area, however, the cost would be about $3.00 per linear foot. A full seal coat with a rock base can be as much as $8.00 per linear foot. In other words, the cost to treat all of the unpaved roads in a county could total several million dollars per year per county.