PRELIMINARY ANALYSIS OF DUST CONTROL MEASURES

APPLIED IN DUNN AND MCKENZIE COUNTIES, ND - 2012

The evaluation of the effectiveness of various dust control strategies that were applied in Dunn and Mckenzie Counties is continuing. The effectiveness is affected by the volume and types of traffic as well as the weather conditions. The Mckenzie County road received very heavy truck traffic immediately after the application of the control products as two gravel pits were located on this route. The Dunn County road did not experience the same volume of truck traffic as Mckenzie County; however, there was still a fair amount of oilfield related truck traffic on this route. Western North Dakota has experienced drought conditions this summer which influences the effectiveness of some products.

The products applied and initial evaluation:

MAGNESIUM CHORIDE – This is probably the most widely used product and it does reduce the amount of dust, however the dry conditions this summer reduced its effectiveness.

CALCIUM CHORIDE – Similar to Magnesium chloride, this product does reduce the amount of dust but was affected by the dry conditions. This product is more expensive than Magnesium chloride.

DURABLEND – Calcium chloride with polymers – There was not a discernible difference from the straight calcium chloride in the control of dust although the road surface seemed a little tighter.

WISP – Synthetic organic oil – This product provided slight dust control for a very short period of time.

RHINO SNOT – An acrylic copolymer – A road stabilizer, this product increased the hardness of the road but provided a limited amount of dust control. There was increased rutting in the road until the product "set".

COHEREX – A petroleum emulsion – This product provides a veneer to the surface of the road and controlled dust until the veneer started breaking up due to traffic. Some surface breaks to the veneer were apparent within a day.

DURABOND – Lignin with additives – This product provides a veneer to the surface of the road and experienced an application failure in Dunn County when the dilution water reacted with the product. The veneer lasted only a couple days in Mckenzie County.

OIL FIELD BRINE – Water produced from an oil well in Dunn County – This product was free except for the delivery and application costs and consisted of about 20% salt, primarily sodium chloride. This product did provide dust control similar to the other chloride products.

CRUDE OIL – Unprocessed crude oil with a pour point of about 70 degrees – This product did not provide significant dust control.

NATIVE CLAY – This material was used to increase the Plasticity Index (PI) of the Mckenzie County aggregate. This material improved the overall road stability and improved dust control especially when treated with magnesium chloride. The Mckenzie County aggregate did not have any PI while the Dunn County aggregate had a good PI.

Past County experience with the chlorides indicates that several applications may be needed initially to provide satisfactory dust control. Application frequency can be reduced after three to four applications.

Under the traffic conditions in western North Dakota, any dust control product must penetrate the road surface or be mixed into the road.