Dust Control on an Active Mine Haul Road

(10:1 base coarse/15:1 maintenance application)

Treating an active mine haul road requires a special type of procedure. Normally with any type of dust palliative it is not effective to treat a haul road one time at the beginning of a project and expect the one-time only application to last months. The reason is that the treated haul road will become re-impacted daily with material falling off of haul trucks, blow-on dust and track-on dust. In reality, even if the haul road was paved it would become dusty in a short period of time due to these factors.

Treating an active mine haul road for fugitive dust with EB is typically done in two phases. The two-phase system works well with any existing water truck. Using this system the mine will notice remarkable savings on water, fuel, personnel time, etc. Also the mine may experience increased cycle times of haul trucks coming out of a pits since a road treated with EB takes away any slippage that may occur on clayey roads that are routinely watered. Increase cycle times result in increased production.

The two-phase system consists of:

1) The ***base coarse procedure***; and

2) The ***maintenance procedure***

The base coarse procedure consists of initially applying an adequate amount of EB to bind up the fines that are presently on the surface of the haul road that is causing the dust. This can be done by applying a solution of EB to build a base equivalent to concentrate of 0.453-liters per square meter of road.

This task can be performed using a 10:1 solution (parts water: 1 part product) solution applied at a rate of approximately 1 liter per square meter and **completed over a 2 to 4-day period.** The reason we recommend this dilute solution is because a typical haul road is very hard and compact. The dilution and application rate maximizes soaking of the dusty surface and aids the penetration. Also to minimize the possibility of EB picking up on the tires of haul trucks during the curing process, we recommend that the base course is built-up over a few days. The actual dilution rate and the days requiring the completion of the base

coarse can be adjusted. It is just important to know that you want a dilute solution of EB and not build up the base course up too quickly.
After the base course is established the maintenance procedure begins. For the maintenance application EB is diluted with water to make an 8:1 to 20:1 and applied at a rate of 1 liter per square meter whenever a maintenance application is needed (once week, twice a month, etc.). Continue the maintenance program during the dusty season until winter or the rainy season. The timing of the maintenance applications vary from mine to mine due to many factors. A specific mine will be able to determine how often they need to apply a maintenance application with experience.
Following is our recommended procedure for treating a heavily active mine haul road using EB.

Recommended Equipment/Personnel

- Large water truck.
- On-site large capacity storage tank with circulation system with a heavy duty pump, flow meter, and hoses if product is shipped in bulk.
- Equipment and personnel to transfer product from railcar/tanker truck to on-site storage tank if product is shipped in bulk or product shipped in totes into the water truck.

Example of Base Coarse Procedure using a 10:1 Solution
Recommend 0.453-liters/EB/sq. meter
1 kilometer haul road X 10 meters wide = 10,000-square meters
10,000 X 0.453 = 4,530-liters concentrate/kilometer.

1) Make sure haul road is free of any excessive potholing, wash boarding, and/or loose gravel.
   If the haul road is free of these imperfections then do not scarify road to enhance product infiltration. Our procedure uses the *compacted road in a beneficial way.*

IRRIDAN
Road stabilization & Dust control

2) In a water truck, make a 10:1 EB concentrate to water solution. Apply this solution on the road at a rate of approximately 0.226-liter/square meter per pass. Shoot a pass twice a day, one in the morning and one in the afternoon, over a 2-day period (total of 4-passes), to build a base coarse equaling approximately 0.45-liters/ conc. /sq. meter.

Example of Maintenance Procedure using a 15:1 Solution

Recommend 0.072-liters/EB/sq. meter
1 kilometer haul road X 10 meters wide = 10,000-square meters
10,000 X 0.072 = 720-liters concentrate/kilometer per maintenance application
In a water truck, make a 15:1 EB concentrate to water solution. Apply this concentration on the road at approximately 0.226-liter/square meter per pass whenever a maintenance application is needed (once week, twice a month, etc.). Continue the maintenance program during the dusty season until winter or the rainy season.

This two phase system should keep your haul roads fugitive dust free especially if it becomes re-impacted daily with material falling off of haul trucks, blow-on dust and track-on dust.

For any additional information kindly contact Daniel Wallach at dani@irridan.com

Thank you.