Dust Control
utilizing EnviroTech’s
Water Conservation
Program

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Company Overview & History

Founded in 1989, EnviroTech Services, Inc. has a rich history of developing superior road and surface solutions to manage all environments; both natural and man-made.

Delivering peace of mind while setting the standards in delivering superior road and surface solutions to manage all environments.

Our Vision Clarity, Unity, and Results. While simple, these words keep us aligned in serving our customers and communities.

Our Mission EnviroTech Services is the leader in finding technologically advanced products and creative solutions for our customers. We are ethical, customer-focused, and mindful of our reputation, while always being committed to sustaining success.

Water Conservation
A Novel Approach to Dust Control

Evaporation Control yields Dust Control

Premise: Slowing the evaporation rate of water reduces the amount of water needed to control dust.

Goal: Reduction of water truck applications by 50-75%.

Field observations show adding X-Hesion Pro to your water truck will significantly reduce dust controlling water applications.

The Water Conservation Program is customizable for dynamic roads in different climates and environments.
Water Conservation makes fine dust particles heavier

X-Hesion Pro is a BioPreferred® proprietary formulation of an agriculturally derived humectant and complex organic polymers.

X-Hesion Pro coats the fine particles, adsorbs water, then creates heavier agglomerate particles.

The coated particles are tacky and group together, gaining in weight, becoming too heavy to get airborne.

1 BioPreferred Program is managed by the U.S. Department of Agriculture (USDA)

Our Approach to Dust Control is Science and Data based.

Additive as a means to decrease the Evaporation Rate of water.

Controlling the Evaporation Rate enables Dust Control Optimization.
The Initial Application and the Program

A section of the mine will be designated for treatment and dust meter measurements will be made prior to treatment.

The Water Truck is the applicator truck

X-Hesion-Pro will be stored on-site near the water fill station and tank levels will be maintained to ensure X-Hesion-Pro is available when needed.

The photo is a photograph of the Larimer County Landfill’s operation utilizing the Water Conservation Program.

The Initial Application

Initial application will contain a 50% X-Hesion-Pro and water mixture. The best mix occurs when the X-Hesion-Pro and water are added to the water truck simultaneously.

The Maintenance Application

For maintenance applications, recommended add rates of X-Hesion-Pro can be provided in a schedule format, but we recommend active participation by the facility manager.

If you have DNR concerns, we can monitor the treated area’s dust levels.
The Program

Total Area to be treated: 450,000 m² = 53,000,000 ft² = 1000 football fields
ESI representative will survey area to be treated.

1. Designate name or use Codelco names for roads.
2. Create map with names or obtain from Codelco.
3. Determine which roads have highest ADT (average daily traffic).
4. Use map to rate road quality (3 to 5, using ESI lab stabilization standards)
5. Each road can be broken down into sections if areas of maintenance aren’t be required.
6. Road sections with a score of less than 3 will need to be worked (defects removed)
7. Grade heavily rutted areas, water with XPro; use trucks to compact

Determine Initial Application Parameters and Product Handling

1) When on mine site, determine absorption property of the compacted roads. Using a 5% Rhizon Pro solution (RPs), spread 1 liter of each in 1 square meter. The majority of solution be absorbed in 10 minutes. Using a shovel, cut into test area to determine penetration depth. If a 5% solution does not absorb well, lower concentrations will be tried (e.g. 4% solution).
2) Product must be stored at the water fill station area so it can be added while water truck is filled. This will insure a good mixing of the XPro.
3) For XPro add to water truck, a high volume pump is needed (e.g. 1800 gpm/minute). Using a digital flow meter, measure the flow rate of the pump.
4) A framework system or direct connection to the water line should be built to provide for water addition of product to the water truck.
5) Determine how many kilometers of road one water truck can cover (liters/km). This is dependent on the truck size, speed, and application rate of spray nozzles.

Initial Dust Meter Measurements [dust baseline of site]

1) Divide the site into discrete roads for Dust Meter readings.
2) Mark sections on map for roads to be sampled with dust meter, name roads, and follow ESI SOP for dust meter measurement.
3) Each named road will have a dust meter filename associated with it.
4) Use Log book provided to keep a record of initial dust measurement details and continue log book entries after the initial product application.
5) Measure road in same direction each week, 6 hours after water truck applies, best if winds are low.
The Program

Evaporation Control yields Dust Control

The expectation is to reduce water truck applications by 75%.*

*Based upon previous results. Climate conditions will affect the final results.

Program Initial Application – August 2014

- Initial application completed by ESI trucks
- 50% R-Hesion Pro applied for quick humectant build-up
- Product applied when the facility was closed (no traffic)
- Cost saving analysis shows the program pays for itself with only the water savings over a period of six months.

Every Water Conservation Project starts with mapping the site and with testing partners baseline dust meter measurements.

On 8/28/2014 no water had been applied prior to the dust meter measurements. Three days of 90 F, no rain; no water trucks needed.
Day 3 after application

- The haul road has little to no dust
- However, the road is Dynamic
- A water application is recommended to be followed by a maintenance application when the dust no longer falls after being airborne.

Program Maintenance Application

- 10% X-Hesion Pro applications are made with the facility’s water truck.
- One X-Hesion Pro treatment a week maintained low dust levels

Program Conclusions

- Historically, 6 to 8 water trucks/day were used
- 1-2 water trucks/day used with 1 truck/week treating with X-Hesion Pro
- 70-80% water savings and fuel savings
- Labor savings are diverted to additional tasks

Savings Scenario

Knowing that prior to the X-Hesion Pro application, six truckloads of water per day was reduced to two truckloads applied, the savings to the landfill would be:

- 21,000 gallons (Historical, six truckloads)
- 7000 gallons (Present, two truckloads)

= 14,000 gallons x 6 days a week of dust control
= 84,000 fewer gallons of water a week

Operating 52 weeks a year and under this scenario, the landfill could see a water savings of more than 4 million gallons of water/year. The Program at the Larimer County Landfill is a very strong example of an involved and proactive site partnering with a supplier familiar with how to manage the site variables and creating real, measurable value for the end user. This can be an example of how to approach a program of your own.
Water Conservation is:

*Dust Control*

- Water Reduction
- Labor & Fuel Reduction
- Maintenance Reduction

Expense Savings