

# SUSTAINABLE SOLUTIONS

*Cypher Environmental has been working hard to provide the mining industry with high quality dust control, soil stabilization and water treatment products that meet the growing requirement for sustainability, as president Todd Burns explains*





Fully loaded haul truck  
traveling on a Dust Stop  
treated road at a mine  
site in Eastern Canada



Over the past 15 years, sustainability has moved from being a nice extra to being a corporate business requirement - a trend that's being reinforced by increasing regulation and legislation, demands for better environmental and social performance by the investment sector, and pressure from environmental lobby groups. The resulting move toward green procurement has been an ideal operating environment for Cypher Environmental.

Based in Winnipeg, Canada, Cypher designs and manufactures a range of dust control, soil stabilization and water treatment products that are marketed and sold worldwide through a network of distributors across 30 countries. "Our products are all 100 percent environmentally friendly, organic, biodegradable and non-toxic," said president Todd Burns. And these credentials are all verified independently by third party analysis and monitoring.

The business was launched in 1998 with EarthZyme, a soil stabilizer that is designed to strengthen and bind the surface of unpaved roads. Widely used by government agencies, local municipalities and farmers, in recent years EarthZyme has come into its own as a recognized technology for the mining sector where sustainability has become a top priority. Mines tend to be located in some of the world's wildest and most isolated spots and their access roads are required to withstand heavy and continuous traffic often over very large distances. EarthZyme is an environmentally





friendly product that fulfills all these needs.

The rest of the product portfolio has grown organically around EarthZyme. The second product to emerge from Cypher’s R&D program was a dust control product, Dust Stop. Aimed at the same marketplace, it prevents dust erosion on unpaved surfaces. More recently, the company has diversified into water treatment products, building on the enzyme technology that lies behind EarthZyme to develop the UltraZyme range of products.

Not only are the materials used in the manufacture of the Cypher products completely organic and environmentally friendly, but the way the products work delivers additional environmental benefits as well as significant cost savings.

EarthZyme, for example, is not a glue as most soil stabilizer products are, but it acts on the clay component already in the soil. Comprising a combination of enzymes, electrolytes and surfactants, it works by releasing water from the soil, enabling it to be compacted, and then it manipulates the clay to bind it together permanently, increasing its strength and density.

By using the clay already in the soil, rather than having to source and transport quantities of gravel for road construction,

the carbon footprint of the road is hugely reduced and significant cost savings can be made. Interestingly, EarthZyme is fully biodegradable in 28 days, but because the effect on the clay is permanent it doesn’t wash away in a few months as glue does. One EarthZyme application can last for 10 years or more, making it very much more cost effective.

“EarthZyme is also very easy to mix

Empty haul truck traveling on the same Dust Stop treated road at a mine site in Eastern Canada

and apply using standard construction equipment,” Burns said. “It comes in a highly concentrated liquid form – one liter can treat up to 35m3 of soil - which means the shipping, transport and application costs are low, from both the financial and environmental perspective.”

The Dust Stop product also has significant environmental benefits. It is the only organic cellulosic-based polymer on the market for dust control today. Most are acrylic polymer or polyvinyl acetate-based. “They are essentially derivatives of oil, and that’s not exactly an environmentally friendly cocktail to be spraying on your

roads,” Burns commented. Moreover, unlike many alternatives Dust Stop contains no chlorides, so it’s neither corrosive to vehicles nor toxic to grasses and plant life at the roadside. “In fact it has been used for hydro seeding, in other words to encourage the growth of

28

Number of days when EarthZyme is fully biodegradable

“OUR PRODUCTS ARE ALL 100 PERCENT ENVIRONMENTALLY FRIENDLY, ORGANIC, BIODEGRADABLE AND NON-TOXIC”



traditionally been used for dust control, and is also highly effective for surface stabilization on tailings piles and stockpiles. “We’re currently talking with a potential new distributor in Guinea who may have a new application for it, spraying it onto rail cars before they leave the mine, to prevent mine dust being spread across the country.”

The active ingredients in the final product, UltraZyme, are enzyme/bacteria

cultures that are harmless to people, animal and aquatic life and digest organic waste safely. “We started off with one product to treat all wastewater and odor control applications,” said Burns. “It comes in a concentrated powder form, so it’s not diluted with water, dyes or fragrances. From this we branched into more specific applications. One is designed to treat sewage, so we’re talking of domestic,

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EarthZyme treated haul road at a coal mine in Cesar Province, Northern Colombia



Dust Stop being applied to the road surface

industrial and agricultural wastewater, general odor control and grease traps. We have another product that digests algae and is used in lakes and ponds, and finally we have a hydrocarbon-specific product which is of interest particularly to the industrial and mining sectors, and can be used to remediate soil where there has been an oil spill or hydrocarbon contamination.”

Cypher is careful to ensure its products are used safely. All distributors are given a full program of training in the products, and the company then takes a proactive role in ensuring they are suitable for the intended application. “We do a significant amount of due diligence on our customers. I know that might sound kind of strange, but we need to be sure they know what they’re doing with

our products, that they understand how they’re designed and how they should be applied,” said Burns.

The company offers advice on the viability of the product for an application, and the quantities and concentrations that will give the optimum results. The application of EarthZyme, for example, is scientifically based on the results of soil sampling, while the use of both Dust Stop and UltraZyme are based on a questionnaire. “Ultimately we don’t want to have an unhappy customer,” Burns continued. “Good word-of-mouth is one of the best advertisements, so we only want the best results from the application of our products.”

Research and development has been a strong feature of the company’s



Haul road in Nunavut,  
Canada just prior to a  
Dust Stop application



development so far, and will continue to form the foundation of its growth in the future. “We are currently working on a new liquid version of Dust Stop which we’ll be launching in North America in the next three months,” said Burns. “It will be easier to mix and apply, removing the need for any specific equipment.” The road tests, due to be done in the next few weeks, are scheduled to take place in the challenging and dusty environment of Texas.

This new liquid version is also taking the company further in its approach to customer service. It will be the first product to be customized in the factory specifically for the end user’s soil conditions. “We can adjust the viscosity of the product simply by varying the inputs in the factory. This will enable the product to penetrate specific soils better, so we can custom tailor the product, and the customer will only need to mix it with a fixed volume of water, which eliminates the potential for error.”

Looking to the future, Cypher has a number of new products in the development pipeline, including some environmentally friendly, organic, biodegradable and non-toxic fertilizer products. With environmental concerns continuing to play an important part in corporate strategy, the company is well placed to grow its product range. “As we see new opportunities to diversify, we will do so,” Burns concluded. **BE**

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