BioSpan Technologies, Inc.
Making Science & Technology Practical™.

Soybeans, Nanoparticles and Pavement Preservation

You might ask " What do soybeans, nanoparticles, and pavement preservation have in common?". You would probably answer that they have nothing in common at all, but you would be wrong. New research and product development conducted by BioSpan Technologies, Inc, located in the heart of soybean country has yielded several new exciting products made from advanced soybean chemistry.

BioSpan's scientists have devoted their research and product development focus on the use of soybean oil and its chemical derivatives for the last 20 years. Their work has resulted in the discovery and development of new technologies in pavement preservation without the need for petroleum based (toxic) materials.

BioSpan perfected ways of extending the useable life of asphalt pavements, and overcoming ASR for concrete. This new technology makes use of polymeric nanoparticles which penetrate deeply into the asphalt matrix, reverse the oxidation of the petroleum based asphalt, and attach the soy ased polymers to the asphalt base. This strengthens the pavement and provides "new" life to both newer and older pavements. It protects against pothole formation and other forms of deterioration (distresses) by helping to maintain a strong, flexible pavement matrix.

Nanoparticles are small particles, generally at the molecular level. BioSpan makes use of this new technology when the products are applied to the pavement surface. These "micro" particles penetrate into the voids and pores in the pavement matrix. As they react inside the pavement, new polymers form and attach themselves to the asphalt, or neutralize the ASR in concrete, and then form new polymers. The particles are derived from soy and other sustainable, domestically grown plants.

The name of the product is: " RePlay Agricultural Oil Seal and Preservation Agent®". BioSpan has several patents covering both RePlay and other pavement protection and preservation products. RePlay penetrates deeply into the asphalt, between 3/4 to 1 1/4" deep. Most other surface treatments only coat the top 3/8" and reduce the skid resistance of the pavement; whereas, RePlay maintains the skid resistance, thus helping keep the treated road surface safe. RePlay does not need a sand blot, and cures in less than a hour, thus reducing the lane closure time.

RePlay is in use in North America, Europe and Asia, and represents the future of pavement preservation using nanoparticle technology combined with new, next generation polymers. The result is safer, non-toxic, non – polluting, environmentally friendly compounds for pavement preservation that work better, last longer, and are less expensive than their petroleum counterparts.

ASR is the main concern when it comes to preserving concrete. Just like asphalt, concrete will deteriorate over time due to its own chemistry (the alkaline nature of concrete), and the electrolytic reactions which concrete has with many soils. BioSpan has created a compound similar to RePlay which stops these problems once it is applied. The name of the product is "Opti-Seal™ Concrete Preservation Agent. Opti– Seal is formulated to be applied to both existing and new concrete, and will penetrate deeply into the concrete with the use of nanopartricle technology.

Both RePlay AND Opti-Seal are applied using the BioSpan Spray System. This system is computer controlled to insure that each product is applied at the proper application rate. The computer eliminates the guess work on the application rate.

BioSpan has perfected a material which can convert asphalt rubble into fresh, new pavement without heat or additional petroleum such as cut back. The rubble must be screened into 3/4"minus, and there has to be a minimum of 4% residual asphalt for Activate™ Millings Restorer to work. Mixing is best done with a pug mill, and it takes 20 minutes of the reactions to take place once Activate is mixed with the asphalt rubble. A pug mill mixer will insure best results.