

Agricultural byproduct can protect delicate environment from oil spills

Dr. Gary Breitenbeck, a soil microbiologist and environmental researcher in the Department of Agronomy at the LSU AgCenter, has developed an effective oil absorbent material used to remediate oil spills in marshy wetland areas. The treated material is biodegradable, degrades more slowly than the absorbed oil and provides an enriched habitat for the microorganisms that digest the oil. The oil transportation industry needed something to trap spilled oil, and, because of the difficulty of recovering such material from marshes and similar wetlands, it had to be disposable.

When spilled oil reaches vegetated coastal marsh, it is absorbed by the soil, sealing the surface and preventing water infiltration and gaseous exchange. If oil covers a significant portion of above-ground plants, survival is critically affected. Severely impacted areas die. Waterfowl, mammals and other aquatic organisms that inhabit the marsh soil also are affected adversely.

Breitenbeck's strategy was to develop an aesthetically acceptable and effective oil absorbent to contain spilled oil and thereby prevent ecosystem damage. The absorbent had to be biodegradable; it had to degrade more slowly than absorbed oil to pre-



Spraying milled bagasse on an oil spill may become a standard practice for remediating oil-contaminated wetlands.

vent release of oil over time; and it had to provide an ideal medium to stimulate microbial activity.

As he was looking for a material that had these properties, Breitenbeck discovered ammoniated, milled bagasse. Adding ammonia to the milled bagasse creates an additional nitrogen source for soil microorganisms,

enhancing their ability to break down and digest the oil. This environmentally friendly material is self-composting and actually turns crude oil into humic material, or simply soil. Oil remediation companies can reap the economic benefits of using this effective low-tech biodegradable product by eliminating the cost of material recovery and disposal fees. Bagasse, the fibers remaining from milling sugarcane, is a waste byproduct of the sugar industry. But it's also naturally absorbent and has an uncanny ability to absorb the same amount of oil whether it's wet or dry.

The fibers — from ½ to 1 inch long — take on a mat-like form when wet so they don't dissipate or sink in the water. And they maintain their effectiveness for a significant time after they're treated with ammonia. With ammoniated bagasse, 98 percent of spilled oil will be gone within 90 days. The product holds the oil and doesn't let it be displaced by water.

The technology is licensed to AltFuels, Inc. of Labadieville, Louisiana, where they're building reactors to ammoniate bagasse. Initial funding for the project came from the Louisiana Oil Spill Research and Development program and the LSU AgCenter.