

KLEIN, NICK<sup>1</sup>, MICHAEL L. NELSON<sup>2</sup>, JOHN SCHUELER<sup>2\*</sup>, and GARY WITZGALL<sup>1</sup>,  
<sup>1</sup>Michigan Sugar Company, 2600 S. Euclid Avenue, Bay City, MI 48706 and <sup>2</sup>USP Technologies,  
900 Circle 75 Parkway, Suite 1330, Atlanta, GA 30339.

**Odor control of mud ponds using hydrogen peroxide dosing with the Peroxidon™**

Michigan Sugar's Bay City facility focuses on minimizing nuisance odors, employing many of the latest technologies and approaches. Wastewater first enters a clarifier, then a series of mud ponds, then an anaerobic digester, followed by a series of aeration ponds before final discharge. The mud ponds presented the greatest challenge for control due to the large surface areas, high solids concentrations, fluctuating loadings and different odorants present. The mud ponds were found to have a predominance of sulfur-based odorants, including hydrogen sulfide and mercaptans. USP Technologies evaluated a series of odor control agents and selected 50 percent hydrogen peroxide as the most cost-effective option. Using the Peroxidon™ dosing apparatus a mixture of a small amount of hydrogen peroxide and 300 gallons/minute of pond water was continuously applied across the surface of the final mud pond. This established a zone of oxidation on the pond surface, through which compounds such as hydrogen sulfide and mercaptans could be oxidized. Furthermore, the catalase-induced decomposition of hydrogen peroxide provided increased dissolved oxygen concentrations, theoretically improving bio-mediated removal of other odorants. In the first stage of the trial continuous dosing of the final mud pond at a concentration of 36 mg/L of H<sub>2</sub>O<sub>2</sub> reduced the amount of volatilized hydrogen sulfide by 96 – 100% and total mercaptans by 75 – 100 percent. With further optimization H<sub>2</sub>O<sub>2</sub> dosed at 9 mg/L reduced the volatilized hydrogen sulfide concentration 98 percent and total mercaptans 100 percent.