

Toxicity Treatment in a Municipal Wastewater Lagoon System

Wastewater lagoon systems often experience biological upsets when toxic loads are introduced. Specifically, the chemicals used in illicit drug manufacturing can cause significant harm to microbial communities in surface waters.¹

Municipal lagoon systems are especially vulnerable to these chemicals because they receive high-strength influent directly from urban sources. The remainder of this document discusses the use of ProBiotic Scrubber® II (PBII) to augment a lagoon system struggling with biomass die-off caused by various factors.



Figure 1. Google Earth image of the 0.3 MGD wastewater lagoon system.

The operators of the wastewater lagoons serving a Wyoming town of 2,000 people realized their three-cell system (Figure 1) was becoming unhealthy. This was evident because the wastewater in the ponds had developed a strong odor and changed color. Facility management and a Wyoming Rural Water Wastewater Technician (WRWWT) concluded that the system's biology had been killed off by toxic chemicals introduced through the collection system from illicit drug manufacturing in the area. Concerned about the

long recovery time required for the lagoon biology to regenerate naturally, management sought a solution to expedite the process. They hired BioLynceus® to restore the biomass needed to properly process wastewater.

After assessing the system, the WRWWT recommended augmenting the lagoons with BioLynceus® PBII. Plant operators manually applied the product at the influent of Cell 1. Within three days, treatment helped replenish the biomass in the first cell, which began properly processing wastewater. The following two cells were operating efficiently within a week. Facility management was pleased with the treatment because the health of the system improved in half the time required by previously used methods.

Additional benefits of PBII treatment included decreased odors from the ponds and improved wastewater color. The odor reduction reduced unpleasant smells experienced by treatment facility employees and town residents. Additionally, the wastewater color returned to a normal appearance. These results indicated that, after treatment, the system had a stable and functional biomass. PBII also helped the lagoon system recover quickly from toxicity. The plant now uses PBII twice a year and as needed whenever a chemical load kills off the biology.

¹ Lee S., Paspalof A., Snow D., Richmond K., Rosi-Marshall J., & Kelly J. (2016). Occurrence and Potential Biological Effects of Amphetamine on Stream Communities. *Environmental Science Technology*. 50 (17): 9727-9735.