

Toxicity Treatment in a Wastewater Lagoon System

Municipal wastewater lagoon systems are susceptible to toxic waste poisoning. Toxic loads from residences and businesses are sporadic and difficult to mitigate. When toxicity levels are high in wastewater lagoons, the biological treatment process is inhibited due to biomass loss. In *Wastewater Bacteria*, Michael Gerardi explains that toxicity impacts microbial cellular structure and activity (Figure 1).¹

Many of the organisms in these systems are unable to grow, divide, and metabolize when toxicants are present. Biomass mortality can contribute to poor wastewater treatment and effluent quality.

Lagoon recovery from toxicity is a slow process if the biology in the system is left to regenerate naturally. To speed up rehabilitation, bioaugmentation can be implemented. Adding a concentrated dose of fully functioning wastewater microorganisms can quickly increase biomass and stimulate biological treatment. The following case study describes toxicity treatment with ProBiotic Scrubber® II (PBII) at a 0.4 MGD wastewater lagoon system.

A lagoon system serving a town of 3,500 residents experienced toxic waste exposure that severely inhibited the biological treatment process. While on site at the 30-acre, two-pond facility, a Utah Rural Water Association Wastewater Technician noticed that the wastewater in the lagoons had an unhealthy color. The water was white and hazy, with floating solids. This indicated that the biology in the lagoon system was dying. Another sign of biomass mortality was the unpleasant odors wafting from the ponds.



Figure 1. 0.4 MGD lagoon system after a toxic hit. The wastewater color was milky, with floating solids indicating biomass die-off.

The lagoon management needed to quickly restore treatment because the city was highly dependent on the utility. The Wastewater Technician recommended BioLynceus® bioaugmentation to restore proper wastewater processing. After a conference call with the city, the decision was made to begin treating the lagoons with PBII.

Ten days after treatment began, the Public Works Director for the city reported that the first pond had returned to a healthy color. The dosage of PBII was decreased in the first pond and increased in the second. About a month later, treatment quality in both ponds improved; the wastewater returned to a normal color, and odors were reduced.

By implementing PBII, biological treatment in the lagoons was quickly restored. The facility continued to use BioLynceus® to maintain biomass stability in the system.

¹ Gerardi, M. (2006). *Wastewater Bacteria*. Hoboken, New Jersey: John Wiley & Sons, Inc. Pp. 173-203.