

A New Era in Water Treatment: Keeping it Clean with Sustainable Solutions

Mining companies today face a trifecta of challenges. They need to be compliant with clean water regulations at a budget-friendly cost and do it without harming the environment. Just managing wastewater alone can be an arduous responsibility, whether a company is cleaning sludge from filtering devices or discharging reclaimed water into the environment. Even if a mine uses holding ponds to stay self-contained, heavy rains and melting snow can lead to overflows that can potentially pollute wetlands and infiltrate the water supply.

The consequences aren't slight, either. On the environmental end, sediment pollution can suffocate fish eggs, kill aquatic plants and wipe out local habitat. On the financial end, regulatory fines and a damaged company reputation can take a toll on a mine's bottom line. Consider the case of Tiller Corporation, whose Wisconsin frac-sand mine had a spill of dirty water that reached the St. Croix River. Because it was considered a violation of the federal Clean Water Act, the Wisconsin Department of Justice sanctioned the corporation earlier this year.

To avoid these complications, many mines don't rely on self-containment alone. Instead they obtain permits that allow them to discharge clean water. While this solves one problem at first glance, in reality it often leads to another. As the saying goes, sometimes the remedy is worse than the disease – and this is frequently the case when it comes to treatments for waste byproducts and runoff.

Replacing Toxins with New Technologies

Traditional treatments for refining wastewater usually contain acrylamide, a neurotoxin linked to infertility and cancer. In fact, both polyacrylamide and polydadmec, another common sand-processing flocculant, were recently added to the Health Department's list of "chemicals of emerging concern." The International Agency for Research on Cancer (IARC), a department of the World Health Organization (WHO), has even classified acrylamide as a "probable human carcinogen."

Further compounding the issue is a need for high doses to clear extremely turbid water, forcing mines to choose between performance and safety. In a climate where both government regulations and consumers demand sustainable water treatments, deploying toxic chemicals can be disastrous to a company's reputation and bottom line.

Companies familiar with the traditional safety versus performance tradeoff may be skeptical of greener technologies' actual power. Yet those who have turned to HaloKlear treatment technologies are finding benefits that range from lower operational costs to more efficient reclamation processes.

HaloKlear works by using a plant-based biopolymer that produces rapid clarification. Chemical-free and non-hazardous, the coagulant uses bacteria and natural enzymatic activity to remove suspended solids and produce dense flocs with low water content for more effective

dewatering. The HaloKlear polymers bind with pollutants and other water impurities to effectively separate turbid water from clean water. Three plant-based biopolymer products with varying charge levels and molecular weights are available, including a highly concentrated formula for lower dosing & more cost-effective logistics.

With a low cationic charge, the treatment offers lower ecotoxicity and bioaccumulation than polyacrylamides. Mines receive the same powerful water treatment - but without fear of cancerous toxins.

Cleaner Water, Improved Control

From aggregate mining to sediment control to water remediation, mines all over the world have been using HaloKlear to efficiently clean their wastewater. For instance, one mine near Victoria, B.C. ran into trouble when heavy rains increased flow rate beyond existing treatment system capacity. The highly turbid water was at 10,000 to 20,000 NTU and overflowing into nearby water systems. By treating the water with HaloKlear BHR-P50, the mine reduced the water turbidity to 10 NTU, well below the 50 NTU specification.

A Wisconsin frac sand mine faced a similar challenge recently when its retention pond hit turbidity levels averaging about 1200 NTU. The mine needed to reduce the turbidity to 70 NTU or below while using environmentally-friendly, biodegradable solutions that met Department of Natural Resources regulations. As that essentially ruled out traditional treatments, HaloKlear was used to set up a treatment system onsite. Post-treatment, turbidity was reduced to levels averaging 7 NTU, well below the requirements set by the state.

These are just a few demonstrations of how greener water treatment technologies have benefitted companies. Having now conclusively proved their effectiveness, greener water treatment technologies like HaloKlear are an indispensable part of the mining industry's future. By using innovative treatment solutions to prevent costly wastewater disasters, mines can mitigate both financial and habitat risks, and makes the industry a shining example of how to succeed in the public domain in the era of sustainability.