



**Water & Waste Management**

# **BioRemove™ HC**

**Petrochemical & Refining**

Case study: Improved oil degradation, saving  
USD 120,000 per year

Rethink Tomorrow

novozymes® 

BioRemove™ HC improved hydrocarbon degradation, resulting in a significant reduction in powdered activated carbon (PAC) use for a petrochemical wastewater facility.

## Benefits

- **PAC use reduced by 54%**
- **Effluent TSS reduced by 26%**
- **Effluent BOD maintained below permitted levels**

## Background

The microbial community in a petrochemical wastewater facility was not able to remove sufficient hydrocarbons to maintain adequate effluent quality. In order to compensate for poor biological activity, the facility used PAC to absorb undegraded hydrocarbons. Despite its effectiveness, the use of PAC significantly adds to wastewater operation costs. The facility turned to Novozymes for a biological solution because it was looking

for a way of minimizing costs at the same time as maintaining a low concentration of hydrocarbons in the effluent.

## Application

Novozymes carried out an evaluation of the microbial community to determine whether it could be enhanced to better remove hydrocarbons and reduce PAC use. BioRemove™ HC was recommended to enhance hydrocarbon removal due to its blend of specially selected microorganisms with unique hydrocarbon degradation capabilities.

## Results

PAC addition was gradually reduced to maintain hydrocarbon removal. Through the addition of BioRemove™ HC, the microbial community was able to better handle incoming hydrocarbon loads. The plant was ultimately able to reduce PAC use by 54% without adversely impacting effluent quality.

Annual cost savings	Amount (USD)
Savings due to PAC reduction	102,900
Sludge disposal cost reduction due to reduced use of PAC	17,700

## Conclusion

Novozymes provided a unique biological solution where chemical alternatives failed. BioRemove™ HC was able to enhance the microbial community by improving hydrocarbon degradation

and reducing PAC use. BioRemove™ HC resulted in:

- **Lower operating costs**
- **Improved plant efficiency**
- **Simplified operations**



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### **About Novozymes**

Novozymes is the world leader in biological solutions. Together with customers, partners and the global community, we improve industrial performance while preserving the planet's resources and helping to build better lives. As the world's largest provider of enzyme and microbial technologies, our bioinnovation enables higher agricultural yields, low-temperature washing, energy-efficient production, renewable fuel and many other benefits that we rely on today and in the future. We call it Rethink Tomorrow.

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