

# Rapid Response and Management of HABs through Peroxide-based Algaecide Studies

Co-PI: Kurt Getsinger, ERDC, Kurt.D.Getsinger@usace.army.mil  
 Co-PI: Benjamin Sperry, ERDC, Benjamin.P.Sperry@usace.army.mil

## USACE Harmful Algal Bloom Research & Development Initiative



Delivering scalable freshwater HAB prevention, detection, and management technologies through collaboration, partnership, and cutting-edge science.

### Problem

Cyanobacteria harmful algal blooms (cHABs) greatly impair water resources on Lake Okeechobee. Impacts are seen in water quality, fish/wildlife habitat, recreation/tourism, and property/canal development. A rapid response, using algaecides, would provide direct control of cHABs.

### Objective

Evaluate the performance of an operational-scale, peroxide-based algaecide treatment to control cHABs in the Lake Okeechobee Watershed. Monitor for changes to aqueous toxin levels pre- and posttreatment. Provide guidance and best management practices for operational applications of PAK 27 for cHAB control.

### Approach

Field demonstrations (operational-scale and in situ mesocosms) were conducted to verify the use of PAK 27 peroxide-based algaecide for a rapid-response tool to quickly control cHAB blooms in selected sites on Lake Okeechobee. Treatments were applied once target organisms reached bloom conditions. Pre- and posttreatment evaluations were conducted to determine level of bloom control (efficacy) and quantity/quality of potential cHAB toxins in the water column.



Figure 1. Treated with PAK 27 (left) vs Untreated (right) waters on Lake Okeechobee.

### Major Milestones

Date	Milestone
Publications	<b>Tech Report:</b> Sperry, Benjamin P., et al. 2023. <i>Field Demonstration of a Peroxide-Based Algaecide for Harmful Algal Bloom Control in Lake Okeechobee</i> . ERDC/EL TR-23-7. Vicksburg, MS: US Army Engineer Research and Development Center.
Demonstrations	<b>In situ mesocosm study:</b> Pahokee Marina using PAK 27 algaecide. FY19. <b>Field-scale rapid response demonstration:</b> Pahokee Marina using Pak 27 algaecide. FY20.

### Partnership/Leveraging Opportunities

This work leveraged multiple collaborations and other work units including the USACE Jacksonville District (USACE-SAJ), the Florida Agriculture & Consumer Services, and the University of Florida.

### Value to USACE Mission

Development of peroxide-based algaecide management strategies provide USACE with tools to rapidly reduce occurrence/acreage of blooms, which can mitigate health and environmental damages in marinas, lakeshore embayments, residential canals, spillway gates/locks, beaches, campgrounds, and parks where water flows can be mitigated.