



Treating Florida's Blue Green Algae Problem

Florida, along with many other states, is dealing with the long-term effects of nutrient overload in its water.

Too many nutrients are feeding harmful algal blooms and bacteria.

While leaking septic systems are a big problem, the main culprits are **Phosphorus** and **Nitrogen** which are injected into the environment via fertilizers and ammonia that isn't being removed by wastewater treatment plants. Fertilizers are applied to the land by the commercial agricultural industry but also homeowners, municipalities, golf courses, and many more. The chemical components of these fertilizers percolate down through the soil and end up in our ground water, or they wash off the land and into our canal systems during storm events. Florida cannot reduce toxic or environmentally harmful blooms without removing the chemicals that feed them, Phosphorus and Nitrogen.

In addition to fertilizers, Florida's water is also suffering from the release of ammonia nitrogen that is not being properly removed from domestic wastewater treatment facilities. **Ammonia nitrogen** is most likely the biggest contributor to toxic bacteria and blue green algae blooms in Florida.

While bio-filtration (grasses, oysters, impoundment) has been heavily considered and occasionally implemented as a solution, the reality is that they can only go so far in helping Florida's water woes.

Only Phosphorus can be removed via biological processes in an impoundment, but its removal by impoundment is an uncontrolled (biological) process whose efficiency can only be estimated. The current practice of "impoundment" has no theoretically verifiable positive effect unless biomass is continually harvested. Also, water impoundment removes productive land from farming, and excavation costs are significant.

Cost calculations show that the same amount of water that would be impounded in an excavated plot of 10,000 acres in a process that would cost well over \$400 million, could be treated safely and efficiently with Ferrate, for pennies on the dollar.

When flowing water is treated with Ferrate, it binds to Phosphorus which is then precipitated out, and can be recycled back onto fields if desired. Nitrogen is converted to a gas and removed from water. No known technology today can quantifiably remove Nitrogen from water or wastewater. Until now.

Ferrate is safe for the environment as it treats water in a closed system before releasing clean water back into streams and lakes.

[Learn more at Ferrate-Solutions.com](https://www.ferrate-solutions.com)

Important FAQs About Nutrient Contamination and Destroying Blue Green Algae

? Is Ferrate poured directly into streams and rivers?

No. Ferrate is used in a controlled manner within a “pump & treat” process. Water from a lake, canal or river is pumped out and ferrate is added.

? Can Ferrate clean up large bodies of water like Lake Okeechobee?

Yes. Ferrate systems can be scaled up to large flows because it is a simple chemical treatment. Hundreds of millions of gallons of water per day can be treated with a modest size system capable of removing thousands of TONS of phosphorus + nitrogen + cyanobacteria.

? Is Ferrate safe for fish and wildlife?

Ferrate is never in contact with any wildlife, including fish. It is added during a pump & treat process, and the treated water (returned to the environment) is the same as before treatment (minus the nutrients and the suspended materials including algae and bacteria).

? Is there any danger to the environment when Nitrogen is converted to a gas?

Ferrate is the only chemical in the world that can convert nitrogen (which has been discharged to the water from wastewater treatment plants or fertilizers) to a harmless nitrogen gas. This gas leaves the water and goes into the atmosphere (our air is already 70% nitrogen) and its volume is insignificant compared to the nitrogen already present.

? What happens if there is a chemical spill?

Ferrate is produced by mixing together common commercial chemicals (ferric iron, caustic, and bleach). These are the only chemicals that could “spill”, as the produced ferrate is injected into the water as soon as it is generated. These feedstock chemicals are used at most every water and wastewater plant in the world and required spill “prevention” measures are already in place.

? What does Ferrate do to the salinity or pH of the water, and is there any concern about the change in either of these to the environment?

There is no change in pH of the treated water due to Ferrate treatment. Some minor amounts of salt (chloride) will be added during the treatment, but this is small and will be diluted when the treated effluent is added back to the environment.

? Can I use Ferrate in my house or in my sprinkler system?

No. Ferrate is intended for large-scale use.

? Once Ferrate is added to water, how long will it take to kill algae and bacteria?

Oxidation and disinfection (killing) reactions are rapid. Contact time to inactivate bacteria and algae will be approximately five minutes.

? How come nobody has talked about Ferrate as a solution, before?

People have talked about Ferrate’s remarkable treatment abilities for over 40 years (20,000+ open literature publications). The reason it has not been utilized is that the chemical was not available on a commercial scale. It now is ... because we have figured out how to make it inexpensively from common feedstock chemicals.

? Will there be any smell related to Ferrate treatment?

No. In fact Ferrate has been used to deodorize wastewater sludge so that it can be land-applied.

