



## Frequently asked Questions and Answers on Harmful Algal Blooms

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### Key Takeaways:

- Red Tides have appeared annually in the Gulf of Mexico since at least the mid-1800's
- Scientists have not established a direct link between nutrient pollution and the frequency or severity of the red tide in Florida.
- Blue green algae blooms are found in freshwater bodies, and their size and intensity are impacted by warm weather and heavy rainfall.
- The International Joint Commission (IJC) [reports](#) that phosphorus (P) from fertilizer and animal manure are largely responsible for excess nutrients in Lake Erie.
- Fertilizer best management practices built around 4R Nutrient Stewardship (use of the right fertilizer source at the right rate, the right time and in the right place) are the foundation for effective and efficient agricultural nutrient management.
- The fertilizer industry strongly supports the adoption of 4R Nutrient Stewardship practices through its support of scientific research, policy advocacy and state and regional 4R certification programs.

### What is Red Tide?

Red tides are caused by an organism, (*the dinoflagellate* *Karenia brevis* (*K. brevis*)). The organism is most often found in saltwater environments. Red tide blooms occur nearly every year in the Gulf of Mexico, and have been documented since the mid-1800s, before the advent of large-scale farming and the use of commercial fertilizers. After developing offshore, in the Gulf of Mexico, they are pushed to coastal waters by winds and tides.

### Is nutrient pollution causing the Florida red tide?

Scientists have not established a direct link between nutrient pollution and the frequency or severity of the red tide (*K. Brevis*) in Florida. The red tide in the Gulf developed 10 and 40 miles offshore, away from man-made nutrient sources. Red tides occurred in Florida long before human settlement of the state, and severe red tide outbreaks were observed in the mid-1900s before Florida's coastlines were heavily developed. Once red tides are transported inshore, however, man-made nutrients can contribute to their growth.



### **How is blue green algae different from red tide?**

Unlike red tide, blue green algae is found in freshwater bodies such as lakes and rivers. As is the case with the recent blue green algal bloom in Lake Okeechobee, warm weather, heavy rainfall and tropical storms can bring nutrients in the lake's bed to the surface, where they are able to feed the development of blue green algae.

### **What is the cause of algal blooms in places like the Western Lake Erie Basin, the Caloosahatchee and St. Lucie rivers?**

Harmful green algal blooms (HAB) are found in lakes and rivers and other freshwater systems. The International Joint Commission (IJC) on the Great Lakes' Science Advisory Board's Science Priority Committee, [reports](#) that phosphorus (P) from fertilizer and animal manure are largely responsible for excess nutrients in Lake Erie.

The incidence of hot weather and excess rainfall contribute to the severity of algal blooms in Lake Erie and other areas. In Florida, the issue stems in part from a manmade canal system of locks and dams that drains nutrient-rich water from Lake Okeechobee to the East (St. Lucie River) and West (Caloosahatchee River). Combined with warm weather and heavy rain events, this nutrient-rich water can lead to HABs downstream.

### **Couldn't farmers just reduce their fertilizer use and stop the formation of harmful algal blooms?**

Unfortunately, there is not a simple answer for solving this decades-old problem. While excess nutrients can drive harmful algal blooms, simply reducing the amount of fertilizer applied is not a complete solution. Better monitoring and consideration of rates can be part of a whole system resolution.

For example, recent data indicates that crops on farmland surrounding the Western Lake Erie Basin are removing more phosphorus than farmers are applying. The IJC report states that stored soil phosphorus can contribute to river and lake phosphorus loads for years – and possibly even decades.

Site-specific fertilizer best management practices built around 4R Nutrient Stewardship (use of the right fertilizer source at the right rate, the right time and in the right place) are the foundation for effective and efficient nutrient management. These practices are dictated by a farmer's goals, a crop's nutrient requirements, soil and weather conditions.



The IJC report recommends “continued promotion of 4R guidelines for fertilizer application through outreach, education and technology to enhance adoption and effectiveness of 4R practices, the expansion of efforts to evaluate the effectiveness of 4R and other best management practices at the field and watershed scales, and the identification of areas for improvement.”

### **What is the U.S. fertilizer industry doing to address the issue?**

The fertilizer industry strongly supports and encourages the adoption of 4R Nutrient Stewardship practices through the following channels:

- Retail fertilizer dealers serve as trusted agronomic advisors to their farmer customers. With the support and services of these professionals, farmers are using the 4R framework to achieve positive crop yield results while protecting the environment.
- The industry recognizes outstanding 4R practitioners through TFI’s [4R Advocate Award program](#). Since 2012, the 4R Advocate Program has recognized 35 pairs of farmers and ag retailers who manage 163,675 acres in 19 states. Six of these individuals hail from Florida and six from Ohio. These farmers and retailers foster best management practices and nutrient stewardship by applying the 4R principles of right source, right rate, right time, and right place to create optimal crop production, soil health, and environmental considerations.

The fertilizer industry also engages in numerous public-private partnerships in support of the 4R’s:

- The industry actively [advocates](#) for the inclusion of resources in the conservation title of the 2018 farm bill to assist farmers with planning and implementation of the 4Rs.
- The industry is advocating to make 4R research a high priority initiative in research title of the farm bill.
- In February of 2018, the North American fertilizer industry committed an additional \$6 million to its 4R Research Fund. Since 2013, the fund has dedicated \$5.8 million towards 4R nutrient stewardship research at Land Grant universities. The fund supports 25 projects in the United States and Canada, and leverages matching public and private funds to allocate a total of \$13 million to 4R research.



- The industry supports the development of state and regional 4R certification programs. The [first 4R Nutrient Stewardship Certification Program](#) began in Ohio, and encourages agricultural retailers, service providers and other certified professionals to adopt proven best practices through the 4Rs. Today, it provides a consistent, recognized standard for agricultural retailers who cover 2.9 million acres in Indiana, Michigan and Ohio

Additional nutrient stewardship resources: [www.nutrientstewardship.org](http://www.nutrientstewardship.org)