RED TIDE FAQs

What is red tide?
Red tide is a specific type of harmful algal bloom, caused by higher than normal concentrations of microscopic algae. In Florida's southwest coast and other areas of the Gulf of Mexico, red tide is usually caused by *Karenia brevis*. *K. brevis* defends itself from predators by producing brevetoxins that can affect the central nervous system of fish and other vertebrates. This, combined with the algae's ability to create areas with low oxygen concentrations in the water, can cause many marine animals to die. Brevetoxins can also cause respiratory irritation in humans once airborne.

What causes red tide?
Karenia brevis causes red tide when their population explodes into a bloom. First, the organism has to have the correct environment. The temperature, salinity of the water and nutrients are all factors that can influence where *K. brevis* can live. Then *K. brevis* needs the right physical conditions, like wind or ocean currents, to concentrate and transport to different areas. *K. brevis* also needs to surpass other phytoplankton. The presence or absence of other life forms may encourage or inhibit *K. brevis* blooms. If conditions are correct, *K. brevis* can reproduce and multiply, causing a red tide.

Has coastal (nutrient) pollution caused red tide?
There is no demonstrated direct link between nutrient pollution and the formation of a *Karenia brevis* bloom or frequency (how often they occur), according to Mote Marine Laboratory. Florida red tides develop 10-40 miles offshore, away from human-contributed nutrient sources. Red tides have occurred in Florida long before human settlement, and severe red tides were observed in the mid-1900s before the state's coastlines were heavily developed. However, once red tides are transported to shore, they can use human-contributed nutrients for their growth.

Can coastal nutrient pollution worsen an existing red tide that has moved close to shore?
Data from Mote has suggested that nutrients that runoff the land into the sea may contribute to red tide. These nutrients can include natural (animal waste) and human-contributed (fertilizer) sources. These sources can runoff in stormwater into storm drains, rivers, and ponds and ultimately the Gulf. These nutrients can serve as "food" for *Karenia brevis* algae and contribute to red tide blooms once the algae are close to shore.

What has the City of Venice done to address red tide?

- City Council passed a resolution encouraging no more lawn fertilization.
- Increased public education via City newsletter, website, social media, email blasts, flyers in utility bills, handouts at City Hall, and evening Florida Friendly Landscaping programs held in Council chambers.
- Completed water quality improvement projects at several outfalls. Many outfalls have dry ponds that capture the initial flow and allow it to naturally percolate into the ground. Other outfalls have sediment collection boxes that help settle out solids prior to flowing to the Gulf.
- The City continues to look for opportunities to fund water quality improvements with Stormwater Enterprise Funds and available grants.
- Nutrient loading modeling for the island basins are underway to prioritize future water quality projects.
- Initial outfall sampling to evaluate water quality prior to discharge at primary stormwater outfalls.
- Council directed staff to place Florida Yards requirements in the LDRs (Land Development Regulations) for development.
- Council directed staff to implement educational outreach and offer free septic system inspections on a voluntary basis at $500 per property, paid by the City.

What is being done to monitor the outfalls at Venice Beach?
The City has contracted a coastal engineering and environmental sampling team to conduct limited outfall water quality testing, determine outfall pollutant load estimates and make recommendations for outfall prioritization while grant applications are being processed by the agency. The project's goal is to identify the priority outfalls for the installation of automatic sampling equipment that monitors flow rates and water quality on a periodic basis. This data will also be used to design water quality capital projects that can be implemented to improve water quality. Additionally, a treatment system was installed on the Venice Beach and Alhambra outfalls to reduce the quantity and improve the quality of the waters that flow to the Gulf.

Why can't the outfalls just be removed?
The City has nine stormwater outfalls that discharge rainwater and surface water into the Gulf, which prevents water from backing up and flooding streets and homes on the island of Venice. The island was actually manmade when the Intracoastal Waterway was dug by the Army Corps of Engineers in the 1960s. Venice was not actually an island before that time, so the land naturally slopes toward the beach. This means the rainwater and these beach outfalls are necessary to let the water escape into the Gulf. There are NO sewage discharges from these outfalls, only rainwater and surface water. The sewage in Venice travels through pipes to the Wastewater Treatment Plant, located in the northeast section of Venice near Laurel Road, where it is treated and recycled as reuse water for irrigation.

If the outfalls don't carry sewage, why can the water in them appear brown?
Some of the outfalls drain natural wetland water bodies. Leaves and other organic plant matter fall in the water and release tannins as they decompose. Tannins can give the water a very brown color and a slight odor; however, this is a natural process. These wetlands are important to the environment and provide a place for the rainwater to soak into the ground and replenish the aquifer.

What can I do to help?
We can each do our part to help keep our waterways clean and reduce nutrients in stormwater runoff:

- Say no to nitrogen. Sarasota County prohibits the use of any fertilizer containing nitrogen or phosphorus from June 1-Sept. 30. If you must fertilize, use slow-release nitrogen and little to no phosphorous fertilizers only between October and May.
- Keep fertilizer away from water bodies.
- Choose Florida Friendly yard plants that require no fertilizer and little irrigation.
- Pick up and dispose of pet waste properly.
- Capture rainwater in a cistern or rain barrel and use for irrigation.
- Properly dispose of yard waste.
- If you have a septic system, have it inspected and cleaned out regularly.

Why can't the City of Venice ban fertilizer outright?
Currently, a more stringent ban is not an option because Florida law partially preempts local governments from regulating the use of fertilizers. In addition, according to scientists, a total ban on the use of fertilizer would be harmful to the environment, limiting plant growth and weakening vegetative root systems, and thereby reducing the ability of productive plants to absorb nutrients prevalent in soil and runoff.

Are septic systems in the City contributing to red tide?
At this time, there are about 45 properties with septic systems within Venice city limits, with fewer than 10 on the island of Venice. All are in compliance with City code.

Can we control or mitigate Florida's red tides?
Currently there is no tried-and-true way to completely remove the red tide algae and its impacts without potentially harming Gulf ecosystems. Mote scientists are currently studying control and mitigation methods.

When will the next red tide occur?

Although the occurrence of a Florida red tide cannot be predicted, scientists can forecast its movement using wind and water current data once a bloom is located. Scientists also monitor the concentration of the red tide organism by collecting water samples routinely and in response to blooms. Currently, Mote Marine Laboratory, the Florida Fish and Wildlife Research Institute and the National Oceanic and Atmospheric Administration provide status reports about Florida red tides to the public.

RESOURCES

https://mote.org/news/florida-red-tide

https://www.venicegov.com/government/engineering/stormwater-division/fertilizer-use

http://www.scienceandenvironment.org/projects/watershed-signs/

http://myfwc.com/research/redtide/