



## AGENDA MEMORANDUM

*Natural Resources  
Department*

---

**City Council Regular Meeting Date: October 7, 2025**

**To:** City Council  
**From:** Holly Milbrandt, Natural Resources Director  
**Date:** September 30, 2025

---

**SUBJECT:** Overview of a study by the Roskamp Institute to investigate the impact of red tide toxins on brain health presented by Dr. Barb Kirkpatrick & Dr. Laila Abdullah

### **BACKGROUND:**

As Sanibel's residents & visitors know all too well, the red tide organism, *Karenia brevis*, produces brevetoxins capable of killing fish, birds and other marine animals. Brevetoxins may also cause health problems in humans, including respiratory irritation when wave action breaks open cells and the toxins become airborne. Although respiratory symptoms are well-documented during red tide blooms, neurological aspects have not been fully examined in large populations.

The Sarasota, FL-based Roskamp Institute has a long history of research examining the causes and potential cures for neurological disorders, particularly dementias such as Alzheimer's Disease. Roskamp Institute scientists, in collaboration with the Gulf of America Coastal Ocean and Observing System (GCOOS), have been conducting a clinical research study to understand the potential impact of red tide blooms on brain health. The study relies on community volunteers, with more than 250 community volunteers from Sarasota, Manatee, Lee, Charlotte and Collier counties participating so far. In 2022, findings from their work provided new evidence that red tide exposure can affect human brain health. Ongoing research seeks to understand why different people respond to the toxins in different ways and the levels of threat that the toxin poses.

The Roskamp Institute is seeking additional volunteers (who remain anonymous) to participate in the 4-year study. By joining the study, participants will help researchers understand how these toxins may enter, how long they stay, and how they are eliminated in the body. The study seeks 400 participants in Southwest Florida to wear a personal air monitor, provide biological samples, complete health surveys, and return for follow-up procedures, including repeat sampling and health checks.

Volunteers interested in learning more about how to participate in the Red Tide study can visit <https://www.roskampclinic.org/trials/redtide/> or call 941-256-8010.

## About the Researchers:

**Dr. Barbara Kirkpatrick** is a research scientist with Texas A&M University and is a current Principal Investigator at for the Gulf of America Coastal Ocean Observing System (GCOOS). She previously served as GCOOS Executive Director and then as Senior Advisor. She has more than 35 years of experience in human and environmental epidemiology and started her career as a Respiratory Care Supervisor at Duke University Medical Center before going on to receive a Master's Degree in Health Occupations Education at North Carolina State University and a Doctorate in Educational Leadership from the University of Sarasota. In 1999, Kirkpatrick joined Mote Marine Laboratory as a staff scientist and shifted her research focus to environmental human health, particularly the respiratory effects linked to harmful algal blooms. She was co-leader of the first major multi-institution study of Florida's red tide on humans that was funded by the National Institutes of Health. The 11-year study was the first to scientifically document the impacts that red tide has on humans — particularly those who have chronic respiratory diseases. She also serves on the Harmful Algal Bloom Task Force, appointed by Governor DeSantis in 2019.

**Dr. Laila Abdullah, Ph.D** is a senior scientist at the Roskamp Institute in Sarasota, Florida. She has more than 15 years of experience in clinical and translational neuroscience, with a focus on understanding how environmental exposures impact brain health. Abdullah received her doctoral training in neuroscience and went on to develop biological expertise to assess impact of environmental exposures on brain health. In 2018, Abdullah expanded her research focus to environmental toxicology and neurological disease. Her work examines how exposure to aerosolized brevetoxins from Florida's red tide affects the brain, with particular attention to vulnerable populations such as individuals with preexisting neurological conditions or genetic risk factors. She is Principal Investigator of a National Institute of Environmental Health Sciences (NIEHS)–funded study that seeks to define threshold levels of airborne brevetoxin exposure that trigger neurological symptoms, identify blood markers of vulnerability to red tide toxins, and develop predictive models of toxin distribution in the brain. Her research team works in close collaboration with environmental scientists and community partners to connect coastal ecosystem monitoring with public health. She also contributes to the Harmful Algal Bloom (HAB) Health Workshop for the State of Florida, helping to translate scientific findings into strategies that protect vulnerable communities and guide public health responses.

**FUNDING SOURCE:** N/A

**RECOMMENDED ACTION:** Information only