Quarterly Progress Report

June 2026

Project Title

Mercury Exposure through Seafood Consumption in the Matagorda Bay System: Human Health Study and Public Education

Contract # 065

Submitted to

Matagorda Bay Mitigation Trust

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Project Summary

Humans are primarily exposed to mercury (Hg) through seafood consumption. This study will investigate people's exposure to Hg through seafood consumption in the Matagorda Bay system using hair Hg analysis and surveys focusing on demographic factors, seafood consumption patterns, and health issues associated with Hg toxicity. In addition, social media accounts will be created and a website constructed to educate the public on the toxicology research occurring in the Matagorda Bay system, with the focus on the Alcoa (Point Comfort)/Lavaca Bay Hg Superfund site. Social media posts and the website will be written in English, Spanish, and Vietnamese.

Project Goals and Objectives

The proposed project has two goals: 1) investigate people's exposure to Hg through seafood consumption in the Matagorda Bay system, and 2) develop online resources to educate the public about the toxicology research occurring in the Matagorda Bay system, with the focus on the Alcoa (Point Comfort)/Lavaca Bay Hg Superfund site. This can be broken down into five objectives:

Objective 1: Calculate how much of each fish and shellfish species can be consumed by an adult or child per week before exceeding the FAO/WHO MeHg PTWI and how that varies spatially throughout the Matagorda Bay system.

Objective 2: Investigate why people are fishing in the Alcoa Hg Superfund site even though the area is closed to the retention of fishes and blue crab.

Objective 3: Investigate seafood consumption patterns in recreational anglers throughout the Matagorda Bay system.

Objective 4: Measure hair Hg concentrations in English, Spanish, and Vietnamese speaking communities bordering Lavaca Bay and Matagorda Bay and interpret the results based on demographic factors, seafood consumption habits, and health histories.

Objective 5: Create social media accounts and construct a website to educate the public on the toxicology research occurring in the Matagorda Bay system. The information will be available in English, Spanish, and Vietnamese.

Project Update

Objective 1

For all individuals of each investigated bay and offshore species, the body length and total Hg (THg) concentration in muscle tissue has been entered into Excel and the required equation written for each column in the spreadsheet. Muscle tissue from five individuals of each species were shipped to the University of Calgary in February 2025 to determine the methylmercury (MeHg) concentration and calculate the percentage of THg that is MeHg. The data was received in October 2025. The MeHg percentages have been added to the Excel spreadsheet for each species and the amount that can be consumed by an adult or child per week before exceeding the FAO/WHO MeHg PTWI has been calculated. Data analysis is ongoing.

The results for several offshore species (blue marlin, swordfish, king mackerel, blacktip shark, yellowfin tuna, blackfin tuna, dolphinfish, and red snapper) were presented at a conference in April 2026.

Rybak, A., B. Barst, and J. Dutton (2026) Mercury exposure via the consumption of offshore fishes in the northwestern Gulf of Mexico: A PTWI assessment. South-Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting. San Marcos, TX.

Objective 2

Survey collection started in July 2024 to investigate why people are fishing next to the Causeway (SH-35) even though the retention of fishes and blue crab is not allowed from the Closed Area (Superfund site). The goal was to collect 100 surveys. Data collection ended in July 2025, and 100 surveys were completed by anglers. All the data has been entered into Excel and data analysis is ongoing.

Initial findings indicate that while some people are doing catch and release fishing, other people are retaining and consuming their catch. Further discussion with these anglers indicated that there is confusion about which part of the bay next to the Causeway is closed to the retention of fishes and blue crab. There are three signs stating their retention is prohibited when you enter the road next to the Causeway (Fig. 1), so people do not retain catch from there. However, further along the road there are no signs and people think they are allowed to keep the catch. While there is a map on the sign showing that the entire road is closed to the retention of their catch, anglers are basing their decision on the presence or absence of a sign.

PI Dutton met with representatives from Alcoa in October 2024 and explained the problem and recommended installing more signs. At the U.S. EPA and Alcoa community meeting in Port Lavaca in December 2024, Alcoa announced they are installing more signs to provide better public awareness about what part of the bay is prohibited to the retention of fishes and blue crab. Two new signs were installed in fall 2025 (Fig. 2).

As a result, there has been a positive outcome from this objective.

Figure 1. Location of signs next to the Causeway (SH-35).

Figure 2. Location of the old signs (1, 2, 3) and new signs (4 and 5) next to the Causeway (SH-35). The three photos are sign 4.

An abstract has been submitted to present the results of this study at a national conference in November 2026.

Objective 3

Survey collection started in July 2024 to investigate fishing activities and seafood consumption patterns in recreational anglers in the Matagorda Bay system. The goal was to collect 150 surveys in Port Lavaca, Point Comfort, Palacios, Matagorda, and Port O'Connor. Data collection ended in August 2025. 150 surveys were completed by anglers in Port O'Connor, Matagorda, and Port Lavaca, whereas 149 surveys were completed in Palacios and 121 in Point Comfort. All the data has been entered into Excel and data analysis is ongoing.

The fishing activity survey results were presented at a conference in April 2026.

Parker, L., J. Kuntz, and J. Dutton (2026) Use of fishing activity surveys to infer mercury exposure in recreational anglers within the Matagorda Bay system, Texas. South-Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting. San Marcos, TX.

An abstract has been submitted to present the seafood consumption patterns results at a national conference in November 2026.

Objective 4

Hair collection should start in summer 2026. This quarter was spent planning the experiment, writing the questionnaire, applying for IRB approval, and purchasing supplies.

Objective 5

The Instagram account (@matbaytoxstudy) has 36 posts and 150 followers.

Goals for the Next Quarter

- Continue data analysis (Objectives 1, 2, 3)
- Continue preparing for the hair collection events (Objective 4)
- Continue posting on our Instagram account and start to construct the website (Objective 5)