

Quarterly Progress Report

March 2025

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

The following was completed this quarter:

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. All MeHg concentrations are expected by the end of May 2025. Once the MeHg percentage is added to the Excel spreadsheet for each species, the amount that can be consumed by an adult or child per week before exceeding the FAO/WHO MeHg PTWI can be calculated.

Objective 2

Survey collection started in July 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 is to collect 100 surveys. To date, 59 surveys have been collected. Due to poor weather this quarter, only three surveys were completed because anglers were not fishing and our team only made two trips to the Port Lavaca area. We expect surveying will pick up again in May when the weather improves.

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



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

Objective 3

Survey collection started in July to investigate fishing activity and seafood consumption patterns in recreational anglers in the Matagorda Bay system. The goal is to collect 150 surveys in Port Lavaca, Point Comfort, Palacios, Matagorda, and Port O'Connor. All 150 surveys have been collected from Port O'Connor and all the data has been inputted in Excel spreadsheets. 118 surveys have been collected from Matagorda, 117 from Port Lavaca, and 20 from Point Comfort. All survey data has been inputted into Excel for Port Lavaca and Matagorda. As explained in Objective 1, survey completion has been slower than expected this quarter due to poor weather. We expect surveying will pick up again in May when the weather improves.

Objective 5

- The Instagram account (@matagordabaytoxicologystudy) has 24 posts and 74 followers

Goals for the Next Quarter

- 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 (Objective 1)
- Continue to survey people on why they are fishing next to the Causeway even though the retention of fish and blue crab is not allowed from the Closed Area (Objective 2)
- Continue to survey recreational anglers about their seafood consumption patterns and enter the data into Excel spreadsheets (Objective 3)
- Continue posting on our Instagram account and start to construct the website (Objective 5)