

FOCUS QUESTION 1:

Is it safe for people to come into contact with bay water?

What was measured:
Fecal bacteria levels and *Vibrio* bacteria.



Answer: Based on the indicators below the answer is “not all the time”. While many of the sites monitored for bacteria show levels safe for recreation, except after a rain, some sites in Corpus Christi Bay exceeded the Environmental Protection Agency health standards in 12% of the samples collected. Also, the risk of transmission of *Vibrio* is low, for healthy individuals, as long as the proper precautions are taken.

INDICATOR #1: Fecal bacteria levels.

Condition/Trend: Good/Stable

Good



I. BACKGROUND

Each year Americans make 910 million trips to coastal areas and spend \$44 billion. In Texas, beaches consistently rank among the state’s top tourist destinations. Several programs are in place to address bacteria levels in the waters of the Coastal Bend area.

Texas Beach Watch Program, a non-regulatory program, implemented by the Texas General Land Office, monitors water for enterococcus bacteria as a surrogate of harder to detect, disease-causing microorganisms where sewage or storm runoff is present. Water quality advisories are recommended when enterococcus levels exceed limits established by the Environmental Protection Agency.

II. CONCERNS

Bay waters may become polluted when rainwater washes pollutants (like animal feces, fertilizer, pesticides, and trash) from yards, farms, streets, and construction sites. It is not unusual to measure higher concentrations of bacteria after a heavy rain. Pollutants can also come from poor performing sewage treatment plants and septic tanks. Bacteria from human and animal waste may indicate the presence of disease-causing microorganisms that pose a threat to public health. Bacteria from the water can accumulate in the tissue of oysters and other shellfish, making them unsafe to eat. Besides affecting shellfish, exposure to fecal bacteria can cause unfavorable effects on human health. The most common result of exposure to fecal bacteria is gastroenteritis (irritation and inflammation of the stomach and intestines), but more serious conditions can occur.



Texas Beach Watch sign indicating the beach location is monitored for bacteria.



Texas Beach Watch advisory sign indicating the sample results have exceeded the standard.

III. LOCAL LEVELS (Conditions)

Four sites are monitored at Aransas County Beaches. In 2008, 7% of the total water samples collected exceeded national health standards at the Rockport Beach Park.

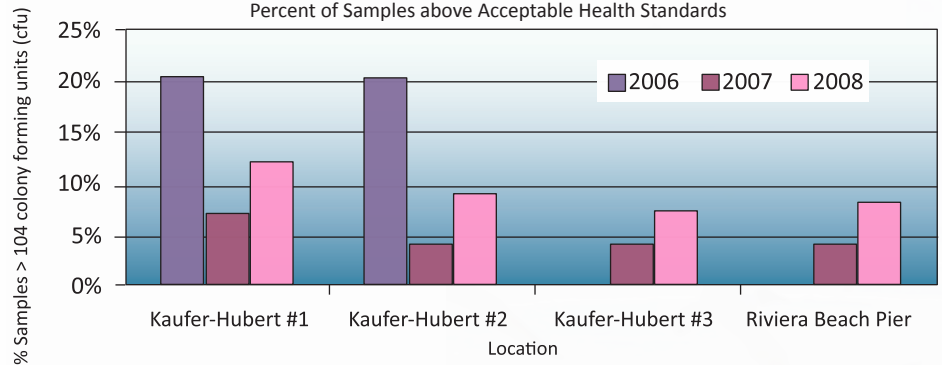
Four sites are monitored in Kleberg County. In 2008, bacteria levels at the Kaufer-Hubert #1 site reached the high category in 12% of times sampled. One site, Nueces Bay Causeway #4, in San Patricio County is monitored. In 2008, the San Patricio County site reached the high category 16% of the times sampled. An additional 44 sites were monitored at eight beach areas under the Beach Watch Program in Nueces County. These sites were in Port Aransas, Mustang Island, JP Luby Park, Bob Hall Pier/Seawall, Upper Corpus Christi Bay, Corpus Christi Marina, Corpus Christi Bay-Urban, and Upper Laguna Madre. During 2008, Ropes Park, JFK Causeway, and Cole Park bacteria levels reached the high category in 24% of the times sampled. In 2008, seven areas were monitored along Corpus Christi Bay. The samples exceeded the EPA health standards in 12% of the times sampled.

An overall look at the bacteria levels within the Coastal Bend area suggests that it is safe to have recreational activities in the bay waters as long as it's not immediately after a heavy rain, in a small creek, or next to a drainage system.

The Texas Beach Watch Program has a website which allows the public to view the current status of each Beach Watch station. To learn more, visit the website: <http://www.texasbeachwatch.com/>.

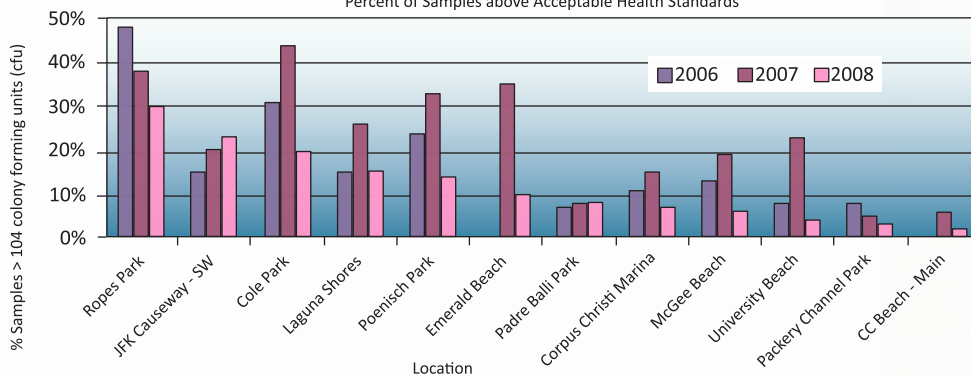
Kleberg County Beach Watch Data

Percent of Samples above Acceptable Health Standards



Nueces County Beach Watch Data

Percent of Samples above Acceptable Health Standards



IV. REFERENCES

- Dorfman, M. and Rosselot, K. July 2009. Testing the Waters: A Guide to Water Quality at Vacation Beaches. National Resources Defense Council. 453 pp.
- Status of Texas Coastal Beaches: An Assessment of Texas Beach Watch Program Data. August 2008. http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/tx_beach_assessment.pdf

INDICATOR #2: *Vibrio* concerns.

Condition/Trend: Good/Stable

Good

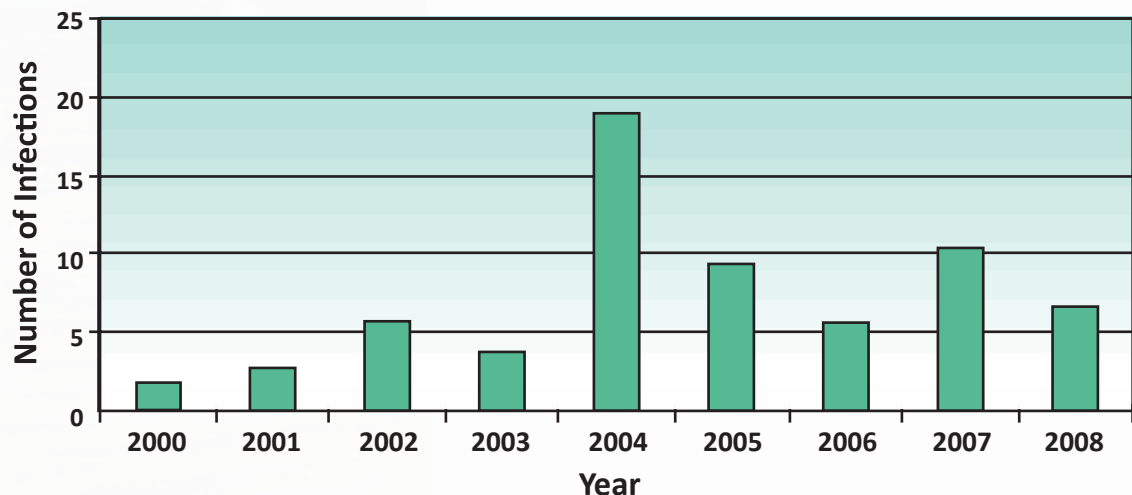


I. BACKGROUND

The *Vibrio vulnificus* bacteria live in coastal waters around the world and are usually more prevalent in summer months when the waters are warmer. *V. vulnificus* is usually transmitted to humans by eating raw or undercooked shellfish, particularly oysters harvested from warmer waters. However, *V. vulnificus* infections may occur when wounds or soft tissues are exposed to warm seawater. The bacteria can also enter the body through open wounds when swimming or wading, or via puncture wounds from the spines of fish such as hardhead catfish. Symptoms include vomiting, diarrhea, abdominal pain, and a blistering dermatitis. Severe symptoms and even death can occur if the bacterium enters the bloodstream—something more common in people with compromised immune systems or liver disease. Environmental factors, such as warm water and moderate salinity, can increase the number of *V. vulnificus* organisms in the bay waters and shellfish, increasing risk of exposure.

Texas Department of State Health Services releases consumption advisories and bans on areas that have high levels of bacterium and other contamination. These consumption advisories serve as a warning to bay users that are in contact with bay waters.

Reported *Vibrio vulnificus* Infections (Water Contact) in Texas by Year



II. CONCERNS

In healthy persons, *V. vulnificus* infections from consumption or wound infections cause diarrhea, vomiting, and abdominal pain. In persons with underlying medical conditions, especially liver disease, it can cause bloodstream infections characterized by fever, chills, decreased blood pressure, blistering skin lesions, and often death.

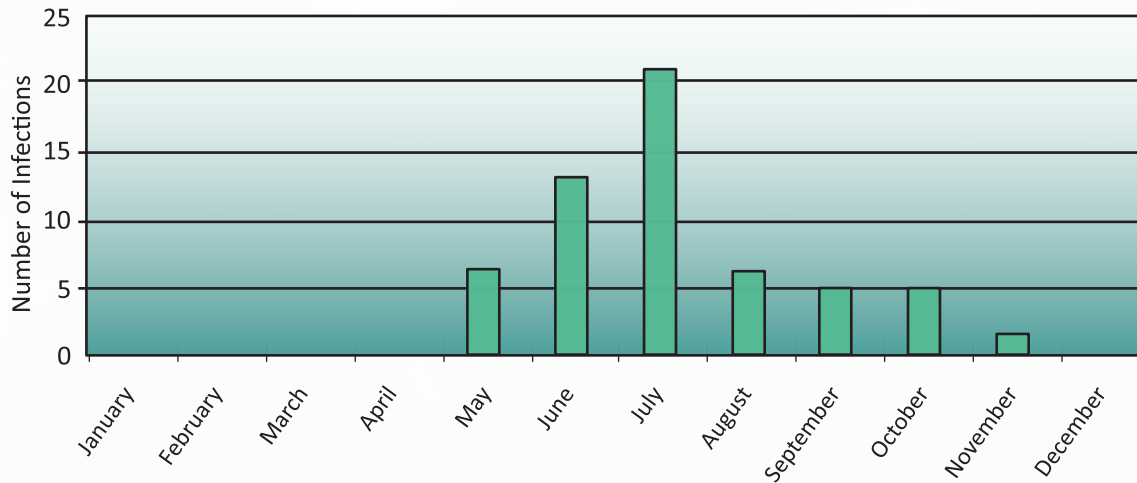
According to Texas Parks and Wildlife Department, there are really two main things to remember, 1. Don't come in contact with any coastal, bay, or Gulf waters if you have open sores or cuts. If you get a cut while in the water, immediately wash it with soap and freshwater. If it shows any signs of infection (redness, pain or swelling) or if the cuts are deep: get medical treatment as soon as you can; 2. Eat only fully cooked shellfish, especially if you are susceptible to liver problems, or have a chronic health condition like diabetes, or a weakened immune system.

III. LOCAL LEVELS

V. vulnificus infections have been reported along the Gulf Coast for many years. *Vibrio*, in wound infections, can cause skin ulcerations, fever, etc. When contacted from infested seawater, *Vibrio* can cause vomiting, diarrhea, abdominal pain, and death. Although it has recently received more attention and questions due to increased media activities, 2009 hasn't been any worse than previous years.

So, is the bay water safe to go in because *V. vulnificus* is in the water? The risk of transmission is low to healthy individuals as long as the proper precautions are taken.

Reported *Vibrio vulnificus* Infections (Water Contact) in Texas 2000-2008 Combined by Month



Vibrio Infection

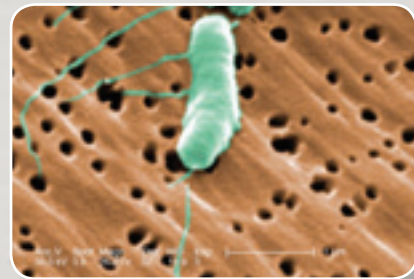


Image Source: CDC Phil/Janice Carr, Colorized scanning electron microscope depicting a flagellated *Vibrio vulnificus*.

IV. REFERENCES

- Centers for Disease Control and Prevention. 2008. *Vibrio vulnificus*. http://www.cdc.gov/nczved/dfbmd/disease_listing/vibriov_gi.html
- Gregg, B. 2007. Four Things You Hate to Think About When You Fish. <http://www.tpwd.state.tx.us/fishboat/fish/didyouknow/darkside.phtml>
- Ho, H. March 2009. *Vibrio* Infections. <http://emedicine.medscape.com/article/232038-overview>
- Mott, J., G. Ramirez, and G. Buck. 2008. *Vibrio vulnificus* Monitoring in Recreational Waters. Coastal Bend Bays and Estuaries Program. 71 pp.
- Texas Department of State Health Services. February 2010. Seafood and Aquatic Group. <http://www.dshs.state.tx.us/seafood/fishConsump.shtm>