

## FOCUS QUESTION 2:

### Is it safe to eat seafood caught in area bays?

**What was measured: Seafood tissue levels, seafood consumption advisories, and shellfish harvesting areas**



**Answer:** Generally yes, but not in all areas. There is only one fish consumption advisory for the Coastal Bend area specifically for Gulf species. This is the statewide king mackerel advisory due to mercury contamination. The Texas Department of State Health Services also monitors whether shellfish harvesting areas are safe. Some areas of the local bays are closed due to high levels of bacteria.

### INDICATOR #3: Seafood tissue monitoring data.

Condition/Trend: Good/Improving

Good



#### I. BACKGROUND

The Texas Coastal Bend has a massive commercial fishing industry that annually harvests more than 8 million pounds of finfish, shrimp, and crab from the area's estuarine waters. Recreational fishing is just as important and contributes millions of dollars to the coastal communities each year. Texas Department of State Health Services (TDSHS) monitors fish in the state for the presence of environmental contaminants and alerts the public through bans (closures) and advisories when a threat to human health may occur from the consumption of contaminated fish.

Since fish and shellfish can accumulate contaminants from the waters in which they live, the TDSHS tests the organisms by looking at the chemicals or diseases within their tissue. TDSHS completed a project in late 2005 within Nueces Bay that involved blue crabs, oysters, and fish.

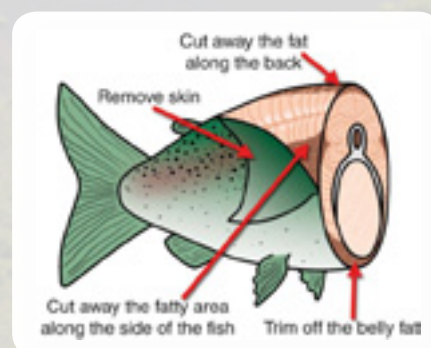
The CBBEP initiated a multi-year effort as part of the Regional Coastal Assessment Program (RCAP) and began sampling in 2000 through 2004 in order to assess the quality of water, sediment, and seafood tissue of the Coastal Bend region.

#### II. CONCERNS

Contaminants of concern consist of mercury (methyl-mercury), copper, chromium, zinc, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and dichlorodiphenyltrichlorethane (DDT) and other pesticides. At typical consumption levels, fish and shellfish in the Coastal Bend do not contain levels of contaminants high enough to cause an imminent threat to health. Health risks from contaminants may increase for people who regularly consume larger fish and predatory fish from an area of contaminated water over a long period of time.

Contaminants such as PCBs, pesticides (i.e. DDT, chlordane, toxaphene, and dieldrin), and dioxins readily accumulate in the fatty tissues of fish. Mercury accumulates primarily in the muscle tissue (fillet) of the fish. While most fish contain some level of mercury, long-lived fish such as gar, king mackerel, shark, and swordfish contain more mercury than small fish.

It is important for people to check seafood advisories to know which areas may produce unsafe fish and shellfish. TDSHS maintains a 24-hour toll-free number (1-800-685-0361) to determine status of approved and conditionally approved harvest areas.



Proper cleaning to reduce intake of contaminant.

Image Source: TPWD

### III. LOCAL CONTAMINATED TISSUE LEVELS

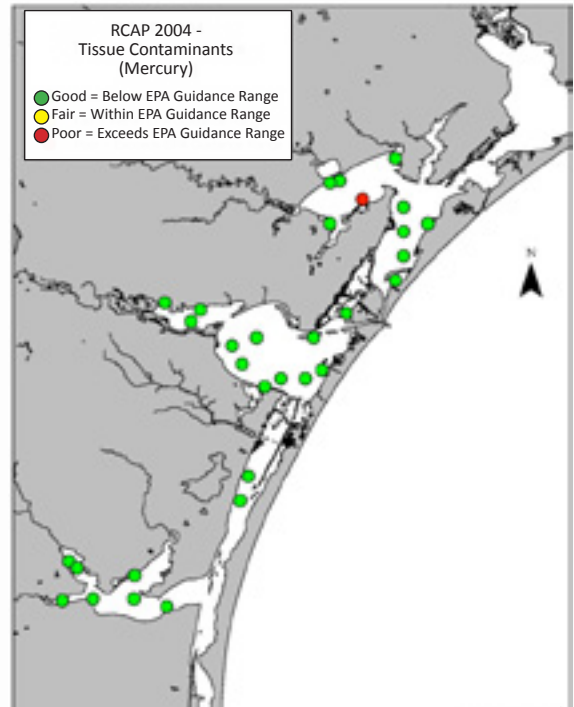
Data collected during the RCAP indicate the Coastal Bend region ranks good, since most contaminants were non-detectable, or well below any applicable screening level. Only one site exceeded the maximum concentration range value (>0.23 ppm) for mercury. Results from past RCAP sampling events indicate most sites had very low concentrations of aluminum, chromium, mercury, and iron. A limited amount of nickel, lead, and selenium followed by zinc and copper occurred at some locations, while many sites resulted in metals concentration values that were non-detectable.

In 2005 a study by TDSHS found oysters from Nueces Bay to have elevated zinc levels suggesting that regular or long-term consumption could result in systemic adverse health effects. Therefore, consumption of oysters from Nueces Bay constitutes a public health hazard.

The good news is that spotted seatrout, red drum, and blue crabs from Nueces Bay do not contain quantities in excess of TDSHS guidelines for protection of human health. Therefore, consumption of spotted seatrout, red drum, and blue crabs from Nueces Bay poses no apparent public health hazard.

All PCB concentrations were well below screening levels. Detectable concentrations of DDT occurred at three sites. As seen with PCB, the highest DDT values were below screening levels. Total chlorinated pesticides, other than DDT, registered in whole-body tissue samples at one site in the Baffin Bay Complex, and consisted of small detectable amounts of lindane. No detectable concentrations of PAHs occurred in any of the 31 sites sampled.

Overall levels of fish tissue contamination in the Coastal Bend region are relatively low and consumption of fish is safe as long as consumption rates of fish follow the TDSHS guidelines.



EPA National Coastal Assessment guidelines for assessing fish tissue contaminants, by site (USEPA 2004).

Rating	Fish Tissue Contaminant Guidelines
Good	The index score falls below the range of the guidance criteria for a risk-based consumption associated with four 8-ounce meals per month.
Fair	The index score falls within the range of the guidance criteria for a risk-based consumption associated with four 8-ounce meals per month.
Poor	The index score exceeds the maximum value of the range of the guidance criteria for a risk-based consumption associated with four 8-ounce meals per month.

### IV. REFERENCES

- Environmental Protection Agency. 2004 National Coastal Condition Report II. EPA/620/R-03/002 Office of Research and Development and Office of Water, Washington D.C. 285 pp.
- Environmental Protection Agency. June 2007. NEP Coastal Conditions Report: CBBEP region. 12 pp.
- Nicolau, B. and A. Nuñez. October 2006. Regional Coastal Assessment Program 2004. Coastal Bend Bays and Estuaries Program. 119 pp.
- Texas Department of State Health Services. August 2005. Characterization of Potential Health Risks Associated with Consumption of Fish and Shellfish from Nueces Bay, Coastal Bend Bays and Estuaries Program. 30 pp.



## INDICATOR #4: Seafood consumption advisories.

Condition/Trend: Good/Stable

Good



### I. BACKGROUND

A consumption advisory is a recommendation to limit consumption to specified quantities, species, and sizes of fish due to harmful contaminants associated with the seafood in question. The TDSHS is responsible for accumulating information on contaminated fish and shellfish, and for advising the general public when contamination of a certain species used as a food source has exceeded safe eating levels. The TDSHS has two levels of advisories, the first being a consumption advisory which is posted when there is a possibility of fish or shellfish contamination. The second level is a consumption ban where possession and consumption of fish and/or shellfish from a particular area is prohibited. When a water body is tested and levels of contamination are below harmful levels, the water body is taken off of the advisory list.

### II. CONCERNS

The status of shellfish-growing waters in Texas estuaries is subject to change by the TDSHS at any time based on monitoring results. Degraded conditions may be due to high rainfall and runoff, flooding, hurricanes and other extreme weather conditions, major spills, red tide, or the failure or inefficient operation of wastewater treatment facilities. Consumption advisories and bans are important in order to keep the public safe from consuming contaminated seafood.



King Mackerel



### III. LOCAL LEVELS

A review of the consumption advisories by TDSHS for the Coastal Bend bays reveals that consumption of all sport fishes such as spotted seatrout, red drum, and Atlantic croaker are safe to eat. However, shellfish advisories differ from fish advisories and are explained in the next section (Indicator #5).

Nearshore, along the Texas Coastal Bend, king mackerel should not be eaten if greater than 43 inches in length due to high levels of mercury. For king mackerel 37-43 inches, adults should limit consumption to one, 8-ounce portion per week, and women in child bearing years and children should limit consumption to one, 8-ounce portion per month. King mackerel under 37 inches is safe to eat.

### IV. REFERENCES

- National Marine Fisheries Services. October 2009. King Mackerel. [http://www.nmfs.noaa.gov/fishwatch/species/king\\_mack.htm](http://www.nmfs.noaa.gov/fishwatch/species/king_mack.htm)
- Texas Department of State Health Services. Survey Information – Current Advisories, Bans, and Rescinded Orders. <http://www.dshs.state.tx.us/seafood/Survey.shtm>
- Texas Parks and Wildlife Department. February 2010. Fish Consumption Bans and Advisories. [http://www.tpwd.state.tx.us/publications/annual/fish/consumption\\_bans/](http://www.tpwd.state.tx.us/publications/annual/fish/consumption_bans/)

## INDICATOR #5: Shellfish harvesting areas.

Condition/Trend: Good/Degrading

Improvement  
Needed



### I. BACKGROUND

The TDSHS is also responsible for providing the public with maps and written locations where fish and shellfish contaminations have been found, and areas that are off limits for harvesting. In waters with consumption bans, possession and consumption of fish and/or shellfish is prohibited, only catch and release fishing from these areas is allowed.

### II. CONCERNS

Molluscan shellfish are defined by TDSHS as oysters, clams, and mussels and pose risks that are different from fish and crabs. Because molluscan shellfish are filter feeders and are often eaten raw, a special program has been developed to reduce risk to consumers. Molluscan shellfish harvest areas are classified on shellfish harvest maps indicating areas that are approved, conditionally approved, restricted, or prohibited for harvest. Restricted and prohibited areas are classified as such based on levels of fecal pollution, human pathogens, or contaminants.

*Classification of Shellfish Harvesting Areas of Corpus Christi and Nueces Bays*



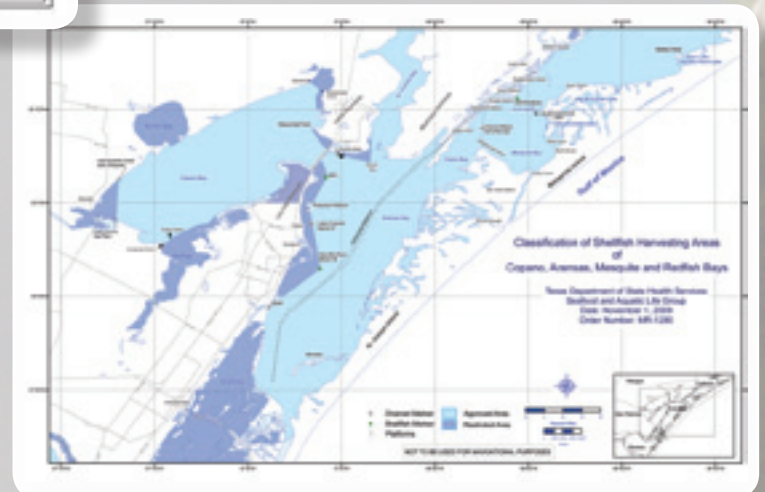
*Locations shaded in dark blue are restricted areas.*

### III. LOCAL LEVELS

Consumption advisories for shellfish are mapped by TDSHS and include: Nueces Bay, Redfish Bay, Mission Bay, Port Bay, portions of San Antonio Bay, portions of Aransas Bay, portions of Corpus Christi Bay, portions of the Upper Laguna Madre, and portions of Copano Bay.

Shellfish, such as oysters, are not safe to eat in the majority of the Coastal Bend bays due to high levels of bacteria. Often, bacteria levels are increased after heavy rain events.

TDSHS issues a marine order to classify areas as restricted or prohibited. Before harvesting molluscan shellfish, individuals should have a current shellfish classification map and determine the status of the approved and conditionally approved harvest areas. The current status of shellfish harvesting areas may be obtained from your local Texas Parks and Wildlife office by calling toll-free 1-800-685-0361, or by downloading the current maps from the TDSHS website at: <http://www.dshs.state.tx.us/seafood/Classification.shtm>.



*Classification of Shellfish Harvesting Areas of Copano, Aransas, Mesquite and Redfish Bays*

### IV. REFERENCES

- Texas Department of State Health Services. October 2009. Classification Information. <http://www.dshs.state.tx.us/seafood/classification.shtm>