Assessing Seafood Safety After the 2010 Gulf of Mexico Oil Spill

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The Deepwater Horizon

- April 20 to July 15, 2010
- 196 x 10^6 gallons of oil
- Most state waters (shore to 3 miles) and 88,522 sq. miles federal waters closed to fishing

Media Attention & the Perception

Who is in Charge?

- NOAA/ NMFS- seafood > 3 miles from shore
- LA DWF/ DHH- seafood inside 3 miles
- FDA/ DHH/ LDAF- landed seafood, docks & processors
- FDA- interstate commerce
- LDAF/ DHH- intrastate commerce

What Happened?

- Oil sheen at surface plus buffer-closed to harvesting
- Because a petrochemical taint renders seafood unfit for human consumption AND/ polycyclic aromatic hydrocarbons (PAHs) are chemical contaminant

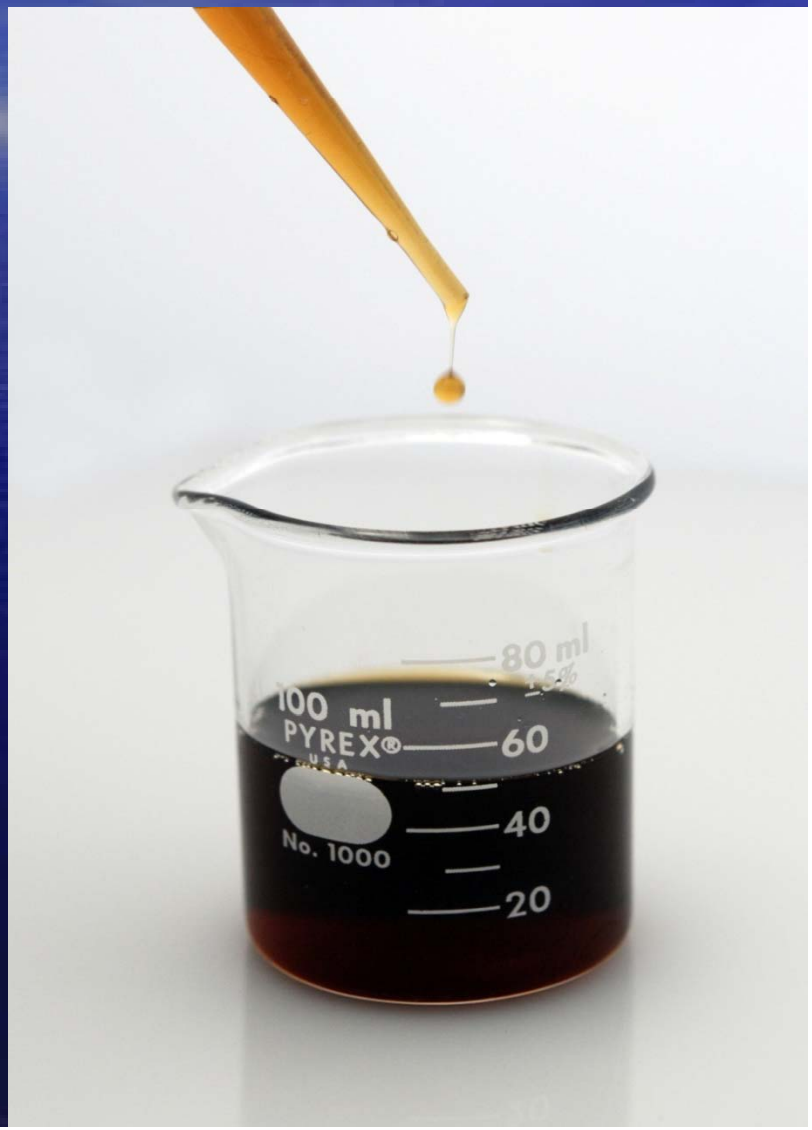
Assessing Seafood Safety

- First line of defense: sensory evaluation
- Seafood rejected if a petrochemical odor is detected at the point of harvest
- No odor: representative samples sent to NMFS in Pascagoula, MS for sensory evaluation by a trained panel.

Can we smell the petrochemical?

Markers of Oil Taint

Polycylic aromatic hydrocarbons (PAHs); can be smelled in the headspace at a level of 10 ppm by field inspectors



Sensory Evaluation

- Techniques to detect PAHs developed >40 years ago
- Rapid method allowing large scale screening
- Permits targeting of appropriate samples for chemical analysis

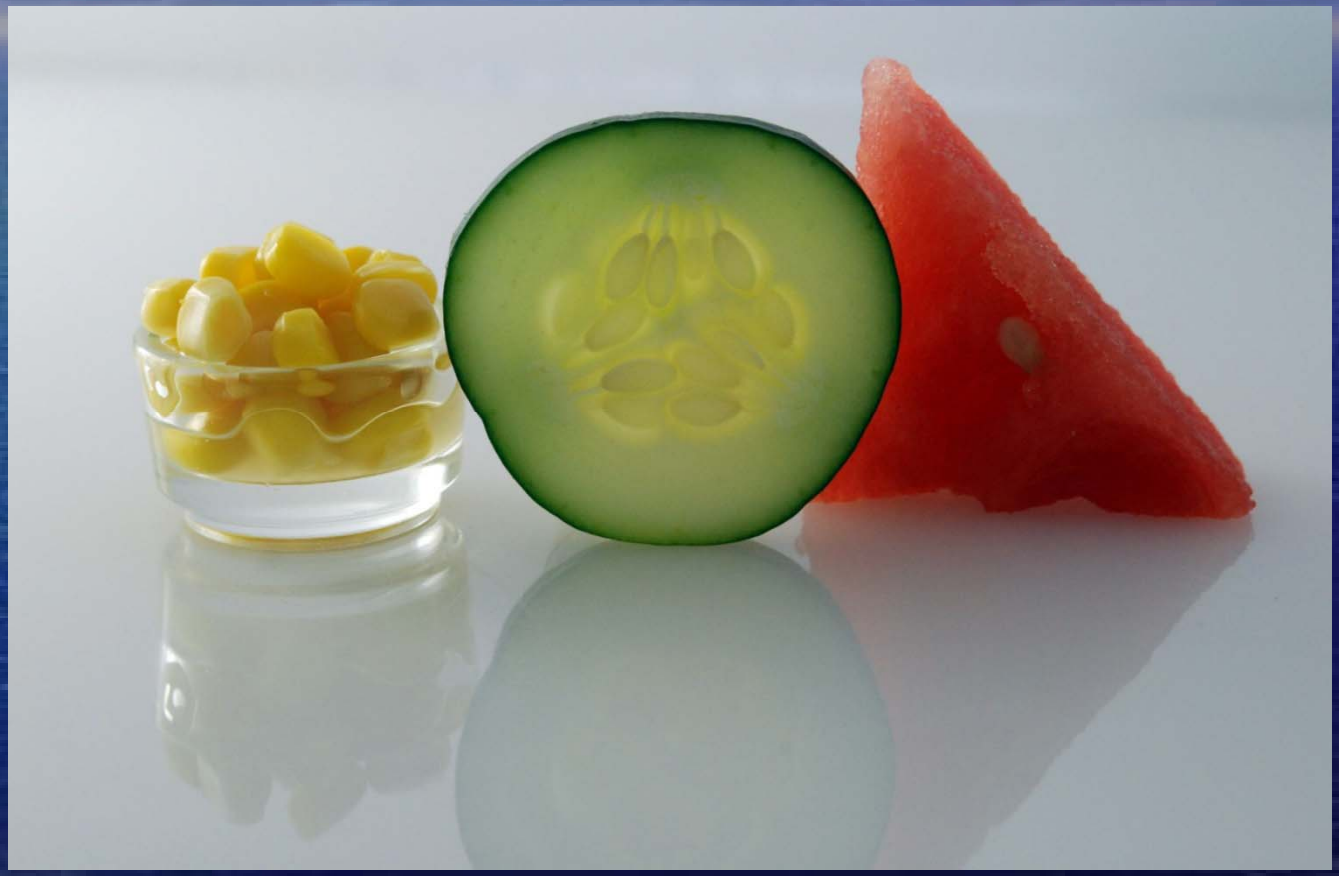
How Sensory Evaluation Works

- Napthalenes (2 ring compounds) dominate PAHs in crude and diesel oils
- Are highly odiferous and downright noxious
- Are water soluble and taint occurs rapidly (30 minutes in a laboratory setting)
- Scottish researchers have been trained to detect to the parts per billion

The Trained Sensory Panel

- Seven trained NMFS/FDA panelists
- Able to detect to 1 ppm PAH contamination
- Highly specific protocol often erroneously reported by skeptics of seafood safety

Freshening the Palate

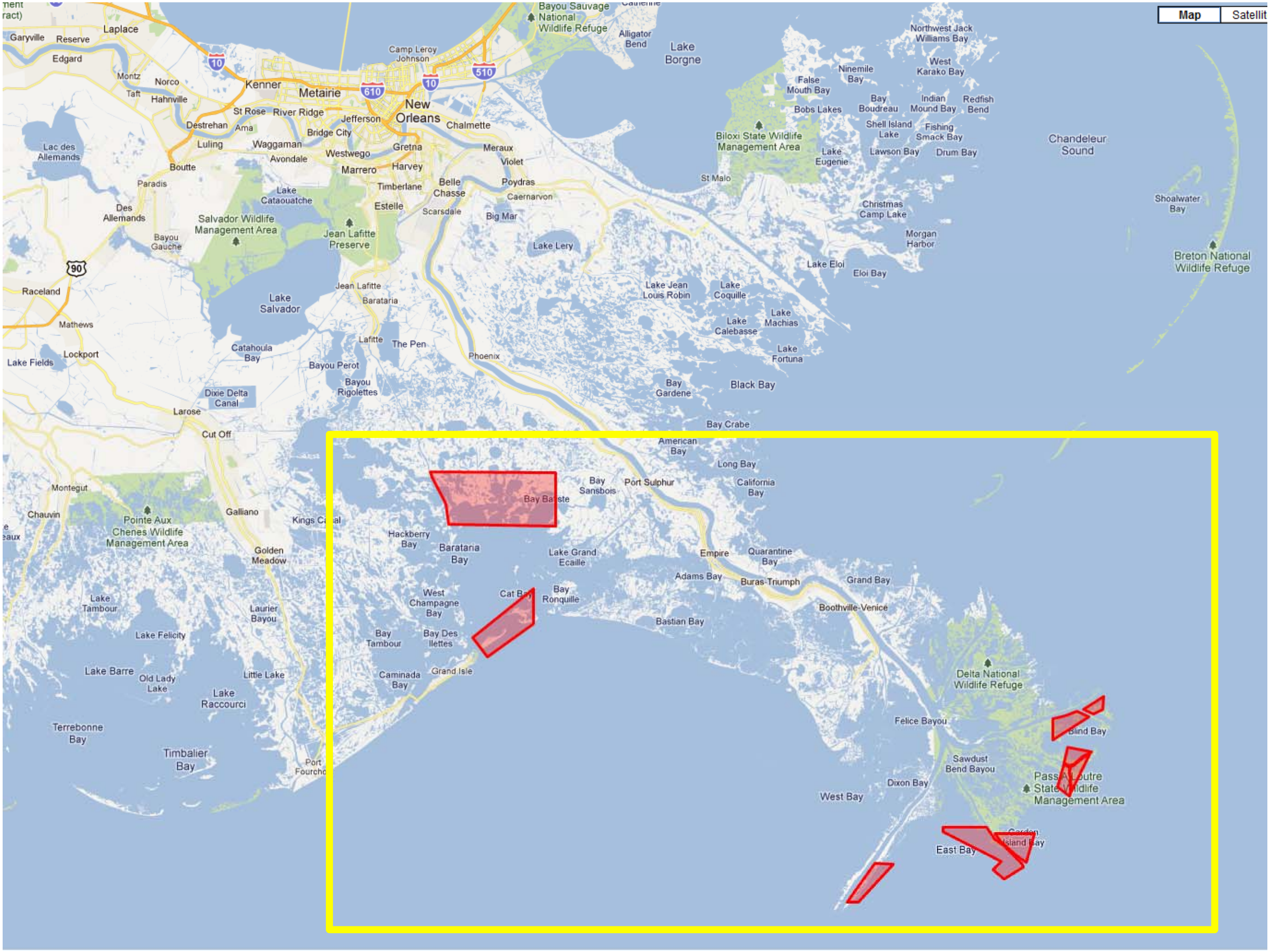


The Process

- Samples have to be considered free of taint by 5 of the 7 panelists for the “sniff test”
- Samples with a pass are divided: half are cooked and subjected to “sniff testing” followed by tasting. The second half is sent for chemical analysis

Re-opening Waters to Harvest

- Repeat samples of species harvested in area are tested; water surface and water column evaluated for absence of petrochemical
- Re-openings may be species specific
- April, 2011, all federal waters were re-opened.


Map
Laplace
Garyville
Reserve
Edgard
Montz
Norco
Taft
Hahnville
Kenner
Metairie
New Orleans
Camp Leroy Johnson
Bayou Sauvage National Wildlife Refuge
Alligator Bend
Lake Borgne
Chalmette
St Rose
River Ridge
Jefferson
Destrehan
Ama
Bridge City
Luling
Waggaman
Westwego
Gretna
Meraux
Avondale
Lac des Allemands
Boutte
Marrero
Harvey
Violet
Paradis
Timberlane
Belle Chasse
Poydras
Lake Cataouatche
Estelle
Caernarvon
Des Allemands
Salvador Wildlife Management Area
Scarsdale
Big Mar
Bayou Gauche
Jean Lafitte Preserve
Lake Lery
90
Raceland
Jean Lafitte
Barataria
Lake Salvador
Mathews
Lafitte
The Pen
Catahoula Bay
Lockport
Lake Fields
Bayou Perot
Phoenix
Bayou Rigolettes
Dixie Delta Canal
Larose
Cut Off
Montegut
Chauvin
Galliano
Pointe Aux Chenes Wildlife Management Area
Golden Meadow
Lake Tambour
Laurier Bayou
Lake Felicity
Lake Barre
Old Lady Lake
Little Lake
Lake Raccourci
Terrebonne Bay
Timbalier Bay
Biloxi State Wildlife Management Area
St Malo
Northwest Jack Williams Bay
West Karako Bay
Ninemile Bay
False Mouth Bay
Bay Boudreau
Indian Mound Bay
Redfish Bend
Bobs Lakes
Shell Island Lake
Fishing Smack Bay
Lake Eugenie
Lawson Bay
Drum Bay
Chandeleur Sound
Christmas Camp Lake
Morgan Harbor
Shoalwater Bay
Breton National Wildlife Refuge
Lake Eloi
Eloi Bay
Lake Jean Louis Robin
Lake Coquille
Lake Machias
Lake Calebasse
Lake Fortuna
Bay Gardene
Black Bay
Bay Crabe
American Bay
Long Bay
Bay Sansbois
Port Sulphur
California Bay
Hackberry Bay
Barataria Bay
Lake Grand Ecaille
Empire
Quarantine Bay
Adams Bay
Buras-Triumph
Grand Bay
West Champagne Bay
Bay Ronquille
Boothville-Venice
Bastian Bay
Bay Tambour
Bay Des Ilettes
Caminada Bay
Grand Isle
Delta National Wildlife Refuge
Felice Bayou
Blind Bay
Sawdust Bend Bayou
Dixon Bay
West Bay
East Bay

True or False?

- PAHs are part of our everyday life

True!

- The EPA has estimated that we are exposed to 3 mg of PAHs each day.
- Tobacco smoke, wood smoke, automobile exhuast, pumping gasoline
- 29% are from breads, cereals and grains
- 21% are from barbequed and smoked foods
- 1 microgram per pound of food we eat

True or False?

- The active ingredient in Corexit, the dispersant, is permitted for use in foods.

True!

- Title 21 of the Code of Federal Regulations (Federal food regulations) 172.810 states that sodium dioctyl sulfosuccinate (DOSS) is permitted in gelatin based products at a level up to 15 ppm; dry beverage bases and fruit juices up to 10 ppm and in noncarbonated cocoa beverages to a level of 25 ppm.

True or False?

- The FDA drew upon the resources and expertise of numerous agencies.

True!

- NMFS/NOAA had the protocol in place for petrochemical detection.
- EPA had developed levels of exposure for non-cancer risk.
- CDC's standard benchmark of 1:100,000 which is the definition of "adequate surveillance" was used to develop risk assessment.
- USDA data was used to define the 90th percentile of seafood consumption

True or False?

- The U.S. Food and Drug Administration (FDA) provided adequate protections to the consumer.

True!

- Estimates included seafood consumption at 16.4 meals per month.

In Conclusion

- 63 pounds of shrimp;
- 5 pounds of oyster meats OR
- 9 pounds of finfish
- Would have to be consumed each day for 5 years to approach a concern for adverse health effect.