Gulf of Mexico Alliance, Action Plan II
Candidate Action Items, *Summary*
Water Quality Priority Issue Team

Harmful Algal Blooms (HABs)

Goals:

- Improve harmful algal bloom detection and forecasting in the U.S. and Mexican States surrounding the Gulf of Mexico and provide information necessary for coastal managers to distribute warnings in a timely manner.
- Reduce the human and environmental impacts of harmful algal blooms through increased understanding of harmful algal bloom organisms and their impacts
- Reduce the human and environmental impacts of harmful algal blooms through development and implementation of effective prevention, control and mitigation methods and efforts

Actions:

1. Better understand harmful algal bloom ecology and toxicology to both identify environmental conditions promoting blooms of harmful algal species and to identify potential management control actions.
2. Provide decision-making information and data to coastal managers to allow for the amelioration or minimization of harmful algal bloom impacts.
3. Improve harmful algal bloom species and toxin detection technologies to provide decision-making information to coastal managers .
4. Improve the capabilities of Gulf-wide monitoring networks to provide the information needed for local coastal managers, recognizing that many HAB events are significant at both local and Gulf-wide scales.
5. Increase communication among those involved in harmful algal bloom-related monitoring and decision making and provide training opportunities to improve management of resources.
6. Develop methods and technologies for the prevention, control and mitigation of harmful algal blooms and their impacts.
7. Better understand harmful algal bloom effects on human health.

Why do this?

- *Fill in at All-Hands meeting*

Results at the end of five years:

- Improved timeliness and accuracy of bloom detection and monitoring and forecasting networks in place to alert public-health managers, natural-resource managers, local governments, and the public.
- A public more knowledgeable about harmful algal blooms and their causes and impacts, including effects on human and environmental health.

Pathogens

Goal:

- Protect human health by improving coastal water-quality management

Actions:

1. Improve the methodology used to identify areas that are impaired by pathogens and to track sources of pathogens.
2. Improve our understanding of sources of pathogens and their risks to human health—including survival in ambient conditions—by building on existing efforts.
3. Provide Coastal Managers with information to make better informed health and resource-management decisions.
4. Better understand *Vibrio* bacteria ecology and health risks.

Why do this?

- *Fill in at All-Hands meeting*

Results at the end of five years:

- Methods for near real-time detection of pathogen (or pathogen indicator) are identified that can allow resource managers to more rapidly and accurately assess potential risks to recreational users of coastal waters.
- Better understanding of human health risks associated with swimming-related exposure to different sources of fecal contamination (human vs. non-human).
- An understanding of how pathogen indicators currently being developed relate to health effects at beach and shellfish harvesting waters.
- Improved water-quality models for generating beach notifications and advisories/closures.
- Better understanding of the incidence of *Vibrio*-caused disease and the factors affecting the distribution of *Vibrio* species in the Gulf of Mexico.

Monitoring and Other Water Quality

Goal:

- To provide information about coastal water-resource status and trends that support informed management decisions.

Actions:

1. Improve data comparability across the Gulf of Mexico
2. Improve water-resource monitoring networks
3. Coordinate the collection of information about monitoring systems and the management of that information across the Gulf of Mexico.
4. Develop management tools that inform decision makers about existing water-quality conditions and potential changes that could result from development decisions.
5. Increase the amount of water quality data available to properly manage resources
6. Improve the knowledge base needed to properly manage or reduce nutrients in coastal waters (in collaboration with other Priority Issue Teams)
7. Improve the understanding of ambient dissolved oxygen concentrations and their effect on living resources (in collaboration with Nutrients Team)
8. Identify specific wastewater and stormwater disposal alternatives which would benefit water quality
9. Identify potential water quality improvements which could occur as a result of habitat restoration.

Why do this?

- *Fill in at All-Hands meeting*

Results at the end of five years:

- An integrated, collaborative monitoring system exists that provides data on the coastal and offshore Gulf of Mexico water resources.
- Improved management of coastal resources.
- Improved data comparability across the Gulf of Mexico.
- Biological indicators are available that assist in water-quality and water-resource management decisions.

Mercury and Other Contaminants

Goals:

- Better our understanding of mercury and other contaminants in the environment, their potential risks to human health and the ecosystem and to distribute that information to the appropriate groups.
- Identify the major sources of mercury ending up in Gulf of Mexico seafood.

Actions:

1. Establish and regularly update our understanding of how mercury cycles in the Gulf of Mexico and define research priorities to improve that understanding.
2. Quantify the major input pathways for mercury to the Gulf of Mexico to allow creation of mercury-cycling models that predict mercury levels in fish and shellfish (in collaboration with Nutrients PIT).
3. Determine where mercury methylation occurs and what processes govern its occurrence
4. Determine how and where methylmercury enters into the food webs and bioaccumulates in fish (in collaboration with Nutrients PIT)
5. Better our understanding of mercury effects on key non-fishery species (e.g., whales and dolphins, seabirds).
6. Better our understanding of other significant contaminants in the Gulf of Mexico and how to reduce health risks to humans and aquatic organisms.
7. Communicate information about mercury and other seafood contaminants having human-health effects to fishermen, seafood distributors, and the public (in collaboration with Education PIT).

Why do this?

- *Fill in at All-Hands meeting*

Results at the end of five years:

- Reduced human exposure to mercury and other contaminants in the Gulf of Mexico seafood supply.
- Information provided to consumers that guides them in safely consuming Gulf of Mexico seafood products.
- Fishermen and seafood distributers better understand how to evaluate and ensure the consumer safety of the seafood they harvest and process.
- Effective regulation of mercury inputs is possible as a result of identifying the sources of mercury ending up in Gulf of Mexico seafood.