

**Request for Report for Projects Awarded in 2013 and 2014 by  
Mississippi Center for Food Safety and Post-Harvest Technology**

**Title:** *Detection and characterization of chemical residues in major crops, live stocks and aquatic foods produced in Mississippi*

**Award year:** *FY 2014*

**PI:** *Wen-Hsing Cheng*

**Co-PI:**

**Collaborator:** *Drs. Zee Haque, Barakat Mahmond, Dipaloke Mukherjee*

1. Objectives.  
*The survey of heavy metals in seafood and major aquaculture products in Mississippi was planned to be carried out in FY2014.*
2. New Accomplishments toward objectives. Please indicate if all objectives listed were completed.
3. Objectives not accomplished and impediments to meeting objectives.  
*See below to respond both items 2 and 3.*

	Progress	Limitations
ICP-MS	Installed on Jan 2015 but not ready up and running	Duck pipe sending toxic gas outside that is not installed
HPLC	Installed and ready	
Hood	Installed on Feb 2015 and ready	
MARS6	Installed on Mar 2015 but need final on-site training from supplier	Need to hook up with a hood

4. If continuing project, when will new and/or long term objectives be completed?  
*FY 2017 (a 3 year project).*
5. Students supported
  - a. PhDs (% FTE and name): *100%, Li Zhang*
  - b. M.S. (% FTE and name)
  - c. Undergraduate (number of students)
6. Leveraged Funds: External Competitive Funding Applied and Awarded based on findings from this project.

- a. Applied for:
    - i. Funding agency: NOAA
    - ii. Program: Sea Grant Aquaculture Research Program 2014
    - iii. Funding request (\$\$): \$125,000 (federal).
    - iv. Outcome: declined
  - b. Awarded:
    - i. Funding agency
    - ii. Program
    - iii. Funding awarded (\$\$)
7. Outputs – In addition to the above, please populate the following sections to be included in a report to be compiled in a FSI Research Accomplishment Booklet. The project report will also be posted in a FSI website to be developed.

**Please submit reports in Microsoft Word Document (except the published journal articles in pdf format) to Ms. Kaila Peggs by May 15.**

### **Project Summary (Issue/Response)**

In this box type 300—400 word project summary in 10 pt font.

*Aquaculture and seafood industry along the Gulf coast of Mississippi and Alabama is vital for local regional economy. Nonetheless, public concern exists due to chemical residues following the BP spill in the Gulf of Mexico since April 2010 and from the Mississippi River and others that run into the Gulf. A key question both regulatory agencies and the consumers will ask is how safe our seafood is. Current food safety studies focus on foodborne illness due to bacterial outbreaks and biological toxicants, but the issues of chemical residues on seafood safety is surprisingly less understood. The coastal area includes the Mobile Bay estuary with the sixth largest watershed in the nation, the fourth largest river discharge, Mississippi Sound, barrier islands, and Perdido Bay. Chemical residues, including organic pesticides and heavy metals, may accumulate in the seafood and seafood products. The term "pesticides" is an umbrella term that includes any product used to kill pest organisms, including herbicides (for weeds), fungicides (for plant diseases), insecticides (for insects), rodenticides (for rodents), etc. Heavy metals are a group of loosely defined group of elements. As detailed below and in full proposal, a fast method and a comprehensive survey of major chemical residues in local seafood from the Gulf, such as shrimp, oyster, crabs, and amberjack are not available. Therefore, there is a timely and critical need for the industry, government agencies and consumers to understand the safety issues of seafood from the Gulf.*

### **Project Results/Outcomes**

In this box type 500—750 word summary of project results/outcomes.

*Rapid and efficient analyses of many elements (nutrients and heavy metals) of foodstuffs will be developed. Upon completing of the survey of the content of mineral nutrients, heavy metals and organic pesticides in the major commodity products produced in Mississippi, we can acquire valuable and needed reference levels of these chemicals as compared to national standard. After executing the proposed experiments, we will provide the essential*

*data the general public is very interested in concerning chemical residues we consumed, as well as to profiling all the chemical residues in all the commodity products of Mississippi.*

## **Project Impacts/Benefits**

In this box type 250—300 words project Impacts/Benefits statement.

*Chemical residue is a critical area of food safety that is sometimes ignored. The etiology of diabetes and obesity is thought to be associated with trace elements attributed to diet, life style and environment. Considering the extremely high obesity and diabetes rates and the location downstream of the Mississippi River in the State of Mississippi, dietary intake of trace elements originally from the environment, including soil, water and air, may have tremendous impact of our health. Surprisingly, comprehensive data on this area of critical public concern are not available. This can provide answers as to whether the link between chemical residues and chronic disease exist.*

## **Project Deliverables**

In this box list complete citations for all publications, presentations, workshops, field days, and other deliverables that came out of this project. Please use the following style (J. of Food Sci):

*None*

## **Graphics**

Include one or two graphics (picture or figure, colored preferred) that illustrate project outcomes. Please make sure you provide labels and appropriate units for all dimensions, and a title with a brief explanation for each figure/graph.

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## **Attached Refereed Journal Publications in Separate Files**

Please attached published journal articles (in pdf format if available) for this project. Manuscripts

accepted or in review process may be submitted in word files. Thank you very much for your cooperation.

*None*