

Pacific Shellfish Institute *Project experience and capabilities*

USDA: Characterization of the Cadmium Health Risk, Concentration and Ways to Minimize Cadmium Residues in Shellfish

Purpose or Scope

This project was designed to study spatial and temporal distribution of cadmium in commercially important west coast molluscan shellfish, evaluate the human health risk to consumers, economic risk to industry and methods to minimize cadmium residues in shellfish products marketed to consumers. Outreach to the industry provided crucial information on geographic regions with high cadmium concentrations and appropriate culture methods, species and husbandry practices that can be utilized to minimize cadmium residues. The results of this research also provided crucial information to USFDA and the Interstate Shellfish Sanitation Conference (ISSC) for inputting into the international Codex deliberations.

Approach

The overall approach was to: 1) Complete a comprehensive sampling effort of cadmium concentrations in molluscan shellfish throughout U.S. west coast growing areas; 2) define geographic locations, culture methods, shellfish species, harvest times and additional factors that affect cadmium concentrations in an effort to minimize cadmium residues in shellfish products; 3) identify the public health risk of cadmium in shellfish as well as the economic risk to the oyster industry given the proposed 1 µg/g ML standard; 4) conduct a preliminary risk assessment and toxicity modeling based on data collected in this study and validated models and approaches from the literature in order to estimate human health risk from consumption of west coast oysters; and 5) provide outreach and extension services to the shellfish industry, regulatory agencies, high risk consumer groups, and the scientific community.

Progress

Comprehensive sampling to determine cadmium concentrations in Pacific oysters was conducted along the Pacific west coast. This was followed up with seasonal sampling at selected sites for to assess levels of cadmium and arsenic in oyster tissues, sediments and water samples. The results are currently being analyzed. Sampling will continue every four months to examine seasonal variation in cadmium concentrations within oysters and study ways to minimize residues in shellfish products. Work will also continue on an in-depth literature review and assessment of the human health risk associated with varying levels of cadmium in oysters and other shellfish.

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