

FISH TISSUE PERFORMANCE EVALUATION STANDARDS FOR PCDD, PCDF AND COPLANAR PCB ANALYSIS FROM AN INTERNATIONAL, INTERLABORATORY STUDY.

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An international, interlaboratory study provided consensus values for three fish tissue homogenates. These novel materials provide QA/QC reference standards for on-going analytical programs and a tool for new method development.

The principal objective of this study was to produce three real-world matrix materials (fish) having the following characteristics;

- 1) Clean Natural Matrix Reference Material (fish); Gathered in clean waters, having a history of sustaining relatively untainted fish.
- 2) Contaminated Natural Matrix Reference Material (fish); Gathered from a relatively polluted Great Lakes region.
- 3) Fortified Natural Matrix Reference Material (fish); A clean material spiked with known amounts of 17 PCDDs and PCDFs as well as three coplanar PCBs (IUPAC #s 77, 126, 169).

with consensus values for PCDDs, PCDFs, and coplanar PCBs from an international, interlaboratory study.

The Data Quality Objectives (DQOs) of the study Included:

*Identity and traceability of the analytes

*Demonstration of homogeneity of the material

*Assurance of on-going stability and

*Assignment of reproducible consensus values for target analytes.

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The purity, identity and traceability of the PCDDs and PCDFs have been produced, validated and previously reported¹. The fish were collected and sent whole (with the exception of the Great Lake fish which were gutted) to a processing plant. A slurry was produced by comminuting the fish four times. The fortified material was spiked with known amounts of the target analytes at this point. The resulting slurries were processed four times in a standard commercial homogenizer. The materials were then ampouled under a nitrogen flush, sealed and thermally processed on a steam retort to stabilize the homogenates.

The fish tissues were sampled and analyzed at three points during the packaging run (early, middle and late) to ensure homogeneous mixing. These three samples were analyzed at three different facilities. No significant changes were noted at the various processing points.

On-going stability studies are in place to monitor degradation or other variances in the materials. This program will be in place as long as the materials are available. Thus far, no stability problems have been encountered.

The international, interlaboratory study consisted of 18 laboratories from 5 countries on 3 continents. The labs were asked to perform PCDD, PCDF and co-planar PCB analysis. Consensus values were obtained as well as standard deviations.

Cambridge Isotope Laboratories, in cooperation with Radian Corporation and the Canadian Department of Fisheries and Oceans present these materials, prepared using strict QA/QC protocols, having verified homogeneity, monitoring stability and with assigned consensus values from an international, interlaboratory study for commercial use.

¹Bradley, J.C., Nichols, A.W., et al, *Chemosphere* 1990, Vol 20, No.5, pp. 487-493.