## C19 Quality Assurance Elements for Environmental Analyses

*Catherine A. Sloan, BS*, Donald W. Brown, MS, and Margaret M. Krahn, PhD, NOAA Northwest Fisheries Science Center, 2725 Montlake Boulevard East, Seattle, WA 98112*

After attending this presentation, attendees will gain insight on how the results of the quality assurance for a study may determine how the analytical data can justifiably be used.

This presentation will impact the forensic community and/or humanity by demonstrating how the incorporation of appropriate quality assurance can ensure that the goals of an investigation can be met.

Attention to quality assurance for environmental analyses has grown over the last few decades due to the increasing necessity to document the extent to which reported data are suitable for their intended use. Analytical techniques have evolved to meet the demand for better data quality and documentation. However, quality assurance requirements and quality control measurements can vary widely depending on the specific project and the level of planning prior to the analyses. It is beneficial for data users to be familiar with the quality control measurements that are possible and the performance attainable for their study. This allows the data users to incorporate, prior to the production of the data, assurance that a desired level of quality can be demonstrated and maintained, and that the data generated will include the necessary documentation showing the data to be of known and acceptable quality.

The Environmental Conservation Division of the NOAA Northwest Fisheries Science Center analyzes marine biota and sediment to measure concentrations of polynuclear aromatic hydrocarbons and persistent organic pollutants as low as 0.2 ng/g wet weight, while maintaining documented, comprehensive quality assurance for accuracy, precision, representativeness, comparability and completeness. This is achieved by implementing internal policies designed to ensure that stringent, internal data quality objectives are met. These policies and quality assurance objectives will be presented, including specific elements of project planning and the laboratory's particular quality control measurements, their frequency, acceptance criteria and documentation. Innovative analytical techniques have been designed and incorporated in order to meet the laboratory's quality objectives and improve quality where possible. These include implementing procedures for increasing the stability of analytical instruments and determining the optimal method of instrument calibration. In addition, data quality and comparability have been shown to be affected by the choice and application of calibration standards and internal standards, and by the determination and use of quantitation limits. Related examples of situations that influence data quality or comparability and the corresponding documentation that data users may need will be discussed to illustrate how these factors may control how data use can be justified. The quality assurance concepts that will be presented can be extended to many types of analyses to help provide confidence that the goals of the investigation can be met.

**Quality Assurance, Quality Control Measurements, Documentation**

 ** Presenting Author*