Pace Analytical®

- All environmental matrices
- All biota: plants, fish, amphibians, birds and mammals
- Human fluids: blood serum, milk

CASE STUDY: FOX RIVER

Extensive biological and sediment sample analysis in support of the Fox River Environmental Resource Damage Assessment and subsequent Dredge/Remediation Project—performed by Pace Analytical's Green Bay Laboratory

BIOTA ANALYSIS

HISTORY

The Fox River, located in northeast Wisconsin, has supported various industrial interests for over a hundred years. Most notable are a number of paper mills which continue to populate the Fox River Valley. The paper mills along the river produced carbonless copy paper from 1954 until the early 1970s. This process involved the use of polychlorinated biphenyls (PCBs), which were discharged into the river along with other paper waste products for several decades. Much of the contaminant load ended up flowing into Green Bay and Lake Michigan, but a significant amount settled into the river sediments. Although PCB contaminated effluents have not been discharged into the river for over 25 years, releases from the sediment continue to contaminate fish and other organisms to this day.

CHALLENGE

It became necessary to measure and quantitate concentrations of PCB aroclors, PCB congeners, pesticides and metals in biological samples – including fish, birds, amphibians and invertebrates – to determine the levels of contamination, their bioavailability, and the impact these contaminants may have on the ecosystem. Extensive testing of the sediment was also necessary. This analytical work was complicated by the fact that the sediment samples contained high concentrations of organic material from agricultural activities and the paper industries along the river. This made the analysis of organic pollutants such as PCBs and pesticides more challenging, and it required the development of unique cleanup procedures to clearly isolate the target contaminants. The results from the sediment analyses needed to be very precise in order to correctly model areas of contamination used to develop remediation plans involving millions of dollars.

SOLUTION

Over the past ten years, hundreds of fish and other biological samples and thousands of sediment samples from the Fox River have been sent to the Green Bay laboratory for analysis of various contaminants. Pace has the facilities and expertise to prepare and analyze any kind of biological sample for a broad range of targeted contaminants. Since the samples from the Fox River had significant PCB contamination, a separation technique was employed to remove these compounds from the extracts analyzed for pesticides—a critical step in providing accurate results. In addition, Pace worked closely with the Wisconsin DNR to develop special methods to prepare and analyze the difficult sediment samples in order to meet project data requirements.

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BENEFIT

Data from the analysis of fish and other biological samples was used to support a Natural Resource Damage Assessment. In addition, analytical data from biota samples has been used to monitor contaminant concentration trends in the Fox River ecosystem. Data provided from the analyses of sediment samples was used to develop remediation and long term monitoring plans. Some of the areas of contamination have been deemed acutely harmful and are being dredged from the river. Other areas with lower contamination levels will be capped. These measures will reduce the level of harmful PCBs and other contaminants in the Fox River system and help restore it to its original condition. Pace Analytical continues to provide analytical support for these remediation activities and is proud to have played an important role in this undertaking.

For more information about our biota analysis services, contact us:
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