

Invited Abstract

## **NUTRIENT TREND RESULTS 1983-2000**

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From 1983 through 2000, the concentrations of nutrients in the open waters of the western, central, and eastern basins of Lake Erie were monitored by the U.S. EPA Great Lakes National Program Office. To illustrate changes in nutrient concentrations that occurred coincidentally with the Dreissena invasion of Lake Erie, the data were analyzed for the periods pre-Dreissena (1983 through 1988) and post-Dreissena (1990 through 2000).

Pre-Dreissena, median total phosphorus concentrations significantly decreased in each basin in Lake Erie, but they were below the water quality guidelines in all three basins only in 1988 and 1990. Post-Dreissena, no significant trend was observed for total phosphorus concentration in the western and eastern basins, but a significant increase was observed in the central basin. Pre-Dreissena Si concentrations were usually below 0.2mg/L in both the central and eastern basins, but Si concentrations exceeded 1mg/l in both basins post-Dreissena. There were no discernable pre- and post-Dreissena trends in total dissolved phosphorus and nitrite+nitrate in any of the Lake Erie basins.

Concentrations of chlorophyll-a increased significantly only in the western basin during the pre-Dreissena period, but post-Dreissena concentrations significantly decreased in all three basins.

Calculated rates of dissolved oxygen depletion exhibited a downward trend during the pre-Dreissena period, reaching their lowest rates in 1988 and 1989. There has been no further improvement post-Dreissena, however.

Calculations of annual external phosphorus loadings through 1995 demonstrate loadings were less than the 11,000 ton target, suggesting that external total phosphorus loads were in control.

Dreissena are implicated in these various changes in nutrient trends, but proof has not been established, and an understanding of the processes involved will require further investigation.