

CYANOWATER - Cyanotoxins in Fresh Waters, Advances in Analysis, Occurrence and Treatment

Co-funded by the European Social Fund and Greek national funds through The Operational Programme "Education and Lifelong Learning", Action ARISTEIA, 350 K€, Duration 36 months, Start date: 9/2012.

Coordinator: Dr Anastasia Hiskia, Researcher at NCSR DEMOKRITOS Rank A'
hiskia@chem.demokritos.gr

WP1 : Development of new advanced analytical methods for the determination of cyanotoxins in environmental samples.

Development of a multi-class cyanotoxin method of analysis, where cyanotoxins belonging to different chemical groups (microcystins, cylindrospermopsin, anatoxin-a, saxitoxins and BMAA) will be detected and quantified in a single analysis with use of LC-MS/MS.

WP2 : Identification of the toxin-producing cyanobacteria species in freshwater bodies.

Monitor the occurring and toxic bloom forming cyanobacteria in freshwaters which have high cyanotoxin diversity and/or density by combining the diversity by standard microscopic analysis and phylogenetic analysis after PCR amplification of the 16S rRNA gene with cyanobacterial-specific primers.



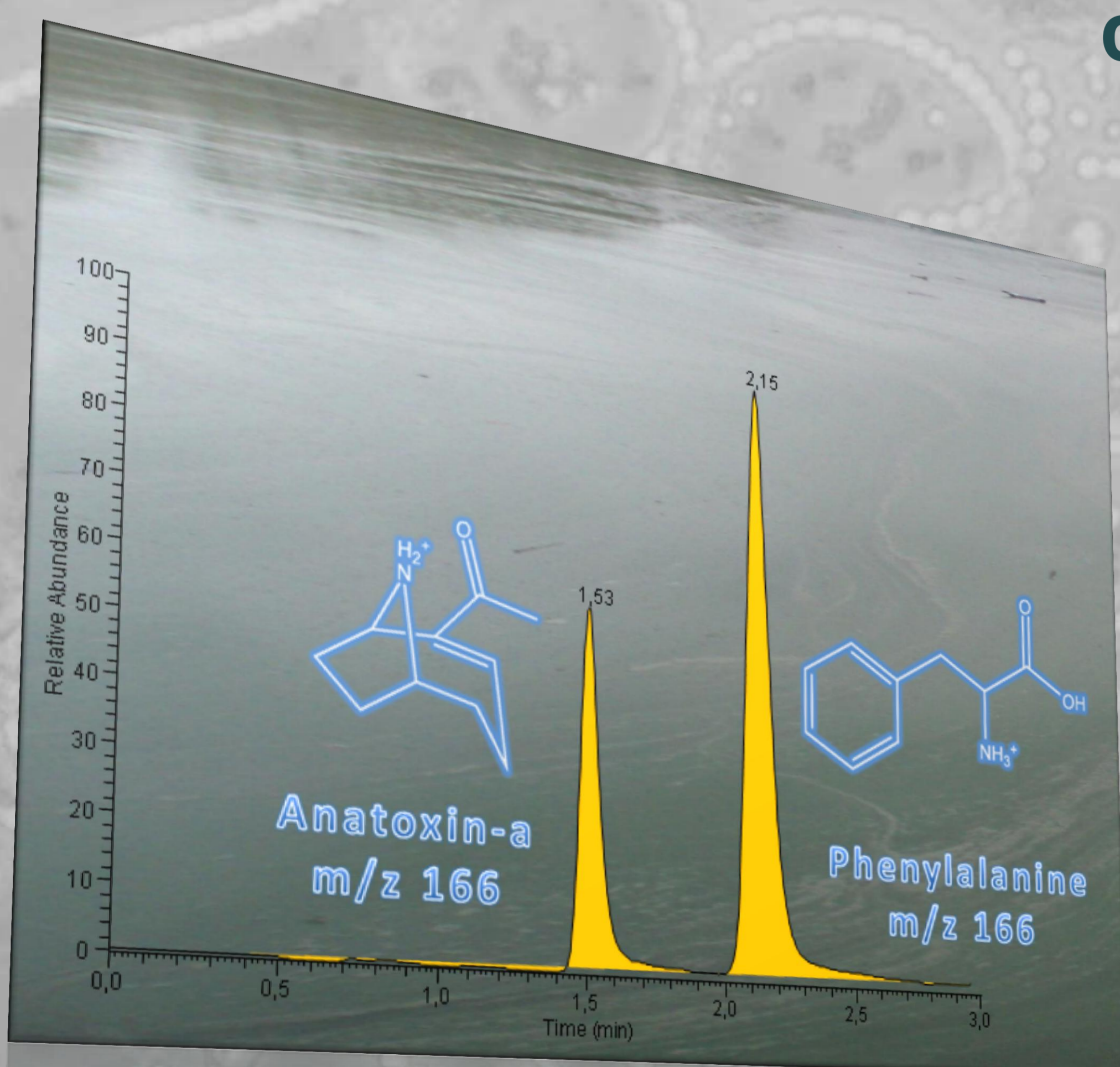
WP3 : Use of Advanced Oxidation Processes (AOPs) for the detoxification of water containing cyanotoxins.

Degradation/detoxification of cyanotoxins in water with use of AOPs based on the OH· radical, to include toxins that are not yet studied (anatoxin-a, BMAA, cylindrospermopsin, microcystins) or AOPs that have not yet been applied to cyanotoxins. Synthesis and characterization of novel hybrid Titanium Dioxide-Polyoxometalate (TiO₂-POM) nanocatalysts for the photocatalytic degradation of cyanotoxins and intermediate products identification during the process.

WP4 : Exploitation and dissemination of results.

Exploitation and dissemination the project's results to the research community, water authorities, policy makers and stakeholders in order to foster public health protection and better management of cyanobacteria and cyanotoxins.

Detection



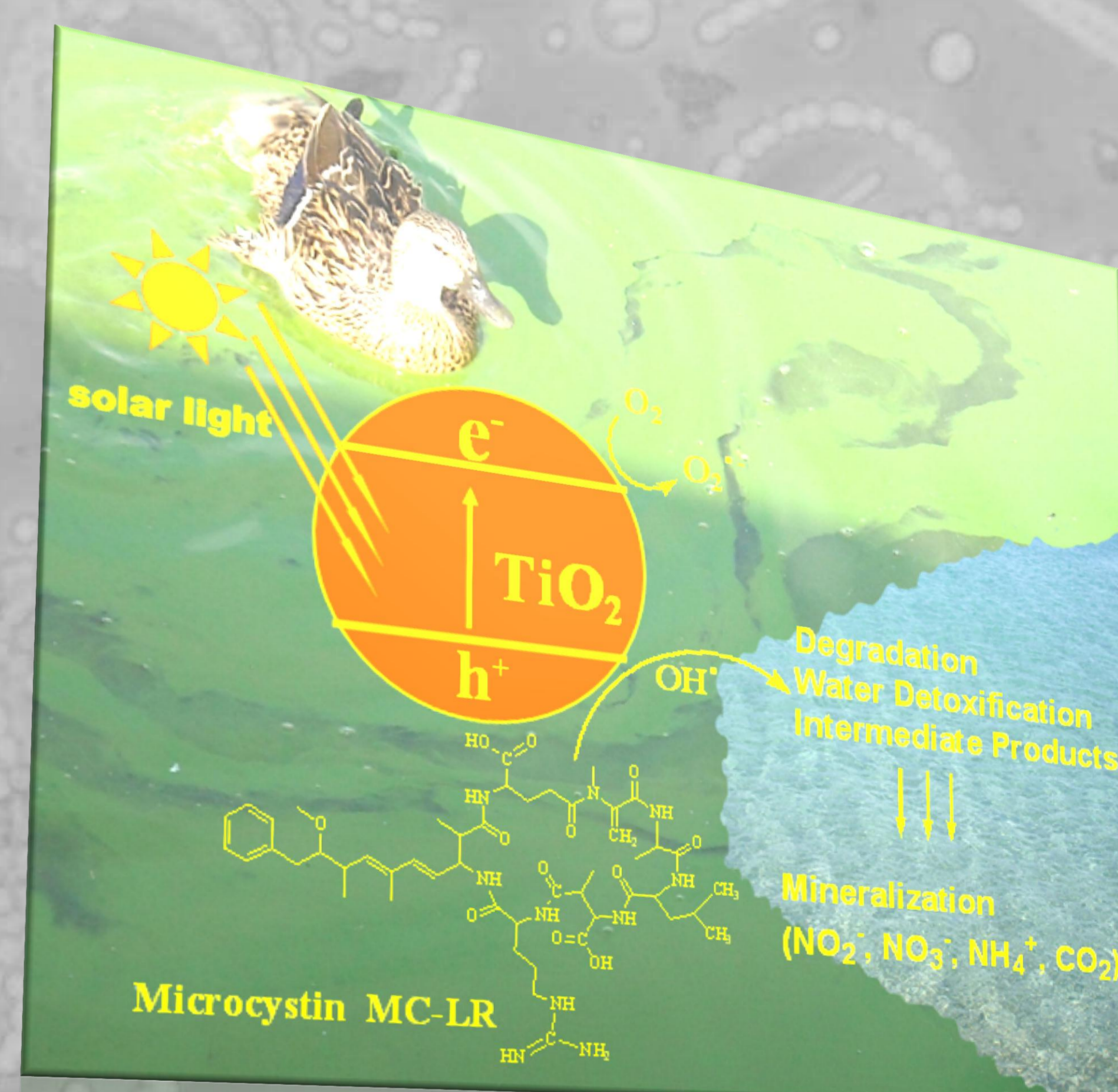
Novel Analytical Methods

Identification of toxin-producing cyanobacteria species in lakes



Microscopic analysis and phylogenetic analysis

Control



Advanced Water Treatment