BInd10: Biovolume of toxic/nuisance phytoplankton species

Quality element: Phytoplankton

Water category and water body types: Lakes, large rivers, transitional waters; except low alkalinity lake types (Northern Europe)

Selection rationale: Direct indicator of the functional quality of recreation and water supply services

Indicator type (DPSIR): State, Impact

Description: Many cyanobacterial species produce hazardous toxins, and high abundances of cyanobacteria threaten the use of recreational and drinking waters. In this regard the World Health Organisation established health risk thresholds for the densities of cyanobacteria in surface waters. Water retention time, water alkalinity and colour influence the presence of cyanobacteria, with low-alkalinity lakes particularly in Northern Europe naturally showing very low abundances of cyanobacteria. Nutrient enrichment, especially phosphorus, is responsible for cyanobacterial blooms, triggered by warmer and drier summer conditions. The biovolume of toxic/nuisance phytoplankton species is a direct indicator of the 'functional quality' of freshwater services regarding water supply and recreation.

Spatio-temporal scale: Growing season mean, representative for water body

Unit: $mm^3\ L^{-1}$

Standardisation: WHO thresholds for cyanobacteria

Data requirements: Field data

Other: none

MARS spatial scale: River-basin and European scale

Reference

Carvalho, L., McDonald, C., de Hoyos, C., Mischke, U., Phillips, G., Borics, G., Poikane, S., Skjelbred, B., Lyche-Solheim, A., van Wichelen, J., Cardoso, A.C. (2013). Sustaining recreational quality of European lakes: minimising the health risks from algal blooms through phosphorus control. Journal of Applied Ecology, 50, 315-323.