

Title: **Application of data-driven models in exploring cyanobacterial bloom risks**

Background and objective: To assess cyanotoxin risk in drinking water supply is listed as one of the main national tasks in public inspection by 2022, according to Swedish national control plan for food industry (NKP 2018-2021). This project aims to establish a framework in facilitating cyanotoxin bloom risk assessment based on the examination of the states and development of 108 lakes within a national environmental monitoring by the Swedish Agency for Marine and Water Management (Havs- och vattenmyndigheten). Project results will be used as reference for developing a general risk pattern and identifying specific lake cyanotoxin risk relative to their types, characteristics, and water quality status as well as environmental impact factors.

Methodology: Multiple data-driven approaches will be applied in exploring cyanobacterial bloom risks. Those approaches may include ANNs, Classification, Random forest (RF), Categorical regression, Trend, and Pattern analysis and Multivariate analysis as well as Bayesian network.

Further application and collaborative work: This project is part of a national initiative to establish a smart platform for managing cyanotoxin in drinking water and beyond named DiCyano (www.dicyano.com). The student will also have opportunity to learn other aspects of cyanobacterial management.

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