

Internal Phosphorus Load & Cyanobacteria Workshop

Presented by:

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Summary

Internal phosphorus loading and cyanobacteria: Hypotheses, case studies, internal load estimation and remediation

Cyanobacteria (“bluegreen algae”) often proliferate at the same time and under similar conditions that are favourable for internal phosphorus (P) loading from lake bottom sediments. Internal loading as phosphorus (P) released from anoxic sediment surfaces often represents the main summer P load to lakes. Because of its high biological availability, the lack of dilution, and the timing, it can have an immense effect on summer water quality of a lake, reservoir, or pond.

In this workshop correlations and coincidences, as well as limnological reasoning is provided in support of the hypothesis that cyanobacteria blooms (in general and for the recently increased frequency), are related to increases in internal P loading. While this workshop is based on my past Internal Load Workshop (2003–2018) much material has been added about the possible links between sediment released P and cyanobacteria blooms. To provide room, some of the more basic limnological and modelling sections have been shortened.

Nonetheless, ways of quantifying internal load in polymictic and stratified lakes are still presented, sometimes in a stepwise fashion, where missing data may be predicted by subsidiary models. Applications regarding lake quality assessment and trophic state, and an introduction into the theory of lake restoration will be provided. Each workshop topic will include a description of the theory and presentation of case studies covering US, Canadian, and European lake assessment and restoration projects listed at <http://www.fwr.ca>.

The paper published in the NALMS Journal in 2009 gives an overview of the *Internal Phosphorus Loading* portion of this workshop: Nürnberg GK. 2009. Assessing internal phosphorus load – problems to be solved. *Lake Reservoir Management*. 25:419–432.

The connections with cyanobacteria are explored in recent publications presenting several case studies. PDF files for the presentation slides, the publications by GKN, and a handout with supplementary information and a Glossary will be provided.