



Conference Abstract

Phosphorus and Lake Eutrophication: Recent Findings and Emerging Challenges

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Abstract

This presentation reviews some recent and ongoing research on phosphorus (P) cycling in a variety of lake systems. Phosphorus is an essential nutrient element, and its anthropogenic enrichment is generally considered to be the main driver of cultural eutrophication of freshwater lakes, which, in the worst case, leads to the occurrence of harmful algal blooms, the intensification of hypoxia and the die-off of aquatic life. The research presented shows that excess external P loading causes the accumulation of reactive chemical P forms in the bottom sediments of lakes (Update #1). The slow release of this reactive legacy P back to the water column can significantly delay a lake's recovery following the reduction of external P loading (Update #2). Land use changes accompanying agricultural intensification and urbanization generally increase P emissions, but the implementation of agricultural and stormwater best management practices can effectively mitigate external P loads to receiving lakes (Update #3). However, additional stressors, including climate change and salinization, magnify in-lake P mobilization pathways and, hence, increase the risks of lake (re-)eutrophication (Update #4).

Keywords

Phosphorus enrichment, lakes, eutrophication, sediment legacies, agriculture, urbanization, best management practices, salinization, climate change

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Conflicts of interest

The authors have declared that no competing interests exist.