

## Behavior of organic phosphorus compounds in Lake Kasumigaura, Japan: A $^{31}\text{P}$ nuclear magnetic resonance spectroscopy study

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Phosphorus (P) is an essential nutrient for all living organisms in lakes. In the surface water, particulate P is the major P fraction usually accounting for more than 80% in total P in eutrophic lakes.

The goal of this study is to clarify how nucleic acid-P compounds in suspended particles change with the productions of microorganisms in a shallow eutrophic lake. In particular, primary productions by phytoplankton are the greatest biological productions in surface water in lakes, yet information on P compounds composition through productions of phytoplankton is limited. The current study therefore concurrently analyzes P compounds with  $^{31}\text{P}$  NMR spectroscopy, particulate organic C (POC), biomass of *M. aeruginosa* by the quantitative polymerase chain reaction (qPCR) technique as a possible contributor of nucleic acid-P in Lake Kasumigaura. We hypothesized that (1) concentrations of nucleic acid-P compounds change with production of microorganisms in a shallow, eutrophic lake; and (2) phytoplankton species composition, including *M. aeruginosa*, could also alter P composition in suspended particles.

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