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# Screening Assessment of Cyanobacteria and Cyanotoxins in Southern California Lentic Habitats

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## ABSTRACT

Harmful bloom-forming cyanobacteria (CyanoHABs) and associated toxins are increasingly prevalent world-wide. We conducted a screening-level study to determine if cyanobacteria and associated cyanotoxins were present in Southern California coastal lakes, ponds, and seasonally tidal lagoons. We evaluated waterbody nutrient status and physiochemical parameters, land use, waterbody type, and habitat type, to determine their utility as screening factors for risk of CyanoHAB blooms. One-time grab samples were collected from 30 sites during July–September 2009. Samples were analyzed for phytoplankton taxonomic composition, nutrients, other physiochemical parameters, and three cyanotoxins: microcystins (MCY), anatoxin-a, and cylindrospermopsin. Cyanobacteria was the predominant taxonomic group in most water bodies in this study, and Microcystis spp. was the predominant genus in 96% of the study sites. Cyanobacteria were equally prevalent among coastal lagoons, depressional wetlands, and lakes in this study. We detected MCY in high concentrations in 10% of our sites, but neither anatoxin-a nor cylindrospermopsin were detected. All of the MCY-positive sites exceeded California action levels for recreational use and World Health Organization (WHO) guidance for human health effects. The prevalence of Microcystis spp. from all study sites indicates a high potential for MCY in these water bodies, although the one-time toxin grab samples likely underestimated the overall toxicity of these sites. Landscape variables, such as developed land use and dominant habitat type, were not found to be predictive indicators of cyanobacterial dominance. However, because cyanobacteria become consistently dominant when chlorophyll-a levels exceed 15 µg L-1, chlorophyll-a can serve as a significant predictor of MCY.

**Full text**: 891_ScreeningAssessmentOfSoCalLenticHabitatCynobacteria&Cyanotoxins.pdf