

PHYSICAL, CHEMICAL, AND BIOLOGICAL ALGAE CONTROL STRATEGIES FOR EUTROPHIC LAKES

Robert W. Kortmann, Ph.D.
Ecosystem Consulting Service, Inc. PO Box 370
Coventry, Connecticut 06238 ph.860 742-0744

Abundant algal biomass often poses impaired use of eutrophic lakes and water supply reservoirs. In most waterbodies of the Northeastern United States, phosphorus tends to be the limiting factor for pelagic phytoplanktonic autotrophy. Hence, the focus of most lake and reservoir management practices tends to be reduction of phosphorus availability from watershed loading and internal cycling.

This paper presents an overview of lake ecosystem structure and function, focusing on factors which influence phytoplankton biomass. The important differences between biomass and productivity, heterotrophy and autotrophy, hardwater and softwater lakes, and trophic quantity and quality are discussed.

Management strategies for control of phytoplanktonic biomass, productivity, and species assemblage are described relative to ecosystem structure and function. Among the algal control strategies are:

- Watershed Load Reduction
- Chemical Methods:
 - Algicides
 - Micronutrient Control
 - Nutrient Inactivation Methods
- Physical Methods
 - Circulation and Aeration Methods
 - Pneumatic Skimming
 - Hydrologic Flow Routing
- Biological (Ecological) Strategies
 - Trophic Level Manipulation

These management strategies are described in terms of trophic quantity and quality, and are exemplified by case studies.