

Wind-concentrated duckweed presents this unpleasant scene. The picture at left is the same area from a different side two weeks after treatment.
keep in contact weekly with our lakes and know what changes are occurring. This saves time. Some lakes will hold for more than a week, so we can eliminate a trip.

Any aquatic treatment success can be noticeably affected by wind. Chemical drift can occur rapidly, with the result being no control at all. Expense goes up, profits go down, and people are dissatisfied.

## The Clear Lake Project

Clear Lake in northwestern Wisconsin is illustrative of a typical lake with several problems.

It's about 40 feet below the level of the village by the same name, which includes a large creamery. Below the creamery was a sevenacre pond infested with brush, a variety of submerged weeds, duck weed and filamentous algae.

This pond was treated three times successfully for control of all the above-mentioned problems. The pond's water drains into Clear Lake, covering about 100 acres.

When we first surveyed the problem, the lake was infested with elodea packed solid in the swimming area of six acres, plus scattered masses around the lake. Planktonic algae was heavy throughout.

My first impression was to forget it and concentrate on other jobs. However, the challenge spurred me to tackle it.

The elodea was controlled completely in two years. The first year, I supervised the job as a state biologist. The village crew treated with aquathol-plus pellets at 600 pounds per acre. In three weeks, the entire mass of elodea broke loose and rose to the surface, but eventually decayed.

The algae became worse
Last year, we took on the maintenance problem, which consisted of elodea treatment, then a weekly routine algae treatment. We used diquat for complete elodea control in the treated areas and 50 pounds of copper sulfate for algae control on a once-around marginal basis. Each week we sprayed using the marginal plan. In three weeks, we had clear water throughout. Planktonic algae disappeared and clumps of clodophora, hydrodictyon and spiro gyra occurred. We then changed from marginal to spot spraying of filamentous algae.

The result was a clear, usable lake all summer long. The fishing was excellent, with northern pike, bluegills, perch, and largemouth bass being taken. We never used more than 50 pounds of copper sulfate per week and never spent more than 45 minutes a week on the lake. The rapid growth of filamentous algae was indicative of the high nutrient content of the water.

We skipped one week and a filamentous growth again started and would have gone completely out of control had we not been on call and informed of the condition.

This plan of total lake management has been very successful for us. We plan on using it on most of our jobs.

It is highly important to develop ethical practices on the water, develop a good understanding and working relationship with property owners, and to report failures and successes to chemical companies and state governing agencies.

It also is a feasible way to carry on a continual year-by-year research program of new techniques, chemical mixtures, new chemicals, and new equipment to better achieve a beneficial program for all concerned.

## Book for Water Specialists

THE PRACTICE OF WATER POLLUTION BIOLOGY, Kenneth M. Mackenthun, U.S. Department of Interior. Single copies free from the Office of Public Information, Federal Water Pollution Control Administration, Washington, D.C. 20242. The book also is for sale at $\$ 1.50$ per copy from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

This book presents some practical water pollution biological field investigative techniques and practices, procedures to solve problems, data analyses, interpretation and display,
and the development and writing of the investigative report. It is written principally for the biologist inexperienced in these activities, and for sanitary engineers, chemists, attorneys, water pollution control administrators, and others who are interested in broadening their understanding of this discipline.

More than 20 years of biological field investigative experience are represented in the described field and laboratory methods, report writing, and data display. Methodology modifications presented may be of value to other professional biologists.


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