

of useful fish and at the same time effectively strain out the nutrient. This would provide an answer for agricultural wash as well as urban surface drainage—both major sources of nutrient.

Circulation patterns in a lake or river can control the availability of nutrient concentration, as well as temperature and clarity conditions to permit or restrict algal blooms. Intelligent design of such patterns could have other benefits. For example, when fish move to colder or warmer water to get relief from lower dissolved oxygen, the temperature change can be fatal. (This is particularly true of the alewife which is very temperature sensitive. It blunders into warmer water and dies.) As the dissolved oxygen becomes restrictive—lowering of oxygen below 3 parts per million puts the animal into the area of increased metabolic rate activity—the fish irrigates the gills more rapidly and this increased exposure of dissolved materials to the blood of the fish can be the reason why ammonia, for instance, becomes more toxic at lower DO. This oxykinetic causes the fish to move to a lesser stress area. If the circulation pattern provides a dissipation of concentration of nutrients it would also provide a more even temperature and oxygen gradient. The work reported indicated that the 3 ppm of DO is the critical level for start of stress with a rapid increase in stress as the oxygen reduces to 1 ppm.

There can be no standards defined to apply to all waters. Each river and lake must be appraised individually. Administrative ease standards are an invitation to futility.

Adding it all up: Limiting our attention to regulations on sewer outfalls (and even if they are eliminated) will result in a multibillion dollar treatment program, pea soup algae, and alewives.

The agronomist, analyst, economist, lawyer and engineer can apply principles developed by biologists who are permitted to solve problems rather than “prove” politically inspired conclusions. This conference made a lie out of the “dying Lake Erie” theme. It also reduced the politically motivated directive to a farce. The American approach to research grants and controls in water resources fared similarly. And yet, the conference provided the data and interpretation of the problem which will, if properly supported and implemented, provide solution.

Thus, the conference ended with a challenge to those conservationists who still refuse to face reality. If they want to team up with the technically competent in a determination of which waters should serve specific uses in the best public interest, the means for protecting those uses can be devised. However, if they continue to evidence a demand to restrict waters for their personal pleasures, achievement will remain nebulous, for their only approach is via legislative means. Oratory, laws and regulations make headlines but do not solve water quality problems.

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EUTROPHICATION

[A BIG WORD IN WATER MANAGEMENT]

In recent years as the popular press has tolled the death of many of our major water bodies, a new word has been introduced into the vocabulary of many concerned with pollution control—eutrophication. Unfortunately, the word has come to have as many misinterpretations as it has mispronunciations. Those who have long studied the process pronounce it “yoo trof i ka shun” and define it, in general terms, as an aging or maturing process which occurs in natural water bodies.

Since eutrophication has literally become a “big word” in water management we asked Gerald A. Rohlich, Director of the University of Wisconsin's Water Resources Center, to discuss its meaning and significance in greater detail. As Chairman of the first International Symposium on Eutrophication, held at the University of Wisconsin this month, he has been intensely involved in improving communication on the subject.

But since there are many facets of eutrophication which can (and do) fill volumes, we have asked Professor Rohlich to risk over-simplification and take an “overview” of the problem in this interview.

There are many noteworthy engineers in the country today and many noteworthy teachers of engineers. It is a rarity, however, when both descriptions are