

UNIVERSITY OF HAWAII

Environmental Center

Office of the Director

ZONES OF MIXING, BEST PRACTICABLE TREATMENT AND THE SCHEDULE FOR IMPROVEMENTS PURSUANT TO THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS REGULATIONS

Statement by Doak C. Cox for
the Department of Health Public Hearing

29 October 1971

My name is Doak C. Cox. I am Director of the University of Hawaii Environmental Center. This statement has not received the interdisciplinary checking we try to secure for formal Center statements, and in any case it cannot be considered as representative of an institutional position of the University.

I will address myself primarily to the combined questions of the criteria for establishing zones of mixing and definition of best practicable treatment and add only brief and general remarks concerning the schedule of improvements of discharges in the plan for implementing the State's water quality standards.

Criteria for zones of mixing

The question of appropriate criteria for the establishment of zones of mixing is one to which we in the Water Resources Research Center and Environmental Center of the University have given a good deal of attention since the first hearing on a zone of mixing was scheduled. On due reflection I believe all the criteria can be reduced to two, that can be stated very simply but that warrant further discussion in explanation:

1) A local variance from one or more of the State's specific water quality standards results in some area of receiving waters of use class A, B, 1, or 2 from a discharge into these waters.

2) The overall, long-term public welfare is best served by sanction of the discharge and the resulting variance.

The first criterion merely states that there is no need for a zone of mixing unless there is a variance from some human activity. The variance from can be determined only by determination, in the receiving waters, of the values of those pollutant concentrations that are recognized as significant in the pertinent standards. The second criterion implies that the detriments associated with the continuance of the discharge and the variance are offset by the

benefits of such continuance, both benefits and detriments being measured in terms of overall long-term public welfare.

A balance is involved among the benefits of continuing the disposal of the waste of concern, the costs of alternative means for disposal of this water, and the costs of disposal of the waste into the waters of the proposed zone of mixing in terms of interference with other uses of those waters. All of these benefits and costs may include both material and non-material aspects. All must be considered in long-term aspects, in recognition that future uses of the waters may significantly be impaired by the effects of current discharges of wastes if these effects are not readily reversible.

The information necessary to the determination of the appropriateness of designation of a zone of mixing should, then generally include:

- 1) The location of the effluent release to be accommodated and the temporal description of the effluent discharge rate and the concentration of pollutants of environmental concern.
- 2) The temporal-spacial description of the concentrations of the pollutants of concern in the receiving waters.
- 3) Direct and indirect ecological effects of the pollutants derived from the effluent.
- 4) Consequences of the water quality and ecological effects with respect to uses of the waters.
- 5) Economic, recreational, and esthetic costs and benefits associated with the ecological effects and consequences with respect to uses.
- 6) Alternative means for disposal, treatment, or control of the effluent, together with their economic, environmental, and other social values.

In the original concept, in which a zone of mixing would be defined purely in geographic terms, the temporal-spacial description of the pollutant concentrations would have had to be very thorough, involving extensive monitoring and detailed understanding of the transport and dispersal field. More usefully a zone of mixing may be defined primarily in terms of the discharge it is to accommodate, the spacial temporal understanding still being necessary to permit estimation of the ecological effects and their values, but not to the degree of precision required for control.

Definition of best practicable treatment

As to the definition of the best practicable treatment or control with respect to discharges into potential zones of mixing, I do not believe that I can improve on the definition that appears in my statement of 13 September 1971 on the meaning of this term, a statement already read into the record of

two public hearings on zones of mixing. The summary of that statement is as follows:

"On the basis of a rational philosophy for environmental quality control, the ordinary meanings of the words, the statutory authority behind the State Water Quality Standards, the useage in those standards, and the responsibility of the Director of Health in the overall system of State institutional responsibilities, the term 'best practicable treatment or control' applicable to discharges in relation to zones of mixing, must be interpreted to mean that method of treatment or control which is best from the standpoint of overall, long-term, public welfare."

In the statement I explicitly excluded such meanings, implied by various advocates at zones of mixing hearings, as:

1) Most practical from a purely economic aspect, without regard to non-material aspects;

2) Most extreme within limits of available technology;

as well as such more extreme meanings as:

3) Most practical purely from the economic standpoint of the discharger;

4) Total elimination.

With highly competent advice I have tried to develop a definition allowing less room for judgment, but I have not found one that would not in one circumstance or another violate the prime goal of the overall, long-term, public welfare.

Schedule for improvements

The schedule proposed at this hearing for improvements to implement the State's Water Pollution Control and Water Quality Standards Regulations is, in my understanding, intended to replace a schedule prepared in 1967 before the water pollution control permit system was significantly operative. Because the Department of Health then had little information on potential rates of improvement of the various discharges, the original schedule could represent, at best, only intelligent guesses. To the extent that the schedule now proposed is based on the schedules for improvements called for in permits covering the respective discharges, it constitutes a realistic schedule, not previously draftable. Surely we ought not to be hung up by some initial bad guesses in our approach to improvement by a rational schedule.

The testimony so far presented at this hearing suggest that there have been not only some bad guesses but some slipshod and laggard enforcement together with confusion, internal disagreement, and inadequacy in the record of status, improvement, and prospective improvement of the discharges, and that some of the

proposed schedule is in fact not yet based on permits representing firm agreements between the Department of Health and the dischargers. I am afraid this may all be correct to a degree and I am afraid some of the disagreements and confusion will haunt us in the future. However, the schedule now proposed represents at least a vast improvement in reality of the old schedule. If it is the best the Department can do at the moment, what can we do other than accept it generally (subject only to the correction of obvious errors) that will in fact not set us back further in our efforts to obtain better quality in the waters of Hawaii.

It seems pertinent to point out that the permits are granted subject to provisions in Chapter 37 of the Public Health regulations including maximum terms of 5 years, renewable but once. This provision, like the others in that Chapter adopted after public hearings, grants to the Director of Health discretionary authority to set dates within that maximum term. I am sure that I would consider the Director's decisions in some cases too stringent and in some cases too lax, but so long as he does not exceed the maximum and is not totally unreasonable, and so long as within 5 years we can genuinely expect to see, with respect to discharges many of which have been in existence for decades, the improvements called for in the permits, I do not believe we have an appropriate basis for a challenge. I am anxious to get on with the improvements.