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DATE: 12 DEC 1978

SUBJECT: Agency Policy on Ammonia Criterion for Warm Water Fish Protection

FROM: Sweb T. Davis, Deputy Assistant Administrator
for Water Planning and Standards (WH-551)



TO: Regional Administrators

Region VIII has been concerned with establishing an ammonia criterion for warm water fish. Correspondence has been exchanged between the Region and Headquarters and I believe that copies of such correspondence may be of value to you and the water quality standards coordinators in all Regions. I am enclosing copies of an August 10 memorandum from Alan Merson that introduces the issue, a September 14 response, a November 7 further clarification on the presumptive applicability of the water quality criteria in Quality Criteria for Water and an additional copy of the July 10, 1978, Federal Register statement of current policy and advance notice on proposed rulemaking relating to water quality standards.

Because of the belief that the ammonia criterion for warm water fish as contained in Quality Criteria for Water may require adjustment, that specific criterion is excepted temporarily from the Agency policy for requiring State justification for a less restrictive value than the one presented in Quality Criteria for Water. With this exception, however, it continues to be Agency policy that the Red Book criteria should be applied in support of an appropriate water use designation unless a State demonstrates that another value for a particular constituent is adequate to support the designated use in a particular water reach or geographical area. Research is underway to study the ammonia problem and develop an appropriate criterion for warm water fish protection.

Enclosures



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80203

AUG 10 1978

Ref: 8W-CT

MEMORANDUM

TO: Thomas C. Jorling
Assistant Administrator for Water and
Hazardous Materials (WH-556)

SUBJECT: Agency Policy on Ammonia Criterion for Warm Water Fisheries

Region VIII would like to solicit your evaluation of present Agency policy with respect to ammonia nitrogen criteria for "warm water" fish species. The EPA recommended criterion for ammonia nitrogen for "cold water" fish species is apparently well accepted and is being uniformly adopted at values of 0.02 mg/l un-ionized ammonia in all states. The situation is apparently different for "warm water" fishes.

We have interpreted the "Red Book" 0.02 mg/l un-ionized ammonia criterion as being applicable to all freshwater aquatic life, irrespective of taxa or ambient thermal regime. The appropriateness of the 0.02 mg/l criterion to "warm water" fishes appears questionable based on the recent American Fisheries Society critical review of the Ammonia section of the "Red Book." The technical fallacies of the Red Book's rationale are recognized by most technical personnel in the Criteria Branch in Headquarters and Duluth and by experts outside the Agency.

Headquarters recommendations to the Regions in the review of state water quality standards is that values in excess of 0.02 can be accepted in state water quality standards submissions if they can be "adequately" justified. If state values in excess of 0.02 mg/l are proposed, but not "adequately" justified, then the Regions are to promulgate the Red Book value of 0.02 mg/l.

It is my understanding that we do not expect any state to justify values in excess of 0.02 mg/l un-ionized ammonia because the research which is needed to provide such justification has not been undertaken.

Two Region VIII states have adopted ammonia nitrogen criteria for "warm water" fisheries in excess of 0.02 mg/l un-ionized ammonia. In our judgement, they cannot be expected to justify their selected values on a technical basis, since such technical justification has

no known scientific support at this time. I understand that other states have adopted values as high as 0.05 mg/l and received EPA approval without adequate technical justification. We are reluctant to promulgate the Red Book criterion for ammonia for "warm water" fisheries. My technical staff does not believe that it is scientifically defensible. I am disturbed with the lack of technical support and guidance from both Headquarters program personnel and from R&D. For several years, Region VIII has identified additional study in this area as one of our highest priority research needs. This research need still exists and further delay only serves to undermine the agency's credibility.

We would like your evaluation of Agency policy in this regard and your re-evaluation of answers to the following questions:

1. In reviewing water quality standards submissions from the states, what latitude does the Regional Office have to deviate from the Red Book values in approving criterion for un-ionized ammonia nitrogen for "warm water" fish and associated aquatic life, in lieu of adequate technical "justification."
2. What exactly does Headquarters consider to be "adequate" scientific justification, specifically with regard to un-ionized ammonia, for state-adopted criteria less restrictive than that recommended by the Red Book.
3. Where state recommended values cannot be technically justified, what criterion should the Regional Office promulgate? What is the technical basis for this criterion? Who provides the technical defense for the recommended criterion in the case of public hearings and in the case of possible legal suits?

Compliance with ammonia nitrogen criteria in water quality standards is a major item in Region VIII water quality plans where stream flows are relatively low and substantial reductions of ammonia nitrogen are necessary in many effluent limitations to protect fish and aquatic life against ammonia toxicity. Treatment costs to meet the adopted criteria are high in many cases and the costs to operate and maintain the treatment works are also substantial. We firmly believe in providing adequate protection for fish and aquatic life. However, because of the costs involved, it is important that our criteria be no more stringent than necessary.

If you think that a meeting to discuss this problem is in order, our personnel will be glad to participate.

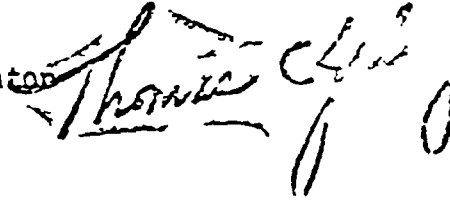

Alan Merson
Regional Administrator

14 1978

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Agency Policy on Ammonia Criterion for Warm water Fish Protection

Thomas C Jorling, Assistant Administrator
for Water and Waste Management



Alan Merson
Regional Administrator, Region VIII

Recent information available to the Agency indicates that the ammonia criterion for warm water fish as contained in Quality Criteria for Water, 1976, may require adjustment. Thus, there is justification for a variance from such a criterion. It is recognized, however, that at the time it was published the ammonia criteria was representative of available data.

Research grants have been awarded to Dr. Robert V. Thurston, Montana State University, to study the ammonia problem. His research will include acute and chronic toxicity studies and should prove adequate to justify a revision of the ammonia criterion. It is estimated that such supporting data will be available in about a year.

In consideration of the above, it seems prudent that the Agency not take action to promulgate the Quality Criteria for Water, 1976, criterion for ammonia in State water quality standards until we have adequate data from which to revise that criterion. Thus the current ammonia criterion in Quality Criteria for Water would be excepted from the Agency policy for requiring State justification for a less restrictive number. Comments on an ammonia criterion in a State water quality standards submittal should, however, indicate that EPA is gathering additional data in support of an ammonia criterion. When such a criterion is published the State will be expected to seriously consider such a criterion in the next review of its water quality standards.

Your question of adequate scientific justification can include more than just a justification for an ammonia criterion. A criterion at variance with an appropriate criterion in Quality Criteria for Water could be justified for a water segment on the basis of existing natural water quality background for the constituent in question, on the basis of other existing water constituents which influence the toxicity of the constituent in question, or on the basis of existing fish or other aquatic species that require a less restrictive water quality for protection and propagation than those species used to derive the criterion in Quality Criteria for Water.

Where a State-recommended criterion cannot be technically justified, personnel in the Criteria and Standards Division of this office will be happy to work with you to arrive at one that is more appropriate. We also will assist in providing technical defense of any criterion for a State standard that is promulgated by EPA.

CONCURRENCES

Status and Use of Criteria Published in July 1976 in
Quality Criteria for Water

Thomas C Jorling, Assistant Administrator
for Water and Waste Management (H-556)

Alan Merson
Regional Administrator, Region VIII

I understand that there may continue to be lingering questions arising from my memorandum of September 14 to you relating to the Agency's position on the use of water quality criteria in the July 1976 EPA book, Quality Criteria for Water (Red Book). The Agency's position is delineated in the memorandum that was sent to all EPA Water Division Directors on January 16, 1978, and the advance notice of proposed rulemaking that was published in the Federal Register on July 10, 1978.

The Agency's current policy on the use of Red Book criteria in water quality standards is stated in the July 10 Federal Register notice (43 FR 29588). EPA feels that the data base for the Red Book numbers is sufficiently broad for the numbers to have presumptive applicability. EPA's policy is that a State may adopt a numerical concentration level for a Red Book pollutant which is less stringent than the Red Book number, but only if a State provides adequate technical justification for the deviation. (See center column on page 29590.) It seems to me that our position is quite clear in this regard. We consider that the water quality criteria published in July 1976 are the criteria that should be adopted by the States to support designated water uses. If a State adopts a water constituent criterion to support a designated water use that is less stringent than the EPA criterion for such constituent in Quality Criteria for Water, the State must provide adequate technical justification for the less stringent criterion. Failure to do so may be grounds for EPA to propose the appropriate Red Book number for public comment under section 303(c)(4).

In my memorandum of September 14, 1978, I was responding to a specific request about what would constitute an adequate technical justification for an ammonia criterion less stringent than the Red Book criterion. I indicated some of the factors that could be included in a State's justification for a less stringent criterion. I also stated that in view of research now underway on ammonia, the current Red Book criterion for warm water fish would be excepted temporarily from the Agency policy for requiring State justification for a less restrictive number. With this exception, however, it continues to be Agency policy that the Red Book criterion should be applied in support of an appropriate water use designation unless the State demonstrates that another value is adequate to support the designated use in a particular water reach or geographical area.

[6560-01]

[40 CFR Part 130]

(FRL 905-8)

WATER QUALITY STANDARDS

AGENCY Environmental Protection Agency

ACTION Statement of current Policy and advance notice of proposed rule-making

SUMMARY Water quality standards may form the basis for enforceable requirements under the Clean Water Act. In the notice below EPA summarizes its current policy for the development of water quality standards and its preliminary thoughts for a revised approach. EPA's contemplated approach would result in (a) more stringent water quality standards than currently exist in many States and in (b) water quality standards for many pollutants which are not subject to existing State standards. EPA is contemplating a revised approach in order to assure achievement of the Clean Water Act's goals and to comply with a court order. EPA will consider written comments on its contemplated approach before formulating proposed regulations.

DATES Written public comments should be submitted to the person listed immediately below by September 8 1978

FOR FURTHER INFORMATION CONTACT Kenneth M. Mackenthun, Director, Criteria and Standards Division (WH-585) Office of Water Planning and Standards, U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, telephone 202 755-0100

I. BACKGROUND

Water quality standards play an important role in the basic scheme of the Clean Water Act, 33 U.S.C. 1251 et seq. Under section 301(b)(1)(C) of the act, water quality standards may dictate the enforceable discharge limitation for an industrial or municipal polluter. Water quality standards may also form the basis for the areawide planning requirements under section 208. Water quality standards may thus be translated into enforceable requirements not only for point sources such as industrial and municipal dischargers, but also for nonpoint sources such as agricultural, silvicultural, and construction activities.

Congress has directed in section 101(a)(2) that by July 1 1983 water