April 1, 2016

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Shelton, WA 98584

Mr. Patrick Lizon, Department of Ecology
PO Box 47600, Olympia WA, 98504-7600

Dear Mr. Lizon:

I'm writing in response to your request for suggestions and recommendations on refining water quality standards. I request that this note and the attached comments be included in your record of proceedings in this matter.

I suggest two changes in the definition and application of aquatic dissolved oxygen concentration standards.

1) The first applies to comparing modern water quality with that of the "natural" (= pre-modern) quality of the same body of water as a guideline for assigning "violations" of the standards in the modern body. My understanding is that, at present, the DO levels of the pre-modern water body are themselves used as the standard where those levels are lower than the modern standard and that a modern "violation" is defined if the modern water's DO is 0.2 mg/L (or more) lower than that "natural" level. (Otherwise the numerical standard applies.)

At present, where pre-modern water quality is unknown, regulators are at liberty to use a computer simulation to estimate them. I recommend that that practice be stopped and that the pre-modern conditions be defined as those existing at the earliest date from which reliable data are available. Alternatively, a specific year – say, 1950 – might be used as the one in which pre-modern water quality conditions are defined as the standard.

Where pre-modern conditions are unknown but simulated by computer, it is usually impossible for third parties to verify or dispute water quality violations assignments. My reason for suggesting this change is to ensure that all investigators know the DO values upon which standards violations are based. This would vastly improve the ability of third parties to verify violations assignments and/or to identify errors. An example is shown in the attachment.

2) The second recommendation is that water quality violations identified by computer simulations be regarded as advisory, not definitive. That is, violations should be defined by observed, replicable field observations – not by computer calculations. The reason for suggesting this change is that few computer simulations of complex aquatic systems can be accurate enough to serve as the sole basis (absent observations) for expensive efforts to reduce degradation of water quality.

Thanks for including this in your record of suggested recommendations.

Sincerely yours,

David H. Milne, PhD
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