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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D. C. 20460

THE ADMINISTRATOR

MEMORANDUM

SUBJECT: Appropriate Water Quality Criterion for
Dissolved Oxygen for the Main Stem of
the Ohio River

FROM: Administrator

TO: Regional Administrators
Regions III, IV, V

This memorandum sets forth guidance on an appropriate water quality criterion for dissolved oxygen on the main stem of the Ohio River (exclusive of tributaries).

Background

Existing standards for the Ohio River have been adopted by six States and approved by three different EPA regional offices. Because of this division of authority and the fact that standards have been adopted, revised, and approved several times since the beginning of the water quality standards program in 1965, the standards are not always consistent or compatible in terms of pollutant parameters included or the criterion values assigned to specific parameters. On June 21, 1979, EPA published a notice seeking data and information concerning appropriate and compatible water quality standards for the Ohio River (44 Fed. Reg. 36252). This information was used by the Agency in technical reviews of water quality standards adopted by the States or as recommended by the Ohio River Valley Water Sanitation Commission (ORSANCO).

The following guidance concerning appropriate criteria for the Ohio River is based on an analysis of the data and information submitted in response to the notice and subsequent technical meetings and discussions. This analysis has focused on dissolved oxygen, as it is a critical factor in the ability of a stream to support a warmwater fish and aquatic life use classification, which is a beneficial use that all the States have applied to the Ohio River. It is also a criterion which historically has been a primary subject of debate among the States, ORSANCO and EPA, and a major factor affecting the determination of treatment levels for publicly owned treatment works. EPA is continuing to evaluate the necessity of seeking revisions to criteria for other

pollutants established by the States. The guidance expressed below has been developed for purposes of EPA's review and approval of state-adopted water quality standards under section 303 of the Clean Water Act.

Policy Guidance

Dissolved Oxygen Criterion

Existing scientific information supports the necessity of maintaining a 5 mg/l D.O. minimum during the spawning season to protect a warmwater fish and aquatic life classification (Quality Criteria for Water, July 1976). However, with respect to the Ohio River, on the basis of EPA modeling studies conducted downstream of Pittsburgh and Cincinnati, the Agency agrees with those States which have argued that, because of flow conditions and small diurnal fluctuations of D.O., treatment levels which would meet a minimum D.O. concentration of 5 mg/l (daily average)/4 mg/l (instantaneous minimum) ("5 av./4 min.") during critical low flows will also attain the 5.0 mg/l minimum concentration during the spawning season. Accordingly, state water quality standards for the Ohio River main stem of 5 av./4 min. shall be considered to be sufficient to protect the designated use set forth above, as long as there is a basis for assuming that treatment techniques used to attain the 5 av./4 min. during low flow conditions will be applied during the spawning season.

Because the Ohio River is regulated by a series of dams, base flows are not quantifiable by the 7Q10 analysis which is usually conducted for free flowing streams, but result from the operation of hydrological control structures in the river basin. EPA encourages States to ascertain appropriate base flows.

The guidance expressed here applies only to the Ohio River. On other water bodies (e.g., high quality streams, lakes and estuaries), a similar combination of environmental factors may not be present, and a different criterion may be more appropriate.

Action

Please forward a copy of this memorandum to the appropriate officials of the relevant States in your region. Your letter should indicate your willingness to assist the individual state in revising its water quality standards on the Ohio main stem. If you or they have questions, please contact Steven Schatzow, Director, Office of Water Regulations and Standards, (202) 755-0402.

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Date

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