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Supplemental Information

EPA Response to Sierra Club Petition Regarding Defined Portions of the Mississippi and Missouri Rivers

What is the Sierra Club Petition?

On February 26, 2003, the Ozark Chapter of the Sierra Club submitted a petition requesting that EPA set "consistent and adequate" water quality standards for defined portions of the Mississippi and Missouri Rivers. The petition area includes waters within the jurisdictions of Arkansas, Illinois, Iowa, Kansas, Kentucky, Missouri, Nebraska, and Tennessee. Specifically, the petition area covers:

- Mississippi River from Burlington, Iowa, to Memphis, Tennessee, and
- Missouri River from Omaha, Nebraska, to St. Louis, Missouri.

What is the Sierra Club petitioning EPA to do?

The petitioner asks EPA to promulgate water quality standards for the petition area to meet the goals and requirements of the Clean Water Act and that are consistent among the states such that no state impairs the ability of a downstream or across stream state to achieve its water quality standards. The petitioner further requests that EPA promulgate water quality standards that include numeric criteria for the following:

- chlordane
- atrazine
- polychlorinated biphenyls
- *E. coli* and enterococci
- conventionals (including dissolved oxygen and ammonia)
- nutrients
- sediments
- an index of biological integrity for the aquatic community, among other pollutants

Finally, the petitioner requests that EPA promulgate water quality standards that include monitoring requirements sufficient to support a uniform and statistically based method to determine if waters are attaining their water quality standards.

To support their request, the Sierra Club asserts that there are inconsistencies among the state water quality standards in the petition area. Specifically, the Sierra Club asserts that there are inconsistencies in designated uses, criteria to protect the same designated uses, and impaired waters listings. The petitioner is also concerned that states have not adopted water quality criteria for all the

necessary pollutants to adequately protect the rivers in the petition area.

How is EPA responding to the petitioner's request?

EPA thoroughly evaluated state water quality standards and state commitments to revise those standards. EPA concluded that Federal intervention is not needed and is denying the request to promulgate water quality standards for the petition area. Neither the regulations nor the Clean Water Act compel states to adopt the same criteria and uses, nor do they suggest that this is the only way a state can meet the federal requirements. EPA based its decision to deny the petition's request on an evaluation of whether the states' water quality standards are consistent with the Clean Water Act and federal regulations.

EPA evaluated the states' current water quality standards, the existing scientific knowledge for each pollutant at issue, and whether the affected states are revising water quality standards in a manner that would address potential concerns. Based on that evaluation, EPA determined that the petition states have or are actively working to adopt water quality standards that are consistent with the Clean Water Act and the federal regulations. Where scientific knowledge is limited, EPA is evaluating the science surrounding the pollutant at issue and its effect in the petition area. For these pollutants, it is not appropriate for EPA to develop a numeric criterion or to require the states to develop a numeric criterion in the petition area for the pollutant until such science is better understood.

For those pollutants where EPA is still evaluating the science, what is the Agency doing to make progress towards the development of a numeric criterion?

While EPA is not promulgating water quality standards for the petition area in response to this petition at this time, EPA will continue to work with the states to ensure these valuable waters are adequately protected by water quality standards.

Nutrients

Specifically in response to the petitioner's request to promulgate numeric nutrient criteria for the petition area, EPA believes it is important to fully understand the cause and responses of nutrients in the petition area prior to adopting numeric criteria for the Mississippi and Missouri Rivers. However, EPA also understands that addressing nutrients in these waters is important to the health of the Mississippi and Missouri Rivers and the Gulf of Mexico. As part of our efforts to better understand the science surrounding nutrient criteria in large rivers, EPA is committing to convene key partners at a multi-day national workshop. Discussions will focus on developing and adopting appropriate ambient water quality criteria for nutrients for the Mississippi and Missouri Rivers that will protect the rivers and the Gulf of Mexico. EPA will publish a report which summarizes the workshop discussions and identifies next steps. This report will establish a roadmap for how EPA intends to work with its partners to address nutrients in the Mississippi and Missouri Rivers. The workshop will be closely linked with The Mississippi River/Gulf of Mexico Watershed Nutrient Federal, State, and Tribal Task Force efforts to ensure that all related nutrient work is effectively coordinated. EPA intends to hold the workshop in 2005. EPA hopes that the Sierra Club and other stakeholders will actively participate in this effort to help ensure success.

Atrazine

EPA is finalizing its recommended atrazine criteria to protect aquatic life and is reevaluating the available toxicity information related to human health. Once this scientific evaluation is completed, EPA will consider developing ambient water quality criteria for atrazine. EPA will evaluate the need for a federal promulgation where it is determined that atrazine criteria are needed after EPA has published its final atrazine criteria recommendations.

Suspended and Bedded Sediments

Finally, as part of the August 2003 Water Quality Standards and Criteria Strategy, (see EPA's website at http://www.epa.gov/waterscience/standards/strategy/), EPA committed to develop a Suspended and Bedded Sediment Criteria Strategy after consulting with EPA's Science Advisory Board. This strategy will inform EPA's guidance on controlling excess sediments. EPA expects that the suspended and bedded sediment strategy will identify methods for developing numeric suspended and bedded sediment criteria and lead to recommendations that states can use to adopt their own numeric criteria for suspended and bedded sediments. These recommendations will also provide a benchmark which EPA can use to evaluate state water quality standards programs in the future.

How does EPA expect water quality standards to protect the Gulf of Mexico from excessive nutrients and what are EPA's plans?

EPA is greatly concerned about the hypoxic zone in the Gulf of Mexico as is demonstrated by its leading role in the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and the *Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico,* published in January 2001. The *Action Plan* acknowledges the complex nature of nutrient cycling in the Mississippi and Atchafalya River basins as well as the Gulf of Mexico. As a result, it is "…difficult to predict specific improvements in water quality that will occur both in the Gulf as well as the entire Mississippi River basin for a given course of action….Further, …while the current understanding of the causes and consequences of Gulf of Mexico hypoxia is drawn from a massive amount of direct and indirect evidence collected and reported over many years of scientific inquiry, significant uncertainties remain. Further monitoring, modeling, and research are needed to reduce those uncertainties in future assessments and to aid decision making in an adaptive management framework."

In 2001, EPA began providing states with waterbody specific technical guidance manuals and numeric nutrient criteria recommendations for states to use as starting points to protect aquatic life from eutrophication resulting from excessive nutrients, not just toxic effects. EPA has provided nutrient criteria recommendations for most of the freshwater in the nation, excluding wetlands (see http://www.epa.gov/ost/standards/nutrient.html). Although EPA has provided nutrient criteria recommendations for the ecoregions that encompass the Mississippi and Missouri Rivers, EPA's water quality criteria recommendations for nutrients are based on a reference condition approach (a reference condition reflects minimally impacted water quality conditions). In deriving the criteria recommendations, EPA incorporated data from the Mississippi and Missouri Rivers. However, since EPA's recommendations are based on reference conditions and are statistically derived to generally protect the designated uses of specific waterbody types in a specific ecoregion, it is not likely that EPA's approach will generate a reference condition value appropriate to base development of a nutrient criterion for these rivers. The Mississippi and Missouri Rivers have unique qualities (i.e., flow, depth, temperature and nutrient-algal response relationships) in their respective ecoregions, and

EPA believes further consideration of historical data and water quality conditions are necessary before establishing nutrient criteria specifically for these rivers. Until more monitoring and research have been conducted to better understand how these large and complex rivers respond to nutrient enrichment, establishing numeric nutrient criteria for the petition area, today, would be less meaningful and effective than ensuring that quantitative nutrient criteria are adopted for waters where the linkage between nutrient concentrations and biological response are better understood and where the sources of nutrient loadings can be adequately controlled.

Modeling by Alexander et al (2000)[1] indicates that more than 90% of the nitrate reaching the Mississippi River will be transported downstream to the Gulf of Mexico. This implies that the Mississippi River primarily transports nutrients downstream with little or no processing or removal of nitrogen occurring.[2,3] Therefore, if there is to be a significant impact on the reduction of nutrients loads into the Gulf of Mexico, we need to control nutrients before they even enter the Mississippi River. EPA and the states are working together to develop and adopt numeric nutrient criteria for tributaries to the Mississippi and Missouri Rivers (in addition to other wadeable rivers and streams, reservoirs and lakes) where the science is better understood. EPA is also working on a strategy to provide additional support to the states as they move forward to develop and adopt criteria to protect waters within their jurisdiction. EPA and states expect that state adoption and implementation of nutrient criteria for tributaries of the Mississippi and Missouri Rivers will lead to an overall reduction of nutrient loadings in the Mississippi and Missouri River basins. These reductions will improve water quality and help protect the designated uses of these rivers as well as the Gulf of Mexico.

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How is EPA protecting recreational uses in the petition area?

EPA published its latest recommendation for bacteria criteria in 1986. EPA recommended that states adopt *E. coli* or enterococci as indicators to protect human health in fresh recreation waters instead of fecal coliform, which had been EPA's previous recommendation. EPA's

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[1] Alexander, R.B., Smith, R.A., and Schwarz, G.E. 2000. *Effect of stream channel size on the delivery of nitrogen to the Gulf of Mexico*. Nature 403: 758-761.
[2] Richardson, W.B., Strauss, E.A., Bartsch, L.A., Monroe, E.M., Cavanaugh, J.C., Vingum, L., and Soballe, D.M. *Denitrification in the Upper Mississippi River: rates, controls, and contribution to the nitrate flux.* (in press).
[3] Battaglin, W.A., Kendall, C., Chang, C.C.Y., Silva, S.R., and Campbell, D.H. 2001. Chemical and isotopic evidence of nitrogen transformation in the Mississippi River, 1997-1998. Hydrol. Process. 15: 1285-1300.

evaluation of the water quality standards within the petition area found that 6 out of the 8 states have either adopted *E. coli* criteria or have proposed *E. coli* criteria in their state rulemaking process. These states are moving forward to adopt the criteria into state regulation. Illinois and Missouri recently sent EPA letters committing to adopt *E. coli* criteria within the petition area (among other waters) in their states. Missouri has committed to adopt *E.coli* criteria by July of 2005. Illinois has committed to initiate its rulemaking process to adopt *E. coli* criteria by September 30, 2004.

While EPA's analysis identified that Missouri does not designate the petition area for primary contact use, Missouri also committed to adopting appropriate recreation uses for their waters by July 2005. The remaining 7 states designate primary contact uses for the petition area.

EPA expects the states to follow through on these commitments. If any state does not, EPA will, if necessary, promulgate water quality standards for the petition area within these states.