

The “Notice of Drafting” related to the triennial review of SC surface water quality standards indicates that SCDHEC is proposing to adopt EPA’s 2001 methylmercury water quality criterion, using implementation guidance published by EPA in 2010.

Our initial comments related to the criterion and its implementation are provided below in response to your request.

Context

One of the key potential benefits of a properly revised approach based on methylmercury is that this mercury species bioaccumulates and is “directly” linked to fish tissue concentrations, an important and sensitive environmental endpoint. As you are aware, mercury chemistry in surface waters is complex and dynamic. The amount of methylmercury, and thus the level of contamination in fish, is determined by the biogeochemistry of the environment as well as the total amount of mercury present. High organic carbon and swampy environments generate the highest methylmercury fractions/concentrations. In SC, our regional biogeochemical conditions are well suited to mercury methylation in surface water so that the fraction of methylmercury in our stream and pond water is relatively high (i.e., above the national average). As a result, a large number of SC water bodies, even those with no point source discharges of mercury, are likely to have upper trophic level fish that are near or above the EPA recommendation of 0.3 mg/kg that protects recreational and subsistence fishers who consume foods from the same local water bodies repeatedly over many years.

Data and SRS Support for the Triennial Review

SRS has generated a substantial dataset of background mercury levels in fish tissue (stretching over a number of years in some cases) at numerous on-site and off-site locations, including some sites that are unaffected by point-source discharges. These data may be useful to help to establish background levels as you draft new standards. Additionally, some of the data might be useful in relating fish tissue concentrations to local water biogeochemical conditions and to local mercury discharges and regional mercury sources such as rainfall. The data also provide some site-specific bioaccumulation factors (BAFs) for SC and provide some information on long-term trends in fish mercury levels. Further, when translating the methylmercury goals into practice for SC, SRS experiences in fish and water sampling, when combined with the experiences of universities and other aquatic scientists/experts in the state, might be helpful in drafting water quality regulation revisions that are as protective, practical, and robust as possible. SRS has a large number of published reports and the associated databases that could be useful to you.

Graded Approach to Implementation

It is clear from the report and recommendations that the issue of mitigating the impacts of mercury at near-background levels is complex and does not lend itself to simple solutions that fit all states and localities. SC has historically done a good job in providing the public useful graded information on fish consumption advisories in various water bodies throughout the state (as documented in brochures and on the website). SRS would encourage continuing and even expanding this graded approach; e.g., by identifying how much fish, if any, can be safely eaten by different subpopulations (pregnant women, women of childbearing age and children age 6 to 16, and adult men and women).

Logistical Considerations

It was noted that much of the information in the 2010 EPA guidance document was brought forward from an earlier (2001) report. During our review, several instances were identified where technical developments in the intervening time period are not captured. For example, the methods for total mercury in fish tissue do not include the direct mercury analysis methods that have been validated and approved during that timeframe – these thermal desorption methods are relatively cost effective and robust and have undergone significant regulatory validation. To encourage maximum quality and technical value for the triennial review, the latest validated analytical methods in the drafted regulatory revisions should be included. The proposed updates have the potential to generate significant expenses; cost and logistics of implementation – sampling strategies, data interpretation and reporting, contingencies, etc., should be considered.

Conclusion

We appreciate and commend SCDHEC efforts on the triennial review. Please feel free to contact me (contact information given below) if you are interested in receiving SRS reports or datasets or if you wish to set up any technical discussions or brainstorming meetings.

Thank you for your consideration,

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