Carbon to Sea Initiative

July 11, 2024

U.S. Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Via *regulations.gov*

RE: Tentative MPRSA Research Permits, Docket ID EPA-HQ-2024-001 and EPA-HQ-2024-02

To whom it may concern:

The **Carbon to Sea Initiative** (CTS) is a nonprofit effort whose mission is to systematically assess whether and how ocean alkalinity enhancement (OAE) can deliver safe, cost-effective, and permanent CO_2 removal at scale. We are guided by a set of core principles that emphasize transparent outcomes, strong and clear governance standards, and sincere stakeholder engagement. The project that is the subject of EPA Permit Numbers EPA-HQ-2024-001 and EPA-HQ-2024-02 was funded in part by a grant from CTS to the Woods Hole Oceanographic Institution (WHOI).

CTS is pleased that the Environmental Protection Agency (EPA) has evaluated the research and monitoring proposal and has tentatively determined that it meets the criteria for a research permit under the MPRSA. **We hope the agency will expeditiously issue the final permits for this project so the carefully planned and structured LOC-NESS project can proceed with its next step: in-water research with alkalinity addition in 2024, led by the Principal Investigator on this project, Dr. Adam Subhas.** This step builds on years of research by leading scientists, including prior lab and mesocosm studies.

The EPA's regulatory findings and determinations are important on several levels:

Demonstrating that the existing regulatory process can support timely in-water research for emerging ocean-based carbon dioxide removal (oCDR) technologies. If oCDR is to be available to supplement emission reductions to limit global warming consistent with the Paris Agreement, it is critical to conduct research now to assess the viability and efficacy of these technologies. In its 2022 Research Strategy for Ocean-based Carbon Dioxide Removal and Sequestration, the National Academies of Sciences, Engineering and Medicine recommended demonstration-scale in situ experimentation as essential to assess the benefits, risks, and potential scalability of a broad spectrum of oCDR approaches. As the first Marine Protection, Research, and Sanctuaries Act (MPRSA) permits for an oCDR field research activity, EPA's tentative determination is a milestone that indicates that the regulatory process for research

activities under the MPRSA is sufficient to accommodate oCDR research that fits within the scope and purpose of the statute.

Rigorous evaluation of the proposed field research benefits the emerging oCDR sector, the environment, and the public interest. The MPRSA "prohibits or restricts disposition in the ocean that would adversely affect human health, welfare, amenities, the marine environment, ecological systems or economic potentialities". CTS agrees that oCDR should gain social license to operate at significant scale in ocean waters only if its methods are shown to be both safe and effective. By rigorously examining the materials, methods, and monitoring proposed by oCDR research projects, the EPA is assisting project proponents in ensuring that "the scientific merit...outweighs the potential environmental or other damage". Research that proceeds under these conditions is likely to inform adjustments to materials, methods and monitoring to improve results, as well as provide insights necessary to plan for increasing the scale of subsequent efforts for any approaches that prove safe and effective at the research scale. It can also help identify methods that should either be abandoned or returned to the laboratory or mesocosm for further experimentation, as warranted.

In developing research permits for this effort, the U.S. and the EPA are gaining valuable experience and insights into how the MPRSA permitting process can be fine-tuned to accommodate in-water research for oCDR technologies. A rigorous review of oCDR-related MPRSA permit applications is both expected and appreciated. Recently, the EPA issued specific guidance for permitting oCDR under the MPRSA and under the Clean Water Act. Also, the federal Fast Track Advisory Committee is evaluating the broader policy and regulatory regime for oCDR in recognition of the valuable role these technologies could play in meeting the nation's climate goals.

It is our understanding that Dr. Subhas and the WHOI have engaged with EPA regarding this permit for more than a year. With any permitting process, uncertainty and revision are to be expected. At the same time, it is important to ensure that permits are issued in a timely manner when activities are judged to meet the permitting criteria. Any significant delay in issuing the final permits for this project puts at risk the ability of the researchers to conduct their field work as planned this summer. That could result in financial losses to this project, which is partially federally funded. A delay might also push back the schedule for the planned second phase of the project. That knock on effect would harm WHOI's ability to assess the efficacy and safety of this approach to OAE as a climate change mitigation tool. Given the pressing need to develop tools to address the climate crisis, it is vital that the EPA and its intergovernmental and interagency partners provide rigorous and timely reviews of these permit applications. We strongly urge the EPA to ensure that these permits are in effect in time for this important research to proceed this summer.

Theoretically, the proposed research offers a way to substantially increase CO_2 uptake and conversion to long-lasting bicarbonate in affected waters. We fully agree with the EPA's tentative determination that this research, "is not likely to result in significant adverse impacts to water quality, marine ecosystems, human health, or other uses of the ocean."

The proposed research and these permits represent an important step forward for the U.S. in developing an effective and timely regulatory process for oCDR, and can provide a glimpse of the potential of this OAE pathway.

Additional resources to supplement the record:

- Dupont, S. and Metian, M.: General considerations for experimental research on ocean alkalinity enhancement, in: Guide to Best Practices in Ocean Alkalinity Enhancement Research, edited by: Oschlies, A., Stevenson, A., Bach, L. T., Fennel, K., Rickaby, R. E. M., Satterfield, T., Webb, R., and Gattuso, J.-P., Copernicus Publications, State Planet, 2-oae2023, 4, https://doi.org/10.5194/sp-2-oae2023-4-2023, 2023.
- Cyronak, T., Albright, R., and Bach, L. T.: Field experiments in ocean alkalinity enhancement research, in: Guide to Best Practices in Ocean Alkalinity Enhancement Research, edited by: Oschlies, A., Stevenson, A., Bach, L. T., Fennel, K., Rickaby, R. E. M., Satterfield, T., Webb, R., and Gattuso, J.-P., Copernicus Publications, State Planet, 2-oae2023, 7, https://doi.org/10.5194/sp-2-oae2023-7-2023, 2023.
- Marín-Samper, L., Arístegui, J., Hernández-Hernández, N., Ortiz, J., Archer, S. D., Ludwig, A., and Riebesell, U.: Assessing the impact of CO2-equilibrated ocean alkalinity enhancement on microbial metabolic rates in an oligotrophic system, Biogeosciences, 21, 2859–2876, https://doi.org/10.5194/bg-21-2859-2024, 2024.
- Ferderer, A., Chase, Z., Kennedy, F., Schulz, K. G., and Bach, L. T.: Assessing the influence of ocean alkalinity enhancement on a coastal phytoplankton community, Biogeosciences, 19, 5375–5399, https://doi.org/10.5194/bg-19-5375-2022, 2022.
- Moras, C. A., Bach, L. T., Cyronak, T., Joannes-Boyau, R., and Schulz, K. G.: Ocean alkalinity enhancement – avoiding runaway CaCO3 precipitation during quick and hydrated lime dissolution, Biogeosciences, 19, 3537–3557, https://doi.org/10.5194/bg-19-3537-2022, 2022.

Sincerely,

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Carbon to Sea Initiative