

EPA Public Hearing on Carbon Pollution Emission Guidelines for Existing Sources
Testimony of Matt Carr, Executive Director, Algae Biomass Organization
July 29, 2014

On behalf of the Algae Biomass Organization (ABO), I greatly appreciate the opportunity to comment on EPA's proposed Carbon Pollution Emission Guidelines for Existing Sources. ABO is the trade association for the algae industry, representing the leading developers of renewable, sustainable products from algae. Our membership includes producer companies, research institutions, utilities, airlines and other end users, and a range of other partners throughout the algae supply chain.

ABO appreciates and supports EPA's efforts to reduce emissions of carbon dioxide (CO₂) from power plants and other industrial sources. Appropriate regulation can help mitigate the rise in atmospheric CO₂ concentrations. It also represents a tremendous opportunity to foster the growth of technologies that utilize CO₂ as an input for renewable, sustainable products. This is particularly true for algae.

ABO members are developing a wide range of algae technology platforms to convert CO₂ to renewable fuels, chemicals, fertilizer, plastics, feed ingredients and other products. Photosynthetic algae thrive on concentrated sources of CO₂. To provide the optimal environment for growth, today's algae developers must purchase commercial CO₂ – at great expense – as a feedstock. ABO members would welcome the opportunity to participate in reducing emissions of CO₂ from the power sector by partnering with utilities to utilize captured carbon as a feedstock, transforming CO₂ from an expensive waste disposal issue into a resource that will benefit industry, the environment and ratepayers. ABO members are, in fact, in active negotiations with utilities to do just that.

ABO has serious concerns, however, that this proposed rule, as written, could have a profound chilling effect on the development of algae and other CO₂ utilization technologies.

The proposed rule offers states flexibility in developing compliance plans. But by making no mention of carbon capture and utilization (CCU) while affirmatively recognizing other compliance options, including carbon capture and sequestration/storage (CCS), the proposed rule risks sending

the signal to states – and to investors – that carbon utilization is not a preferred mitigation strategy. This would be a profound missed opportunity.

Algae CCU is adequately demonstrated and technically feasible. It can be implemented at reasonable cost, provide meaningful emission reductions, and will serve to promote further development and deployment of the technology.

Since 2010, the Department of Energy has helped to advance algae CO₂ utilization by funding a dozen projects. Carbon utilization is being demonstrated at projects in Florida, New Mexico, Iowa, Hawaii, Kentucky, and elsewhere, and is ready for commercial deployment. ABO members are in negotiations with partners in China and several other nations to deploy algae CCU technology. CO₂ utilization has now advanced to the point where it can and should be available to states to help meet their greenhouse gas goals.

By creating a market for captured carbon, carbon utilization can mitigate, offset, or even negate the cost of carbon capture, providing a CO₂ reduction mechanism that minimizes the cost to ratepayers. Algae producers need CO₂ and will pay power producers to get it.

As you know, the greatest concern about carbon regulation is the cost of compliance. Absent technologies that can reuse waste carbon, compliance is a sunk cost. Currently, some projects are seeking to offset the cost of compliance by selling the CO₂ for enhanced oil recovery. In contrast, algae CCU offers a way to offset the cost of compliance while reducing the use of petroleum. This seems to me a much better approach to comprehensive CO₂ reductions.

Even when subsequently combusted as a transportation fuel, CO₂ utilization produces meaningful emissions reductions by displacing additional fossil fuel combustion. Peer reviewed lifecycle analyses of two of the largest commercial demonstration algae production facilities show CO₂ reductions of 68¹ to 80² percent. Every barrel of algae biofuel produced through carbon

¹ Xiaowei Liu, et al., *Life Cycle Assessment of Transportation Fuel Production from Hydrothermal Liquefaction of Algae Grown in Open Ponds*, 146 BIORESOURCE TECH. 163 (Nov. 2013)

² Dexin Luo, et al., *Life Cycle Energy and Greenhouse Gas Emissions for an Ethanol Production Process Based on Blue-Green Algae*, ENVIRON. SCI. TECHNOL. 2010, 44, 8670-8677

capture replaces a barrel of petroleum that would otherwise have been extracted and combusted. Through this substitution, CO₂ remains permanently stored underground as petroleum.

We understand that the proposed rule does not mandate any single method for meeting the CO₂ reduction targets. It does, however, include a discussion of CCS as a method that states can use to meet its target. *“The implementation of partial CCS may be a viable GHG mitigation option at some facilities, and as a result, emission reductions achieved through use of the technology could be used to help meet the emission performance level required under a state plan.”* The preamble also specifically asks for the public to comment on the application of CCS for existing utilities, but makes no mention of utilization.

We are concerned and believe that EPA is missing an important opportunity by failing to recognize or even solicit comments on CO₂ utilization as a method that states can use to meet their targets. We are concerned the proposed rule’s silence on CO₂ utilization will effectively discourage states from including utilization in their state plans, thereby slowing progress in technology development with great potential for monetizing CO₂ and reducing atmospheric CO₂ in a productive way.

The Pollution Prevention Act waste management hierarchy lists waste treatment options in the following order: 1. Prevention or reduction of waste; 2. Recycling; 3. Treatment; 4. Disposal. Disposal is the least preferred option for handling waste under the statute. We encourage the EPA to apply this hierarchy to CO₂ and encourage the utilization of CO₂ as a preferred method to sequestration.

We encourage the EPA to include language in the final rule indicating that carbon utilization would be an acceptable component in state emissions reduction plans. Such affirmative recognition would provide states and sources of private capital with the confidence to invest in this highly promising CO₂ solution while helping to create a market for CO₂ that reduces the cost of compliance. Thank you for your consideration of these remarks. We look forward to submitting further, comprehensive formal comments prior to the comment deadline.