

**EXECUTIVE COMMITTEE**

**PRESIDENT**

**Jeff Theerman**

*Executive Director*

Metropolitan St. Louis

Sewer District

Saint Louis, MO

**VICE PRESIDENT**

**David R. Williams**

*Director of Wastewater*

East Bay Municipal

Utility District

Oakland, CA

**TREASURER**

**Suzanne E. Goss**

*Government Relations Specialist*

JEA (Electric, Water & Sewer)

Jacksonville, FL

**SECRETARY**

**Julius Ciaccia, Jr.**

*Executive Director*

Northeast Ohio Regional

Sewer District

Cleveland, OH

**PAST PRESIDENT**

**Kevin L. Shafer**

*Executive Director*

Milwaukee Metropolitan

Sewerage District

Milwaukee, WI

**EXECUTIVE DIRECTOR**

**Ken Kirk**

September 13, 2010

EPA Docket Center

Attn. Docket ID No. EPA-HQ-OAR-2010-0560

Environmental Protection Agency

Mailcode: 2822T

1200 Pennsylvania Avenue, NW

Washington, DC 20460

*Via Regulations.gov*

Dear Sir or Madam:

The National Association of Clean Water Agencies (NACWA) appreciates the opportunity to comment on the *Call for Information on Greenhouse Gas Emissions Associated with Bioenergy and Other Biogenic Sources* (75 Fed. Reg. 41173; July 15, 2010). NACWA's members serve the majority of the sewered population in the country and treat billions of gallons of wastewater on a daily basis. Managing the Nation's wastewater does result in the emission of greenhouse gases (GHGs); as such, clean water agencies are working to better understand their contribution through industry-funded research as well as exploring ways to decrease the impacts of their operations. NACWA strongly believes, however, that biogenic GHG emissions should not be handled the same way as anthropogenic emissions.

EPA's call for information relates specifically to the Agency's Prevention of Significant Deterioration (PSD) and Title V Programs, which EPA recently amended via its GHG Tailoring Rule (75 Fed. Reg. 31514; June 3, 2010). But how EPA addresses biogenic emissions also impacts other Agency rules and programs, most notably the GHG Reporting Program. EPA must establish a clear and consistent approach for addressing biogenic emissions across all of its GHG programs.

NACWA offers the following points in response to EPA's request for information:

- Clean water agencies, which manage the Nation's wastewater for the benefit of the communities they serve and to improve the environment, would be significantly impacted by EPA's Tailoring Rule if biogenic emissions were regulated;

- Biogenic emissions are part of the natural carbon cycle, do not contribute to climate change, and therefore should not be counted toward Title V or PSD thresholds;
- Regulation of biogenic emissions from combustion of biogas would serve as a disincentive to green energy use.

These points are further developed below.

Clean water agencies would be significantly impacted by EPA's Tailoring Rule if biogenic emissions were regulated

Regulation of biogenic CO<sub>2</sub>, as proposed by EPA, is unprecedented, not supported by science or any existing policies, and will have a disproportionate impact on the wastewater treatment community. Carbon dioxide from the decomposition of human waste is emitted into the atmosphere as part of the natural carbon cycle with or without an intervening wastewater treatment step.<sup>1,2,3</sup> Wastewater treatment plants exist to intercept, treat, and break down human waste in a manner that protects the environment and public health. Treatment plants manage the decomposition of waste and capture the resulting gas, in many cases so that it can be used beneficially for power generation.

The primary product of concern is biogas, which contains approximately 40% CO<sub>2</sub> and 60% methane. In addition, some clean water agencies combust the biosolids (a biomass) they generate and recover heat to offset power use and in some cases generate electricity. Biogas and biomass at wastewater facilities have significantly lower carbon implications when compared to other commercial biomass energy production, particularly in the transportation fuels sector. Waste-derived biofuels exhibit the following characteristics that warrant their consideration separate from other biofuel sources:

- Largely generated locally, there is a very small transportation-related GHG contribution to get the fuel to 'market'. Other biofuels (e.g., ethanol imported to the U.S. from Brazilian sugarcane) may have a significant transportation component;
- There is no competing land use impact – cropland is not being taken out of service, for example, to grow the ingredients needed – wastewater treatment plants are already in place and here to stay;
- Sewage is a "must manage" waste. Our agencies do not choose to process organic material, they are merely managing it in the most environmentally beneficial way possible.

Biogenic emissions are part of the natural carbon cycle, do not contribute to climate change, and therefore should not be counted toward Title V or PSD thresholds.

As biogas at a wastewater treatment plant is combusted, methane is converted to CO<sub>2</sub> that is considered biogenic and "carbon neutral".<sup>4,5,6</sup> Carbon neutral in this case means that the carbon from the biodegradable organic material was absorbed from the atmosphere relatively recently through the process of photosynthesis, and when the carbon is released as CO<sub>2</sub> during the combustion process, the carbon re-enters the natural carbon cycle. For this "short-term" carbon cycle, the emissions have been offset by the uptake of an equivalent amount of CO<sub>2</sub> and there are no net emissions or global warming impact.<sup>7,8,9</sup> This is different from fossil-derived CO<sub>2</sub>, where the carbon is released from carbon-containing fuels that were in long-term geological storage.<sup>10,11</sup> These emissions represent an increase of carbon to the atmosphere upsetting the natural carbon cycle.

Although the carbon cycle can be much more complicated than portrayed here, the concept of biogenic CO<sub>2</sub> as carbon neutral has been accepted globally<sup>12-19</sup>. Some argue that combustion of biogenic material creates a sudden release of large amounts of CO<sub>2</sub> that should not be considered as part of the natural carbon cycle. In reality, the natural carbon cycle involves the release and absorption of gigatons of CO<sub>2</sub> every year, so the relatively small amount of CO<sub>2</sub> generated from biogas management can readily re-enter the natural carbon cycle and not represent a net emission increase.

EPA's own website (<http://www.epa.gov/greenpower/gpmarket/>) states that:

“Biogenic emissions, in contrast [to anthropogenic emissions], result from natural biological processes, such as the decomposition or combustion of vegetative matter. Biogenic emissions are part of a closed carbon loop. Biogenic CO<sub>2</sub> emissions are balanced by the natural uptake of CO<sub>2</sub> by growing vegetation, resulting in a net zero contribution of CO<sub>2</sub> emissions to the atmosphere. Examples of biogenic emission sources include burning vegetation (biomass) to produce electricity or using plant-based biofuels for transport.”

EPA also made the distinction that it is anthropogenic GHG emissions that are contributing to climate change in its Endangerment Finding.

Existing GHG tracking or trading systems recognize that biogenic CO<sub>2</sub> should not to be included. If it is reported, it should be done for informational purposes only. These include:

- EPA's National GHG inventory, which excludes biogenic emissions;
- EPA's GHG Mandatory Reporting Rule that segregates biogenic and anthropogenic emissions in its report formats;
- California's AB32 greenhouse gas regulation that-
  - Does not require biogenic CO<sub>2</sub> emissions to count towards the threshold to determine what industries are part of the cap-and-trade carbon market
  - Segregates biogenic and anthropogenic emissions in its Mandatory Reporting Program;
- The U.S. Department of Energy's GHG accounting protocols that exclude biogenic emissions;
- The Bay Area (California) Air Quality Management District greenhouse gas fee regulation that excludes biogenic CO<sub>2</sub> because “these are a result of materials in the biological/physical carbon cycle, rather than the geological carbon cycle”;
- The Regional Greenhouse Gas Initiative (RGGI) and the European Union that consider biomass energy to be a zero-greenhouse-gas-emitting technology;
- The 2006 (and earlier versions) of the United Nations Intergovernmental Panel on Climate Change (IPCC) Guidelines for national greenhouse gas inventories, which excludes biogenic emissions from greenhouse gas inventory accounting.

We encourage EPA to distinguish biogenic from anthropogenic emissions under the Title V and PSD programs, just as it has for mandatory reporting. Because biogenic CO<sub>2</sub> does not contribute to climate change, it should not count toward regulatory thresholds.

Biogas is a green energy resource and should be promoted as an environmentally-friendly alternative to fossil fuel

Biogas and biomass-derived fuels continue to be viewed as valuable renewable energy sources with low carbon potential. The benefits of bioenergy are two-fold: conversion of GHG emissions to a form that is carbon neutral and avoidance of the production of an equivalent amount of energy from fossil fuels. Biogas generated by wastewater treatment plants can be used for heating or electrical production, and if treated and compressed, a transportation fuel. EPA has recognized that biosolids contain 10 times the energy needed to treat them, and that it is technically feasible to recover energy from biosolids. As wastewater agencies continue to push the envelope in terms of recovering more energy from biosolids and biogas, they should be encouraged to do so to boost the U.S.'s green energy production.

President Obama set a goal that the United States will obtain 10 percent of its electricity from renewable sources by 2012, rising to 25 percent by 2025, and biogas and biomass derived fuels such as biosolids are important renewable sources that can be used to help meet this goal. Regulating biogenic CO<sub>2</sub> emissions under Title V and PSD would significantly disincentivize this green energy and green fuel development and would in fact stop some projects that otherwise would have contributed to reducing GHG emissions by offsetting fossil fuel use and converting methane to biogenic CO<sub>2</sub>.

Other Issues

EPA also should consider that the biomass generated from the municipal wastewater treatment process originates from a complex group of sources, unlike the cutting of trees for fuel or clearing forest to grow crops for biofuels. Part of the biomass produced is a sequestration of carbon in the form of the microbial biomass produced during the wastewater treatment process.

Accounting of GHG emissions from municipal wastewater treatment processes should consider carbon input and carbon sequestration associated with management of the resulting biosolids. The dissolved and particulate organic carbon in wastewater is generally unstable and can be lost to the atmosphere, but becomes more stable when incorporated in microorganisms. The treatment process results in an overall net sequestration of carbon in the sludge or biosolids. When biosolids are beneficially utilized through land application, though some of the carbon is lost, the recalcitrant carbon fraction, which accounts for 15–20 percent of total biosolids carbon, is estimated to have a lifetime in soil of about 60 years. In addition, land application of biosolids also sequesters carbon in crop and microbial biomass that builds up in the soil. Most cultivated soils are carbon neutral (i.e., there is no gain (carbon sink) or loss (carbon source)). Recent studies indicate that soils in the Midwest can become carbon sinks when biosolids are applied and that the rate of such carbon sequestration is the highest of other typical methods of managing agricultural soils<sup>20</sup>.

\* \* \*

Again, NACWA believes that biogenic CO<sub>2</sub> emissions should not be regulated under the Clean Air Act PSD and Title V programs. Not excluding biogenic emissions would disproportionately impact the wastewater industry and negatively impact the use of bioenergy to boost U.S. production of green energy.

September 13, 2010

Page 5

Thank you again for the opportunity to provide comments on this request for information. Please contact me if you have any questions at (202) 833-9106 or [chornback@nacwa.org](mailto:chornback@nacwa.org).

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Hornback", written in a cursive style.

Chris Hornback  
Senior Director, Regulatory Affairs

## REFERENCES

1. United Nations Environment Programme, International Source Book on Environmentally Sound Technologies for Wastewater and Stormwater Management, Section 2.2, Natural Purification Processes: "Leaf litter, animal wastes and dead organic matter are decomposed by bacteria and other decomposers releasing the carbon as carbon dioxide thus completing the carbon cycle."  
[http://www.unep.or.jp/ietc/publications/techpublications/techpub-15/2-2/2-2\\_1.asp](http://www.unep.or.jp/ietc/publications/techpublications/techpub-15/2-2/2-2_1.asp)
2. United Nations Environment Programme, International Source Book on Environmentally Sound Technologies for Wastewater and Stormwater Management, Section 2.4, Figure 2.9: Sustainable wastewater management practice by closing the local biogeochemical cycles (Lange, J and Otterpohl, R (1997) Oekologie Aktuell ABWASSER Handbuch zu einer zukunftsfaehigen Wasserwirtschaft. MALLBETON GmbH, Donaueschingen-Pföhren.).  
<http://www.unep.or.jp/ietc/publications/techpublications/techpub-15/2-2/2-4.asp>
3. UNFCCC, Consultative Group of Experts Handbook on Waste Sector: "Plants withdraw CO<sub>2</sub> from the atmosphere through the process of photosynthesis. Carbon dioxide is returned to the atmosphere by the respiration of living creatures and the decay or incineration of organic matter."
4. U.S. Climate Change Science Program First State of the Carbon Cycle Report, Page 86: "Carbon dioxide, generated from aerobic metabolism in waste removal and storage processes, arises from biological material and is considered GHG neutral."
5. U.S. Climate Change Science Program First State of the Carbon Cycle Report, Page 91: "Anaerobic digestion generates CH<sub>4</sub> gases that can be captured and used in cogenerators...the resultant CO<sub>2</sub> released from such combustion is considered biological in origin."
6. Draft Federal Greenhouse Gas Accounting and Reporting Guidelines from the White House Council on Environmental Quality, 2010, Page 34: "Biogenic emissions: CO<sub>2</sub> emissions as a result of natural biological processes, such as the decomposition or combustion of vegetative matter. They are part of a closed carbon loop. Biogenic emissions are balanced by the natural uptake of CO<sub>2</sub> by growing vegetation, resulting in a net zero contribution of CO<sub>2</sub> emissions to the atmosphere."
7. United Kingdom Water Industry Research, Carbon Accounting Methodology in collaboration with Water UK and Carbon Trust, Section 4.5, Changes from the Previous UKWIR Tool, footnote 4: "Short cycle carbon is that derived from recent biological activity (e.g. vegetation, food, faecal matter) and is carbon neutral in terms of global warming. In reality some of the biodegradable carbon in sewage will be of long-cycle anthropogenic origin (e.g. detergents), but this will be a small percentage and all sewage/sludge is considered short-cycle for this project."
8. United Kingdom Water Industry Research, Carbon Accounting Methodology in collaboration with Water UK and Carbon Trust, Section 6.3.3, Sewage Sludge Biogas: "Under the Defra Guidelines, water industry process emissions of CO<sub>2</sub> are excluded because they are short cycle."

9. United Kingdom Water Industry Research, Carbon Accounting Methodology in collaboration with Water UK and Carbon Trust, Section 7, Review of Process Emissions Factors;: “The original tool also considered emissions of carbon dioxide from processes, but these were all categorized as short cycle emissions and therefore fall outside the scope of the new tool.”
10. UK Renewable Fuels Agency,  
<http://www.renewablefuelsagency.gov.uk/aboutbiofuels/howbiofuelscanreducegreenhousegasemissions>, “Biofuels can offer the potential to reduce greenhouse gas emissions because the carbon in the plant matter from which biofuels are produced comes from the carbon dioxide absorbed by the plants from the atmosphere during their lifetime. This is in contrast to the carbon in fossil fuels which has been locked up under the ground for millions of years, and which is released into the atmosphere as carbon dioxide when the fuels are burnt.”
11. EPA, Endangerment Finding, 2009, Technical Support Document, Section 2, Page 16: “...carbon in CO<sub>2</sub> cycles between different reservoirs in the atmosphere, ocean, land vegetation, soils, and sediments. There are large exchanges between these reservoirs, which are approximately balanced such that the net source or sink is near zero. Anthropogenic CO<sub>2</sub> emissions released through the use of fossil fuel combustion and cement production from geologically stored carbon (e.g., coal, oil, and natural gas) that is hundreds of millions of years old, as well as anthropogenic CO<sub>2</sub> emissions from land-use changes such as deforestation, perturb the atmospheric concentration of CO<sub>2</sub> and the distribution of carbon within different reservoirs readjusts.”
12. Australia’s National Greenhouse and Energy Reporting (Measurement) Determination 2008, excludes process CO<sub>2</sub> from domestic wastewater treatment. See Division 5.3.1 through 5.3.8.
13. United Kingdom Water Industry Research, Carbon Accounting Methodology in collaboration with Water UK and Carbon Trust, Section 6.4.2 CHP Using Biogas: “Renewable biomass sources, e.g. biogas, are considered zero rated for emissions...”, also, “...the emissions are zero-rated and minor gas emissions, CH<sub>4</sub> and N<sub>2</sub>O, remain accounted.”
14. European Parliament and the Council of the European Union, “On the Promotion of the Use of Energy from Renewable Sources”, April 23, 2009, Article 2 (a): “energy from renewable sources’ means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;”
15. IPCC, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Page 5.28: “In sewage sludge the fossil carbon usually can be neglected.”
16. IPCC, Frequently Asked Questions – Questions about the Waste Sector, Page 15, Q53: “CO<sub>2</sub> emissions from wastewater treatment are not included in the national total in the IPCC Guidelines since these are assumed to be of biogenic origin.”

17. IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Chapter 6, Page 6.6: “Carbon dioxide (CO<sub>2</sub>) emissions from wastewater are not considered in the IPCC Guidelines because these are of biogenic origin and should not be included in national total emissions.”
18. IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Chapter 6, Page 6.9: “Emissions from flaring are not significant, as the CO<sub>2</sub> emissions are of biogenic origin.”
19. UNFCCC, Clean Development Mechanism, Methodology AM0080, Mitigation of Greenhouse Gases Emissions with Treatment of Wastewater in Aerobic Wastewater Treatment Plants, Table 1, pages 3 and 4: “CO<sub>2</sub> emissions from the decomposition of organic waste are not accounted for.”
20. Tian G., Granato T.C., Cox A.E., Pietz R.I., Carlson C.R. Jr., Abedin Z. 2009. “Soil carbon sequestration resulting from long-term application of biosolids for land reclamation.” *J. Environ. Qual.* 38:61–74.