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Dr. Nabanita Modak Fischer

Fuels and Incineration Group, Sector Policies & Programs Division
Environmental Protection Agency
Research Triangle Park, NC 27711

Submitted via the Federal eRulemaking Portal: <http://www.regulations.gov>.

RE: NACWA Comments on EPA's Advanced Notice of Proposed Rulemaking for the Potential Future Regulation Addressing Pyrolysis and Gasification Units (Docket ID EPA-HQ-OAR-2021-0382)

Dear Dr. Nabanita Modak Fischer:

The National Association of Clean Water Agencies (NACWA) appreciates the opportunity to provide initial comments to the U.S. Environmental Protection Agency's (EPA) recent Advanced Notice of Proposed Rulemaking (ANPRM) for input on the potential development of regulations for pyrolysis and gasification units (EPA-HQ-OAR-2021-0382).¹

NACWA represents the interests of more than 340 public clean water utilities of all sizes across the country that everyday provide an essential service of managing billions of gallons of the nation's wastewater and the millions of tons of biosolids generated as a byproduct of the wastewater treatment processes in a manner that ensures the continued protection of public health and the environment.

NACWA's members and other clean water utilities nationwide are able to choose from only a limited number of highly-regulated biosolids management pathways – primarily land application, land disposal and thermal treatment/incineration in sewage sludge incinerators (SSIs). These options have been under continued intense state and federal scrutiny.

Land application, which has long been seen as an environmental and sustainable beneficial use of biosolids, is nevertheless now facing bans in some states in light of potential per- and polyfluoroalkyl substances (PFAS)-related concerns. The use of landfills to bury biosolids continues to be impacted by rules prohibiting landfilling organic materials. And the remaining SSIs throughout the country are still struggling to meet stringent Clean Air Act MACT requirements that have led many clean water utilities

¹ 86 Fed. Reg. 50,296–50,303 (Sept. 8, 2021).

to shut down their units, further stressing the already limited management capacity for biosolids generated by the wastewater treatment process.

As a result of these pressures, NACWA members are increasingly looking for new and innovative technologies to manage biosolids, including cutting-edge technologies like pyrolysis and gasification that are the subject of this ANPRM.

As EPA points out in the ANPRM, several municipalities are currently investing in gasification—and at least one utility is currently using pyrolysis—as long-term, sustainable options for managing biosolids. Depending on unit configuration, these processes are providing a beneficial end product for fertilizer (biochar) and/or a renewable source of energy (a synthetic natural gas or hydrogen fuel) for these utilities.

Additional utilities are also considering gasification and pyrolysis in long-term planning discussions around biosolids management. Notably, at many utilities that employ incineration their SSIs are nearing the end of their useful lives. Given the complexities and cost of switching to land application or landfill disposal, these utilities in particular are looking at newer thermal treatment options like gasification or pyrolysis, as well as other innovative technologies, as potential long-term biosolids management solutions.

As EPA weighs potential regulations for gasification and pyrolysis units, NACWA encourages the Agency to consider this broader context in which publicly-owned clean water utilities must operate and the limited choices for biosolids management they face. The municipal clean water community needs flexibility to ensure they can continue to safely manage the millions of tons of biosolids generated each day.

Gasification and Pyrolysis Should Not Be Placed into Existing CAA Categories

As EPA notes in the ANPRM, “pyrolysis and gasification technologies have been used to convert solid and semi-solid materials... into useful products such as energy, fuels, and chemical commodities,” and there are a handful of commercial-scale and pilot-scale gasification units intended for processing biosolids (sewage sludge) that are currently operating and have been for some time, or are near operational in the United States.² NACWA is also aware of one other pyrolysis unit not listed in Table 3 of the ANPRM used to treat municipal biosolids.

The processes of gasification and pyrolysis are inherently different from other thermal treatment methods (like incineration) currently regulated by EPA, and these units should not be lumped into existing categories simply because there is heat involved in the process and/or they are being used to manage the same feedstock.

² *Id* at 50,302.

Under 40 CFR Part 60, Subpart LLLL and as defined in 40 CFR § 60.4930, SSIs are units that *combust* sewage sludge. Gasification units, by contrast, *do not combust* any solid, semi-solid, or liquid material, including sewage sludge. The mere fact that both gasification units and SSIs process sewage sludge and biosolids and employ heat *does not* make them equal under EPA's regulations, nor is it appropriate to treat them as such. The same reasoning is likewise applicable to pyrolysis units treating biosolids.

These innovative technologies, which may provide viable solutions to the ever-increasing challenge of biosolids management, deserve additional study rather than being burdened with predetermined, inappropriate regulatory requirements developed and designed for air emission categories to which they do not belong.

If EPA determines that limitations for these technologies are necessary, such standards should be specifically tailored to address each unique treatment process and EPA should consider further bifurcating the categorization of gasification and pyrolysis to ensure applicable requirements are appropriate for each technology. Any such regulations should likewise take into account the highly variable and unique nature of biosolids as a feedstock, which can impact both the gasification and pyrolysis processes.

EPA Has Already Determined that Gasification Units Processing Biosolids are Not SSIs

On at least three occasions, EPA has made applicability determinations that both gasification and pyrolysis units processing biosolids are not SSIs and are therefore not subject to either the SSI New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart LLLL or the Emission Guidelines for Existing SSIs found at 40 CFR Part 60, Subpart MMMM.

These applicability determinations span the current and previous two EPA administrations. They are identical in their findings that gasification and pyrolysis units do not have a controlled flame that combusts sewage sludge, that the syngas they combust is not a solid, semi-solid, or liquid and that they therefore cannot be by definition classified as SSIs. EPA has consistently stated in these determinations that:

- Gasification and pyrolysis units do not meet the definition of SSIs applicable to 40 CFR § 60.5250 (emission guidelines for existing units) or 40 CFR § 60.4930 (NSPS). In one of the determinations, EPA noted that the preamble to the final SSI rule states that an SSI unit is “an enclosed device or devices using controlled flame combustion that burns sewage sludge for the purpose of reducing the volume of sewage sludge by removing combustible matter”³ (76 Fed. Reg. 15,372). However, regarding the gasification unit, EPA's determination notes that, “no flame is applied or propagated in the gasifier and the gasifier prevents combustion by limiting the air-to-sludge ratio such that

³ See Regulatory Determination Letter from Peter Tsirigotis to Dale Mullen (ENVTL. PROT. AGENCY Sept. 9, 2021)(referencing EPA's Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units; Final Rule, 76 Fed. Reg. 15,372 (Mar. 21, 2011) and finding Ecoremedy's gasification unit is not subject to this SSI Rule).

combustion cannot occur. Therefore, we do not believe that the gasifier is an SSI, because it does not combust sewage sludge.”⁴

- Syngas produced by these gasification and pyrolysis units is not a “solid, semi-solid or liquid,” and therefore “is not sewage sludge (even though it is derived from sewage sludge).”⁵

EPA’s longstanding position that gasification and pyrolysis units are not SSIs is consistent with applicable regulations and based on key differences in the processes employed by such units as compared to SSIs. EPA should maintain these separate classification as it moves forward with any regulations addressing gasification and pyrolysis units.

If EPA Regulates Gasification and Pyrolysis Units, It Should Do So Under CAA Sections 112, Not Section 129

EPA claims that there is “considerable confusion in the regulated community regarding the applicability of CAA § 129 to pyrolysis and gasification units,” and that the Agency has received comments and “on-going questions about regulating” these units.

To be clear, gasification and pyrolysis units managing municipal biosolids do not combust or incinerate solid waste, which is the crux of what CAA § 129 regulates, so there should be no confusion. It is inappropriate to regulate pyrolysis and gasification units under CAA § 129. As outlined above, EPA’s past regulatory determinations underscore that these units combust a gaseous fuel – not a solid waste - for the purposes of processing additional biosolids or generating renewable energy. Accordingly, should EPA deem regulations necessary, only standards developed pursuant to CAA § 112 are appropriate for gasification and pyrolysis units managing municipal biosolids.

In addition to the clear statutory language precluding gasification and pyrolysis units from regulation under CAA § 129, policy considerations also support the use of Section 112 to regulate such units should EPA deem it necessary. Under CAA § 112, EPA would have the ability to make the distinction between “major sources” and “area sources,” and to provide greater flexibility for those sources that emit fewer pollutants, such as municipal clean water utilities.

Indeed, in the 1990 CAA amendments, Congress expressly directed EPA to regulate publicly owned treatment works (POTWs)— i.e., municipal clean water utilities—under § 112(d).⁶ EPA ignored this Congressional directive when it set standards for POTW-operated SSIs under CAA § 129, and the

⁴ See Regulatory Determination Letter from Edward Messina to Jeff Snyder (ENVTL. PROT. AGENCY Dec. 19, 2013)(determining MaXWest Environmental System’s gasification unit for managing sewage sludge is not subject to the Emission Guidelines for Existing SSIs Rule).

⁵ See, e.g., Regulatory Determination Letter from Matt Salazar to Dario Presezzi (ENVTL. PROT. AGENCY July 25, 2016)(finding that BIOFORCETECH Corporation’s pyrolysis system for managing sewage sludge is not subject to the requirements in the SSI NSPS).

⁶ 42 U.S.C. § 112(d)(1990).

negative consequences of that decision continue to resonate throughout the clean water sector. EPA should not make this same mistake with respect to gasification and pyrolysis units.

Many of NACWA's members with SSI units continue to face tremendous challenges as they work to comply with CAA § 129 standards, while many others shuttered their units all together. The Section 129 standards are particularly difficult for both new and modified SSIs to meet, and the strict operating parameters that must be established for all SSIs often conflict with one another or run contrary to normal biosolids management practices. And even though courts have determined that EPA's SSI CAA § 129 standards are flawed, EPA has failed to make any changes to provide public utilities with the relief they need and to which they are entitled.⁷

CAA § 129 standards set one-size-fits-all requirements and provide no flexibility to account for the relative contribution of pollutants from a particular source. Regulation of gasification and pyrolysis units under such a regulatory scheme would likely significantly hamper, if not eliminate, their use by the clean water sector to manage biosolids. In particular, utilities that have relied on SSIs in the past that are now in need of other management options face huge obstacles (both physical and financial) if they wish to pursue land application as an alternative management mechanism, and as noted above emerging concerns with PFAS are subjecting such practices to additional scrutiny. Thermal options like gasification and pyrolysis could become increasingly viable and environmentally beneficial biosolids management options, and EPA must not unduly stifle continued innovation in this space.

Gasification and Pyrolysis Show Promise at Addressing PFAS Pollution in Biosolids

PFAS are perhaps the most challenging and complex contaminant that the water sector has ever faced. The presence of PFAS in municipal biosolids, even at extremely low parts per billion (ppb) or parts per trillion (ppt) levels, has the potential to create an existential threat and end to beneficial land application practices. One state has in fact already completely banned land application of biosolids containing ppb levels of certain PFAS compounds, leaving clean water utilities in that state to seek more burdensome, costly, and limited alternatives that do not provide the environmental and other beneficial use advantages of land application.

While NACWA is confident the science and EPA's risk assessment for PFAS in biosolids will demonstrate that the low levels of PFAS are safe for human health and the environment when those biosolids are land applied, the rising challenge of biosolids management in light of PFAS concerns underscores the importance of developing and preserving a range of viable and environmentally beneficial biosolids management options.

Not all biosolids management options are available to all utilities. For example, utilities that have relied on incineration in the past generally do not have the capacity to digest their biosolids to make them suitable for land application. Utilities that are able to use and benefit from land application are witnessing increasing regulations and burdens that may limit their ability to do so in years ahead.

⁷ Nat'l Ass'n of Clean Water Agencies v. EPA , 734 F.3d 1115 (D.C. Cir. 2013).

Utilities that send biosolids to landfills are likewise being turned away completely or are facing increased costs that would lead to the overburdening of local communities.

Importantly, in addition to their energy and beneficial end product production benefits, gasification and pyrolysis technologies may have the ability to break the strong carbon-fluorine bond that makes PFAS so persistent in the environment. EPA has expressed particular interest in the potential of using high-temperature thermal processes, like pyrolysis and gasification, to possibly destroy these “forever chemicals” although EPA should take a closer look to ensure PFAS is not simply partitioning and transferring from one environmental media to another.

The limited data that are available suggest that these technologies may in fact provide an option for safely managing materials like biosolids that could, where there are significant industrial contributions, have elevated levels of PFAS. EPA’s Office of Air and Radiation must consider this broader context, and the fact that these technologies could play an important role in solving one of the nation’s most pressing environmental challenges, as it moves forward with any gasification and pyrolysis regulations and research.

The Office of Air and Radiation, Office of Research and Development, and Office of Water Must Work Closely on Regulations Impacting Biosolids Management

It is imperative that EPA’s Office of Air and Radiation, Office of Research and Development, and Office of Water—which leads EPA’s efforts on biosolids management—work closely together on any potential rulemakings concerning pyrolysis or gasification.

Such coordination was severely lacking when the Office of Air and Radiation developed regulations for SSIs, and clean water utilities and their public ratepayers are still dealing with the consequences. Given the potential impact such regulations could have on biosolids management and PFAS destruction, close coordination between these EPA Offices is necessary to ensure that any future CAA regulations best reflect the unique operating environment of clean water utilities and will lead to the most beneficial outcomes for human health and the environment.

Conclusion

The public clean water community is tasked with managing billions of tons of biosolids each year. In light of the ever-increasing need for additional environmentally beneficial biosolids management options, it is imperative that EPA ensure that technologies like gasification and pyrolysis are not unnecessarily and prematurely sideline through over-regulation.

The conversion of biosolids, in the absence of combustion, to renewable thermal energy (including a synthetic natural gas or hydrogen fuel) and a recycled beneficial product (biochar) that can be applied safely to land as a fertilizer, and the potential of such processes to destroy PFAS chemicals, offers a promising new option for all clean water utilities. EPA must take the time necessary to study these

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technologies and ensure that any potential regulations appropriately reflect the unique aspects of their processes and feedstocks they manage.

Thank you for considering these comments. If you have any questions, please contact me at eremmel@nacwa.org.

Sincerely,

A handwritten signature in black ink, appearing to read "Emily Rimmel". The signature is fluid and cursive, with a large loop at the end of the last name.

Emily Rimmel
Director, Regulatory Affairs