

**STANDARDS FOR AIR CURTAIN INCINERATORS THAT ONLY BURN
WOOD WASTES, YARD WASTES AND CLEAN LUMBER; PROVISION
FOR COMMERCIAL AND INDUSTRIAL SOLID WASTE
INCINERATION UNITS: TEMPORARY USE INCINERATORS AND AIR
CURTAIN INCINERATORS USED IN DISASTER RECOVERY**

Office of Air and Radiation

**AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS
COMMENTS**

Attention: EPA-HQ-OAR-2025-0068; FRL-12906-03-OAR

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I. Introduction

The American Fuel & Petrochemical Manufacturers (“AFPM”) respectfully submits these comments on the United States Environmental Protection Agency’s (“EPA” or “Agency”) Federal Register notice titled, “Standards for Air Curtain Incinerators That Only Burn Wood Wastes, Yard Wastes and Clean Lumber; Provision for Commercial and Industrial Solid Waste Incineration Units: Temporary Use Incinerators and Air Curtain Incinerators Used in Disaster Recovery” (“Proposed Rule”).¹ Specifically, in Unit VI of the Proposed Rule, EPA is seeking comments on revising the definition of “municipal waste combustion unit” in the Other Solid Waste Incinerator (“OSWI”) New Source Performance Standard (“NSPS”) and Emission Guidelines (“EG”) by removing the reference to “pyrolysis/combustion units.”² These comments support EPA removing “pyrolysis/combustion units” from the OSWI NSPS and EG because:

1. Pyrolysis and gasification units are not waste operations and should not be regulated as such under the Clean Air Act (“CAA”);
2. Pyrolysis and gasification units do not involve combustion;
3. Post-consumer materials used for the manufacture of products are not solid waste – they are feedstocks;
4. Pyrolysis and gasification units are manufacturing processes that are properly regulated under §111 and §112 of the CAA; and,
5. Proper classification of pyrolysis and gasification units is essential to advancing circularity and diverting valuable post-consumer plastics from existing waste streams.

II. AFPM Interest in the Proposal

AFPM is the leading trade association representing the manufacturers of the fuels that keep America moving and petrochemicals that are the essential building blocks for organic chemistry, including plastic products that improve the health, safety, and living conditions of humankind and make modern life possible. AFPM members are committed to sustainably manufacturing safe, high-performing fuels and the petrochemicals and derivatives that growing global populations and economies need to thrive, improving and innovating recycling and reuse rates and technologies, and developing policies to address plastic waste in the environment.

AFPM collaborates with policymakers and other stakeholders to develop sound, risk- and science-based policies to address environmental issues including the complex plastic waste challenge. To this end, AFPM supports the innovation and development of plastic waste repurposing technologies that have the potential to recover plastic waste, divert that waste from landfills or entering the environment and transform it into value-added materials.

Pyrolysis and gasification are essential manufacturing technologies that advanced recycling facilities and petrochemical manufacturers use to convert post-use materials into

¹ See 91 *Fed. Reg.* 13543, “[Standards for Air Curtain Incinerators That Only Burn Wood Wastes, Yard Wastes and Clean Lumber; Provision for Commercial and Industrial Solid Waste Incineration Units: Temporary Use Incinerators and Air Curtain Incinerators Used in Disaster Recovery](#),” EPA–HQ–OAR–2025–0068; FRL–12906–03–OAR, published March 20, 2026.

² *Id.* at 13553.

petrochemical manufacturing feedstocks, which can then be transformed into a wide range of valuable products. These products retain the same or substantially similar physical properties as those made from virgin materials. Misclassification of these process units as waste operations will hinder rather than encourage innovation to meet consumer demand for recycled materials and increase recycling rates and content.

III. Background on Advanced Recycling

Most recycling in the US is considered “mechanical recycling.” This type of recycling takes certain types of plastic items, then shreds, washes, and melts them into plastic pellets, which can then be used to make new products. Mechanical recycling has its limitations, however, including the types of finished goods recycled plastics can be used in, limitations in sortation, challenges with contamination, and limitations involving the number of times the plastics can be recycled before degrading (similar to what is seen in recycling paper).

Advanced recycling, a type of non-mechanical recycling, often uses a pyrolysis process to overcome many of the limitations of mechanical recycling. Specifically, advanced recycling can be used to recycle more types of plastics into a wider range of new plastics and other valuable products. Advanced recycling is essential and needed to complement mechanical recycling to help EPA meet its goals of creating a more circular economy for plastics and increasing overall recycling rates.

Petrochemical producers recognize the potential of advanced recycling to complement mechanical recycling and better address plastic waste. Petrochemical manufacturers are driving real breakthroughs in advanced recycling using pyrolysis and gasification. Since 2017, companies from areas across the United States have announced \$8.7 billion in investments for 83 new projects in advanced recycling and recovery, as well as mechanical recycling, aimed at revolutionizing the use and reuse of plastic resources. Advanced recycling and recovery facilities could divert over 12 million metric tons of used, recoverable plastics from landfills each year.³ AFPM and its members are exploring and supporting policies to spur investment and scaling of these technologies as a key element to address plastic waste.

Regulating advanced recycling processing units as solid waste incineration would be inconsistent and incongruent with the legal definitions found in the CAA. It would also run counter to the precedent 27 states have set when they enacted laws appropriately defining advanced recycling as a manufacturing process, as opposed to solid waste disposal or incineration.⁴ Treating pyrolysis and gasification units used in advanced recycling as an incineration or disposal action as opposed to a manufacturing process would also defy scientific convention – advanced recycling processes do not involve combustion or incineration – and invoke onerous and inappropriate permitting requirements, severely hampering the country’s ability to modernize and expand plastics recycling.

³ See “[The Potential Economic Impact of Advanced Recycling and Recovery Facilities in the United States](#)” published by American Chemistry Council, April 2022, accessed May 4, 2026.

⁴ See “[Regulation of Advanced Recycling Is at a Crossroad](#),” Mark Duvall, Ben Champion, Chloe Heller. Published July 24, 2025, by Beveridge & Diamond. Accessed April 7, 2026.

IV. The Science – Pyrolysis is Not Combustion

Pyrolysis processes that involve plastics or other hydrocarbon-based materials are designed to minimize or virtually eliminate the presence of oxygen to produce other hydrocarbons, often with shorter carbon chain lengths, and to avoid production of unwanted byproducts that have little value like carbon dioxide and water. In other words, pyrolysis units are carefully designed and operated to prevent the “combustion” or “burning” of the feedstock. Consistent with these principles, EPA correctly explained in the 2021 ANPRM that “[p]yrolysis is a process where materials are thermally decomposed or rearranged under process conditions where extremely little to no oxygen is present.”⁵ Also, as noted above, EPA explained in the 2021 ANPRM that pyrolysis reactions are endothermic, which means that energy must be added to the reaction to obtain the desired reaction products. Combustion is commonly understood to be an exothermic reaction – i.e., one that produces rather than consumes energy.

Similarly, the object of a gasification unit is not to burn the feedstock. Instead, gasification units are designed to produce a value-added gaseous product (“syngas”) that is subsequently used for conversion to desirable hydrocarbons, alcohols, or other products. In gasification units, the amount of oxygen is carefully controlled to produce syngas. In other words, as with pyrolysis units, the primary purpose of a gasification unit is to prevent combustion of the feedstock. As EPA explained in the 2021 ANPRM, “[o]xygen (as air, concentrated oxygen, or steam) is added in small amounts to maintain a reducing (i.e, oxidation- or combustion-preventing) atmosphere, where the quantity of oxygen available is less than the stoichiometric ratio (i.e, amount needed for complete combustion of the feed material).”⁶ Based on the science, EPA properly concluded in 2021 that these processes should not be regulated under §129.

V. Regulatory History of the Treatment of Pyrolysis and Gasification

A. Pyrolysis units that consume post-consumer plastics as feedstocks are currently misclassified and regulated under §129 of the CAA.

Over the past six years, EPA has considered various ways to regulate pyrolysis and gasification units under the CAA. Unfortunately, regulatory uncertainty remains because the Agency has not taken a definitive position on how these units should be regulated. In 2020, EPA proposed to modify the definition of “municipal waste combustion unit” in the OSWI rules by removing the reference to pyrolysis/combustion units but that proposed rule was never finalized.⁷ Instead, EPA wanted to gather more information to make a more durable change before finalizing the 2020 proposed rule, so in 2021, the Agency published an Advanced Notice of Proposed Rulemaking (“ANPRM”) to gather more information on pyrolysis/combustion units.⁸ AFPM

⁵ See 86 *Fed. Reg.* 50296, “[Potential Future Regulation Addressing Pyrolysis and Gasification Units](#),” EPA-HQ-OAR-2021-0382; FRL-7547-01-OAR, published Wednesday, September 8, 2021. p. 50299.

⁶ *Id.* at 50300.

⁷ See 85 *Fed. Reg.* 54178, “[Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review](#),” EPA-HQ-OAR-2003-0156; FRL-10013-19-OAR, published Monday, August 31, 2020.

⁸ See 86 *Fed. Reg.* 50296, “[Potential Future Regulation Addressing Pyrolysis and Gasification Units](#),” EPA-HQ-OAR-2021-0382; FRL-7547-01-OAR, published Wednesday, September 8, 2021.

provided written comments to the docket noting CAA §129 is not appropriate for regulating advanced recycling processes.⁹

In 2023, the Biden Administration proposed to withdraw the 2020 proposed rule that would have removed the reference to pyrolysis/combustion units; however, that rule was also never finalized.¹⁰ In 2024, EPA reopened the docket one more time in its proposal to add a definition for rudimentary combustion devices to address the unique issues associated with them.¹¹ At that time the Agency did not address pyrolysis and gasification units in that notice but did state it would address them at a later date.

B. AFPM does not support the regulation of pyrolysis and gasification units under the CAA §129 standard for OSWI.

As mentioned above, on September 8, 2021, EPA published an ANPRM to gather details on pyrolysis/combustion units.¹² While EPA did not expressly request comment in the 2021 ANPRM on whether pyrolysis or gasification units should be regulated under CAA §129, the Agency noted ongoing confusion as to the applicability of the existing CAA §129 standards and explained that the information gathered through the 2021 ANPRM would inform the “growing interest in the general need to determine whether these conversion technologies should be regulated under CAA section 129 as part of a category (or subcategory) of solid waste incineration unit, or as a specific source category under other provisions of the CAA, including under CAA sections 111 or 112.”¹³ To be clear, this rule should be framed as a clarification to reflect longstanding interpretation, since pyrolysis units have never been included within the definition of an OSWI.

EPA further explained that the 2021 ANPRM was motivated in part by comments received on its 2020 proposal to determine that the CAA §129 standard for OSWI does not apply to pyrolysis units.¹⁴ In that proposed rule, EPA explained that it:

“believe[s] the reference to pyrolysis/combustion units as MWC Municipal Waste Combustor should not apply to OSWI units because

⁹ See AFPM Comments “[Potential Future Regulation Addressing Pyrolysis and Gasification Units](#),” EPA-HQ-OAR-2021-0382-0140, submitted on December 23, 2021.

¹⁰ See 88 Fed. Reg. 36524, “[Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review; Withdrawal of Proposed Provision Removing Pyrolysis/Combustion Units](#),” EPA-HQ-OAR-2003-0156; FRL-7547.2-02-OAR, published Monday, June 5, 2023.

¹¹ See 89 Fed. Reg. 60342, “[Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Revisions to Definitions](#),” EPA-HQ-OAR-2003-0156; FRL-7547-03-OAR, published July 25, 2024.

¹² See 86 Fed. Reg. 50296, “[Potential Future Regulation Addressing Pyrolysis and Gasification Units](#),” EPA-HQ-OAR-2021-0382; FRL-7547-01-OAR, published Wednesday, September 8, 2021.

¹³ See 86 Fed. Reg. 50296, “[Potential Future Regulation Addressing Pyrolysis and Gasification Units](#),” EPA-HQ-OAR-2021-0382; FRL-7547-01-OAR, published Wednesday, September 8, 2021. p. 50296.

¹⁴ *Id.* at 50298.

such units are used to combust uncontained gases and do not involve the combustion of solid waste as defined in the OSWI rule.”¹⁵

More specifically:

“In a closely coupled pyrolysis/combustion chamber, the gaseous material comes out of the pyrolysis chamber and immediately is incinerated in the combustion chamber. The pyrolysis gas is not placed into a container and then combusted. Therefore, the pyrolysis gas in the closely coupled pyrolysis/combustion chamber is not “contained gaseous material,” as referenced in the definition of solid waste.”¹⁶

EPA noted that this conclusion was consistent with its determination in the OSWI rule that “thermal oxidizers, catalytic oxidizers, and flameless thermal oxidizers are not considered to be subject to the OSWI rule if these units are used to combust uncontained gas from an industrial process (70 FR 74877).”¹⁷

Lastly, EPA observed that “the pyrolysis process, by itself, is not combustion” because “unlike combustion, the pyrolysis process is endothermic and does not require the addition of oxygen (i.e., the partial pressure of oxygen during a pyrolysis process is maintained close to zero).”¹⁸ In fact, a pyrolysis process must EXCLUDE oxygen to produce the desired products. If that were not the case, then the resulting products would be predominantly carbon dioxide and water.

The key to the Agency’s analysis was to recognize that pyrolysis is a discrete process that does not entail “combustion.” In some applications, certain byproducts from a pyrolysis process may be routed to a combustion device, but the subsequent combustion of pyrolysis gas byproducts does not cause the pyrolysis unit itself to be a combustion unit that is subject to regulation under CAA §129. AFPM agrees with this analysis and urges EPA to remove pyrolysis/combustion units from the definition of “municipal waste combustion unit” in the OSWI NSPS and EG.

C. Post-consumer materials used as feedstocks for the manufacture of products are not solid waste.

The CAA solid waste incineration provisions incorporate Resource Conservation and Recovery Act’s (RCRA) definition of “solid waste,” solely as a threshold jurisdictional test.¹⁹ Put simply, RCRA determines what is a solid waste; the CAA determines how combustion of that waste is regulated. If a material is not a RCRA solid waste under 40 CFR §261.2(e)(1), then CAA §129 cannot apply, and EPA must regulate under §112 or another CAA authority.

¹⁵ See 85 Fed. Reg. 54178, “[Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review](#),” EPA-HQ-OAR-2003-0156; FRL-10013-19-OAR, published Monday, August 31, 2020.

¹⁶ *Id.* at 54187

¹⁷ *Id.* at 54188.

¹⁸ *Id.*

¹⁹ See [40 CFR § 261.2\(e\)\(1\)](#).

According to 40 CFR §261.2(e)(1), recycled materials that are “[u]sed or reused as ingredients in an industrial process to make a product” are not considered solid waste.²⁰ Post-consumer plastics used as feedstocks for pyrolysis and gasification meet this criterion. These materials are intentionally collected and processed to produce pyrolysis oil, which is a substance classified as Unknown or Variable composition, Complex reaction products, or Biological materials (“UVCB”). The components of pyrolysis oil can be separated and used to produce a variety of organic chemicals that serve as building blocks for specialty chemicals and plastics. The feedstocks for pyrolysis and gasification units are not discarded; rather, they are intentionally collected and processed to make other products, so they do not even fit the most fundamental definition for solid waste: “any discarded material.”²¹

To reiterate, used plastic only implicates the CAA solid waste incineration rules if it is first a RCRA solid waste. When used plastic is legitimately used as a manufacturing feedstock, as mentioned above, it is not “discarded;” therefore, §129 cannot apply. Treating feedstock recycling as incineration improperly expands §129 beyond its statutory trigger and collapses the distinction Congress preserved between waste disposal and industrial production.

D. Advanced recycling processes are manufacturing processes and should be regulated under CAA §111 and §112 like other petrochemical manufacturing processes.

Pyrolysis and gasification units are used to manufacture syngas and a range of Class 2 substances, such as distillates, naphthas, and other value-added products substantially similar to those derived from petroleum.²² In fact, many processing units found at petroleum refineries, such as reformers, visbreakers, fluidized catalytic crackers, and hydrocrackers are based on pyrolysis. Petrochemical manufacturing sites use steam crackers that are also based on pyrolysis. Pyrolysis processing is not new; on the contrary, pyrolysis has been used to manufacture fuel components and petrochemical building blocks for many decades. Gasification has been around even longer; with coal gasification starting in the 1800s. These units are regulated under CAA §111, and for those that may emit hazardous air pollutants, also under §112. Pyrolysis and gasification units that use plastics, biomass, or other non-petroleum feedstocks are used to manufacture syngas, naphthas, distillates, and other Class 2 substances in a similar manner as the pyrolysis and gasification units that handle petroleum-based feedstocks.

The primary purpose of gasification and pyrolysis is manufacturing or materials recovery, not waste disposal. A central distinction relevant to CAA applicability is the purpose of the unit. Pyrolysis and gasification units operate as part of a production process to produce syngas, oils, waxes, or chemical intermediates from feedstocks (including plastics or biomass) – they are not part of a waste management system. EPA has acknowledged in rulemakings and the ANPRM that many of these units function more like industrial process units than waste incinerators, particularly when outputs are used onsite or sold as commodities. Furthermore, 40 CFR §260.10 lists

²⁰ *Id.*

²¹ See [40 CFR § 261.2\(a\)\(1\)](#).

²² Under the Toxic Substances Control Act (TSCA), Class 2 substances are UVCBs on the TSCA Inventory of substances actively manufactured in the United States. They are often complex isomeric streams that can vary in carbon chain length and molecular branching.

incineration and pyrolysis as two separate, distinct thermal treatment processes, so they are not synonymous.²³

Indeed, §129 is a narrow, technology-specific carve-out from §112 under the CAA. The CAA structure makes §129 the exception, not the rule. Section 112 establishes the general Maximum Achievable Control Technology (MACT) framework for stationary sources of hazardous air pollutants, while §129 is a bespoke regime limited to defined categories of solid waste combustors. Courts and EPA guidance have repeatedly recognized that units should not be swept into §129 unless they squarely fit within those combustion categories.

Lastly, §112 of the CAA also better accommodates feedstock and design variability. Pyrolysis and gasification units vary widely in feedstocks, temperature and oxygen conditions, and use of secondary combustion or none at all. The MACT framework under §112 is expressly designed to address this type of source-specific and subcategory-based variability, whereas §129 relies on uniform treatment standards developed for broadly similar incinerator categories and, therefore, does not reflect the operational diversity of these systems. For all these reasons pyrolysis and gasification units should be regulated under CAA §112 just like all the other pyrolysis units used in manufacturing.

To the extent emissions may warrant regulations, §111 NSPS for the relevant source category for hazardous air pollutants already apply or can apply. This is consistent with how EPA regulates other thermal manufacturing processes (e.g., crackers, reformers, and cokers) that involve high temperature but are not incineration.

VI. Conclusion

AFPM appreciates the opportunity to submit these comments and unequivocally supports EPA's proposal to delete reference to pyrolysis/combustion units from the definition of "municipal waste combustion unit" in the OSWI NSPS and EG. To reiterate, pyrolysis and gasification units are not waste operations and should not be regulated as such under the CAA. Pyrolysis and gasification units minimize oxygen and, therefore, do not involve combustion. Pyrolysis and gasification units are manufacturing processes and should be regulated under the CAA the same way that other petrochemical and fuel manufacturing processes are regulated. Proper regulatory classification of pyrolysis and gasification units is essential for increasing circularity and achieving industry and the nation's sustainability goals.

²³ See [40 CFR 260.10](#).