

May 4, 2026

U.S. Environmental Protection Agency
EPA Docket Center
WJC West Building, Room 3334
1301 Constitution Avenue NW
Washington, DC 20004

Re: 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 – Docket ID: EPA-HQ-OAR-2025-0068-0001

Thank you for the opportunity to comment on EPA's proposed rule addressing air curtain incinerators and related solid waste combustion units.

These comments are offered to provide technical context that may be helpful in distinguishing between different thermal processes referenced or implicated in this rulemaking.

Pyrolysis and similar chemical recycling processes are sometimes discussed alongside incineration, despite fundamental differences in process conditions, outputs, and intended purposes. Clarifying these distinctions may support consistent interpretation and implementation of the regulatory framework.

EPA has defined incineration as a process in which combustion occurs, and air curtain incinerators are similarly described as units "in which combustion occurs," reflecting the central role of oxygen and controlled flame combustion in these systems. These processes are designed to convert waste materials primarily into carbon dioxide, water, and ash. Pyrolysis, by contrast, is a non-combustion thermal process conducted in an oxygen-limited or oxygen-free environment. Under these conditions, materials are not combusted within the primary reactor; instead, they are thermally decomposed into hydrocarbon products such as a spectrum of hydrocarbon products, including condensable liquid fractions (often referred to as pyrolysis oil), non-condensable gases (C1-C4), and solid carbonaceous char. These outputs retain material value and may be used as chemical feedstocks or inputs to the manufacturing processes.

This distinction is reflected in both process design and outcomes. Combustion-based systems are designed for waste destruction and energy recovery, while pyrolysis-based systems are designed to transform materials into usable intermediate products. As a result, the two approaches produce different outputs and serve different roles within the broader waste management system. These distinctions are particularly relevant where regulatory classifications hinge on whether a process is defined as 'combustion' under Section 129 of the Clean Air Act.

EPA materials describe combustion of municipal solid waste as a process in which waste is burned to generate energy, converting materials primarily into heat, electricity, and residual ash.¹ These combustion-based systems rely on the presence of oxygen and are designed for waste destruction and energy recovery.

By contrast, pyrolysis is a thermal decomposition process that occurs in the absence (or near absence) of oxygen². Under these conditions, materials are not combusted within the primary reactor but instead broken down into hydrocarbon products such as gases, liquids, and solid residues. These outputs may be further processed and used as feedstocks in manufacturing applications, distinguishing pyrolysis from combustion-based waste management approaches.

In this context, the following considerations may be relevant to EPA's evaluation:

- Maintaining clear distinctions between combustion-based processes and non-combustion material recovery technologies;
- Evaluating technologies based on their operating conditions (including the presence or absence of oxygen), outputs, and system-level performance rather than categorical assumptions; and
- Using terminology that reflects these technical differences, particularly in areas where the Agency has requested input on definitions related to pyrolysis and combustion (e.g., OSWI-1).

Clear and consistent terminology can support effective implementation, reduce ambiguity for stakeholders, and ensure that different technologies are evaluated according to their respective characteristics.

Thank you for the opportunity to provide comments.

Sincerely,

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¹ <https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw>

² <https://www.bakerinstitute.org/research/controversy-context-evidence-based-insights-chemical-recycling>