

# Using Clean Cellulosic Biomass as Fuel in Cement Manufacturing

A FORUM HOSTED BY EPA'S SMART SECTORS PROGRAM IN JUNE 2025



## BACKGROUND

EPA's Smart Sectors program has been working with the American Cement Association (ACA) to advance the cement industry's sustainability goals. One goal is increasing the use of alternative fuels in cement production. Cement production is highly energy intensive and currently relies primarily on fossil-based fuel sources for the generation of heat; increased use of biomass as a fuel has the potential to reduce the industry's environmental footprint.

Smart Sectors facilitated a series of conversations between the cement industry and EPA that culminated in the release of an EPA fact sheet in September 2024 ([Fact Sheet on Clean Cellulosic Biomass and Non-Hazardous Secondary Materials Determinations](#)) that clarifies the regulatory treatment of biomass residuals used as fuel under EPA's Non-Hazardous Secondary Materials Rule.

EPA's Smart Sectors program works with industry sectors to develop collaborative approaches to improve environmental and public health outcomes. To learn more about the Smart Sectors program, [visit their website](#).

The **American Cement Association** is the premier policy, research, education, and market intelligence organization for the cement industry. For more information about ACA, [visit their website](#).

## FORUM

**On June 18, 2025, EPA's Smart Sectors program, in cooperation with ACA, convened a virtual forum for the cement industry, the solid waste management industry, and EPA personnel to:**

- Highlight the release of EPA's fact sheet on the use of clean cellulosic biomass as fuel and the regulatory clarifications it provides.
- Initiate a multi-stakeholder dialogue on opportunities for the cement industry to work with the solid waste management industry to achieve its goal of increasing the use of biomass fuels.
- Present best practices and lessons learned on the use of clean cellulosic biomass as fuel.
- Make connections between ACA's membership and EPA leadership.

The event included four presentations followed by a dialogue between participants and presenters.





## EPA PRESENTATION

Traci Atagi ([Atagi.Tracy@epa.gov](mailto:Atagi.Tracy@epa.gov)), from EPA's Office of Land and Emergency Management, provided an overview of the agency's Non-Hazardous Secondary Materials (NHSM) Program, where she defined clean cellulosic biomass and clarified that (1) clean cellulosic biomass is considered equivalent to traditional fuel unless it has been discarded and (2) it is only considered discarded when it has been mixed with solid waste (e.g., municipal solid waste or construction and demolition debris) or otherwise disposed of (e.g. buried in a landfill).



## UNACEM PRESENTATION

Desirea Haggard ([dhaggard@drakeus.com](mailto:dhaggard@drakeus.com)) presented a case study on UNACEM's Arizona cement plant which is currently utilizing biomass residuals (derived from local forest management activities) as 10-20% of its fuel mix with the goal of eventually replacing up to 50% of its traditional coal and petcoke fuel blend. UNACEM believes that the increased use of locally sourced biomass residuals can result in a reduction of CO<sub>2</sub> and CH<sub>4</sub> outputs while also reducing PM10 and PM2.5 emissions by supporting regional forest management practices that mitigate fire risk.



## IDAHO NATIONAL LABS (INL) PRESENTATION

Lynn Wendt ([Lynn.Wendt@inl.gov](mailto:Lynn.Wendt@inl.gov)) provided an overview of INL and other federal data regarding the characteristics and supply of biomass residuals that can be used as fuel, and the challenges associated with logistics, quality, and consistency in the supply of these materials. The Department of Energy estimates that more than 161 million tons of biomass residuals are available annually that could potentially be utilized to reduce the use of fossil-based fuels while diversifying the energy portfolio and providing local economic development opportunities. INL offered its support to cement companies in overcoming the challenges associated with using biomass as fuel.



## NATIONAL WASTE AND RECYCLING ASSOCIATION (NWRA)

Anne Germain ([agermain@wasterecycling.org](mailto:agermain@wasterecycling.org)) provided an overview of opportunities for the cement industry to partner with the solid waste management industry to increase the use of biomass residuals as fuel. Cement companies interested in exploring collaboration opportunities with the solid waste management industry were encouraged to assess their specifications, cost, transportation, and storage requirements prior to reaching out to NWRA.

## HIGHLIGHTS FROM Q&A SESSION

**Q: If a cement manufacturer blends different biomass materials before introducing them into a cement kiln as fuel, does that impact regulatory treatment under EPA's NHSM regulations?**

**A (EPA):** It depends on the biomass materials blended. If the blending includes biomass materials other than clean cellulosic biomass, additional review (including review of contaminant levels) should be conducted.

**Q: Some cement plants use highly variable fuel blends and it can be difficult to distinguish what portion of the blend is biogenic. Is there a test method to determine the biomass percentage of the fuel blend being used?**

**A (INL):** Carbon-14 testing can assess the age of organic material to distinguish between biogenic vs. non-biogenic content (when conducted in accordance with D6866 Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis). Spectroscopy may be an alternative technique, but additional research is needed to ensure the accuracy of these tests.

## ATTENDEE INFORMATION

The forum was attended by 62 participants from the cement industry, the solid waste management industry and the federal government.

## ATTENDANCE

More than 60% of ACA member companies participated in the forum.

## ADDITIONAL RESOURCES AND CONTACT INFORMATION

For additional information, presentation materials or further questions, contact EPA Smart Sectors' Cement and Concrete Sector Lead, Peter Hillebrand ([Hillebrand.Peter@epa.gov](mailto:Hillebrand.Peter@epa.gov)) or [visit Smart Sectors' web page on the forum](#)

[Find a list of EPA's regional contacts for NHSM waste determination](#)