

Non-Hazardous Secondary Materials (NHSM) Program and Clean Cellulosic Biomass

EPA Clean Cellulosic Biomass Forum with the Cement Industry
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Overview of Presentation

- NHSM Regulations: Background
- NHSM Interaction with State Solid Waste Programs
- Traditional Fuels and Clean Cellulosic Biomass
- Regulation of Other Biomass Material
- Resources

NHSM Regulations: Background (1)

- Clarifies which secondary materials are **solid wastes** when burned in combustion units for energy recovery.
 - “Secondary material” refers to materials that are not the primary product of a manufacturing or commercial process and include post-consumer material, off-spec commercial chemical products or manufacturing chemical intermediates, post-industrial material, and scrap.

Examples of NHSM



C&D Wood



Poultry Litter



Biosolids



Used Oil

NHSM Regulations: Background (2)

- Under 2007 circuit court decision on 2 air rules, combustion of *any* solid waste, whether for energy recovery or not, is subject to CAA section 129 waste incinerator standards.
- The NHSM regulations identify criteria by which a non-hazardous solid waste can be transformed into a product-like alternative fuel.
- Only applies to non-hazardous waste; under the RCRA statute, hazardous waste always remains regulated when burned for energy.
- Important thresholds in the program:
 - The waste must really be transformed (i.e., processed) into a non-waste fuel.
 - The NHSM fuel must have a comparable amount of hazardous air pollutant (HAP) compounds or less compared to the traditional fuel it would be replacing.

NHSM Regulations: Background (3)

- Why these regulations are important:
 - Units that burn **solid waste** would be subject to requirements under CAA section 129 solid waste incinerator regulations.
 - Units that burn materials identified as **non-waste** would be subject to requirements under CAA section 112 regulations.



NHSM Interaction with State Solid Waste Programs

- Under CAA section 129, the term “solid waste” is defined by RCRA federal regulations.
- Therefore, state definitions of solid waste or beneficial use are not applicable in determining waste/non-waste under the NHSM rules.
- However, NHSM rules do not preempt state solid waste authority for regulation of other (non-combustion) end uses.
- **In other words, a material may be a solid waste for NHSM purposes, but not for state solid waste regulatory purposes (and vice versa).**

Traditional Fuels

- Traditional fuels are materials that are produced as fuels and are not NHSMs or solid wastes, including:
 - (1) Historically valuable fuel products, including fossil fuels and their derivatives (e.g., coal, oil, natural gas, petroleum coke, bituminous coke, coal tar oil, refinery gas, etc.) and virgin wood; and
 - (2) Alternative fuels that have been used as fuel products, including used oil which meets the specifications outlined in [40 CFR 279.11](#), currently mined coal refuse that previously had not been usable as coal, and **clean cellulosic biomass**.
- Traditional fuels provide the benchmark against which NHSMS are evaluated in determining whether the NHSMS are non-waste fuels when burned for energy recovery.

Clean Cellulosic Biomass: Definition

- Clean cellulosic biomass is not an NHSM (or a solid waste) when burned for energy recovery, **unless discarded.**
 - This material is considered equivalent to a traditional fuel.
- Examples include agricultural and forest-derived biomass, urban wood, corn stover and other biomass crops, and bagasse and other crop residues.
- Cellulosic biomass is considered “clean” when it contains contaminants at concentration levels no higher than those normally associated with virgin biomass material.



Clean Cellulosic Biomass: "Discard" Clarification Request

- In collaboration with the cement industry, EPA's Smart Sectors Program identified agricultural residues and other types of clean cellulosic biomass as opportunity for increasing the industry's use of alternative fuels.
 - One area that industry identified as a possible barrier to this alternative fuel use is the statement in the regulations that clean cellulosic biomass is not an NHSM or solid waste "**unless discarded**".
- The Smart Sectors Program organized a meeting between EPA's NHSM staff and representatives from the cement industry, where industry representatives offered examples where clarification from EPA on the use of clean cellulosic biomass would be helpful.
- As a result, the NHSM team developed the **Fact Sheet on Clean Cellulosic Biomass and Non-Hazardous Secondary Materials Determinations** to help provide clarification and regulatory certainty.

Clean Cellulosic Biomass: Discard Clarification

- Clean cellulosic biomass managed separately from solid waste and going to burning for energy recovery **would not be** considered “discarded.”
 - For example, branches, and other plant material collected separately from municipal solid waste to be converted to alternative fuel.
- Cellulosic biomass that has been mixed with solid waste, such as municipal solid waste or construction and demolition debris, or that has been disposed of (e.g., buried in a landfill), **would be** considered “discarded.”
- **Units combusting these co-mingled materials would be regulated as solid waste incinerators**, unless the material is sufficiently processed and meets the legitimacy criteria for non-waste fuel.



Clean Cellulosic Biomass: C&D Wood vs C&D Debris

- Clean construction and demolition (C&D) **wood** is an example of clean cellulosic biomass.
- C&D **debris**, which consists of a mixture of wastes resulting from construction and demolition activities, **is not**.
- C&D debris must be processed using best management practices to produce construction and demolition wood that would meet the definition of clean cellulosic biomass.
 - The specific standards for processing are 40 CFR Section 241.4(a)(5), which include a requirement that the combustor obtain a written certification from each final processor of C&D wood that states: ***the processed C&D wood has been sorted by trained operators in accordance with best management practices.***



Clean Cellulosic Biomass and Biochar

- Clean cellulosic biomass that is processed to make a biochar product would **not** be considered discarded and would not be an NHSM or solid waste for the purposes of the Clean Air Act.
- Biochar produced from clean cellulosic biomass is considered a “traditional product” for the purposes of the NHSM regulations.



Regulation of Other Biomass Material

- Biomass that is not “clean cellulosic biomass,” such as treated wood, is a solid waste when combusted as fuel, unless it has been sufficiently processed and meets the legitimacy criteria for non-waste fuel or meets one of the categorical non-waste fuels listings.
 - For example, resinated wood is a categorical non-waste fuel per 40 CFR Section 241.4(a)(2).
- In addition, biomass that is not clean cellulosic biomass is considered discarded when used in a combustion unit to make biochar (and thus potentially subject to CAA 129), unless it meets the legitimacy criteria for a non-waste ingredient.
- Combustors can make a self-determination that these materials are a non-waste fuel or ingredient based on the NHSR regulatory requirements, which include adequate processing and meeting the applicable legitimacy criteria.
- The NHSR Guide for Waste/Non-Waste Determinations can be used to help make these types of non-waste determinations.

Resources and Contacts (1)

- **EPA's NHSM website**

<https://www.epa.gov/rcra/identification-non-hazardous-secondary-materials-are-solid-waste>

- **The NHSM Guide for Waste/Non-Waste Determinations**

https://www.epa.gov/sites/default/files/2021-05/documents/nhsm_guide_5_26_2021.pdf

- **Fact Sheet on Clean Cellulosic Biomass and Non-Hazardous Secondary Materials Determinations**

<https://www.epa.gov/rcra/fact-sheet-clean-cellulosic-biomass-and-non-hazardous-secondary-materials-determinations>

- **Fact Sheet on Non-Hazardous Secondary Materials Determinations and Scrap Tires**

https://www.epa.gov/sites/default/files/2020-12/documents/scrap_tire_fact_sheet_dec_2020_v2.pdf

Resources and Contacts (2)

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NHSM EPA Regional Contacts

<https://www.epa.gov/rcra/identification-non-hazardous-secondary-materials-are-solid-waste#contacts>