



NON-HAZARDOUS SECONDARY MATERIAL (NHSM) REGULATIONS 40 CFR PART 241 GUIDE FOR WASTE/NON-WASTE DETERMINATIONS¹

What is the purpose of this guide, and who is the intended audience?

The purpose of this document is to provide guidance to help you understand the regulations found at Title 40 of the Code of Federal Regulations (40 CFR) part 241 and how they apply to a non-hazardous secondary material (NHSM) when it is burned as a fuel.²

The intended audience for this guide includes:

- The regulated community, including NHSM generating facilities and owners/operators of combustion units intending to combust NHSM.
- U.S. Environmental Protection Agency (EPA) officials with oversight responsibility for the NHSM rules.
- State, interstate, and local air agency permitting and enforcement officials.
- Tribal officials.

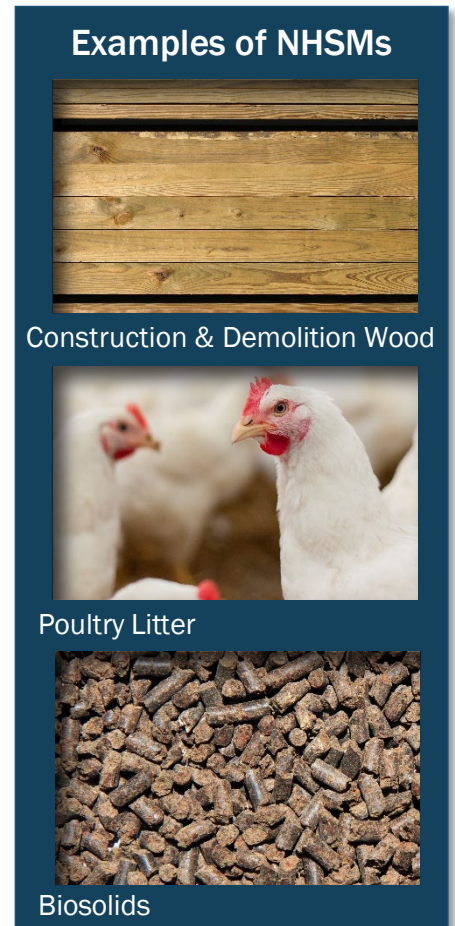
What is an NHSM and what is the purpose of 40 CFR part 241?

An NHSM is any secondary material that, when discarded, would not be identified as a hazardous waste (e.g., construction & demolition wood). Secondary materials are materials which are not the primary product of a manufacturing or commercial process. These can include post-consumer material (e.g., recycled cardboard), off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material, and scrap.

NHSM that is combusted is a solid waste, unless it is specifically determined to be a non-waste per the procedures in the 40 CFR part 241 regulations. The purpose of 40 CFR part 241 is to identify when an NHSM that is being combusted as a fuel or ingredient would be considered a *solid waste* under the Resource Conservation and Recovery Act (RCRA).

The RCRA statute defines solid waste as “any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.”

A key concept within the solid waste definition is that of “discard.” The definition of solid waste includes the phrase “other discarded material” to indicate the definition is not exclusive. It also provides examples



¹ The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies.

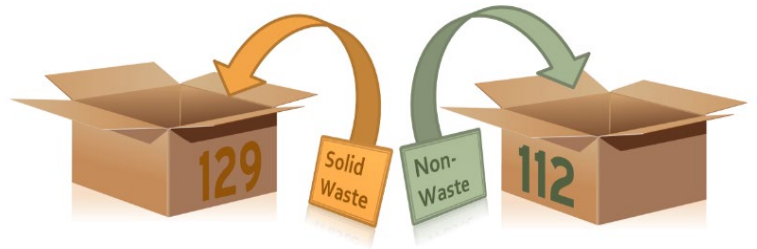
² While 40 CFR part 241 also applies to ingredients, this guide does not go into the requirements for ingredients. For more information about how the NHSM rules apply to ingredients, please see 40 CFR part 241.

of materials that are not included as discarded material. In determining discard, the plain-English meaning of the term applies, for example, disposed of, thrown away or abandoned.

Why does it matter if an NHSM is a solid waste under RCRA when it is combusted?

Determining whether an NHSM is a solid waste or not when it is combusted is key to understanding which Clean Air Act (CAA) requirements apply to the unit that combusts the NHSM.

Units combusting an NHSM that is a **solid waste** are subject to the requirements of **CAA section 129**, while units that combust an NHSM that is **not a solid waste** are subject to regulations promulgated under **CAA section 112**. CAA section 129 applies to solid waste combustion units such as commercial and industrial solid waste incinerators, while CAA section 112 applies to other types of units, such as boilers.



If a combustion unit subject to CAA section 112 burns an NHSM that is a solid waste under RCRA, then that unit will be in violation of its CAA permit. Therefore, it is critically important that *non-waste determinations* be done correctly.

What is a site-specific “self-determination” that an NHSM is not a solid waste when burned as a fuel under 40 CFR 241.3(b)?

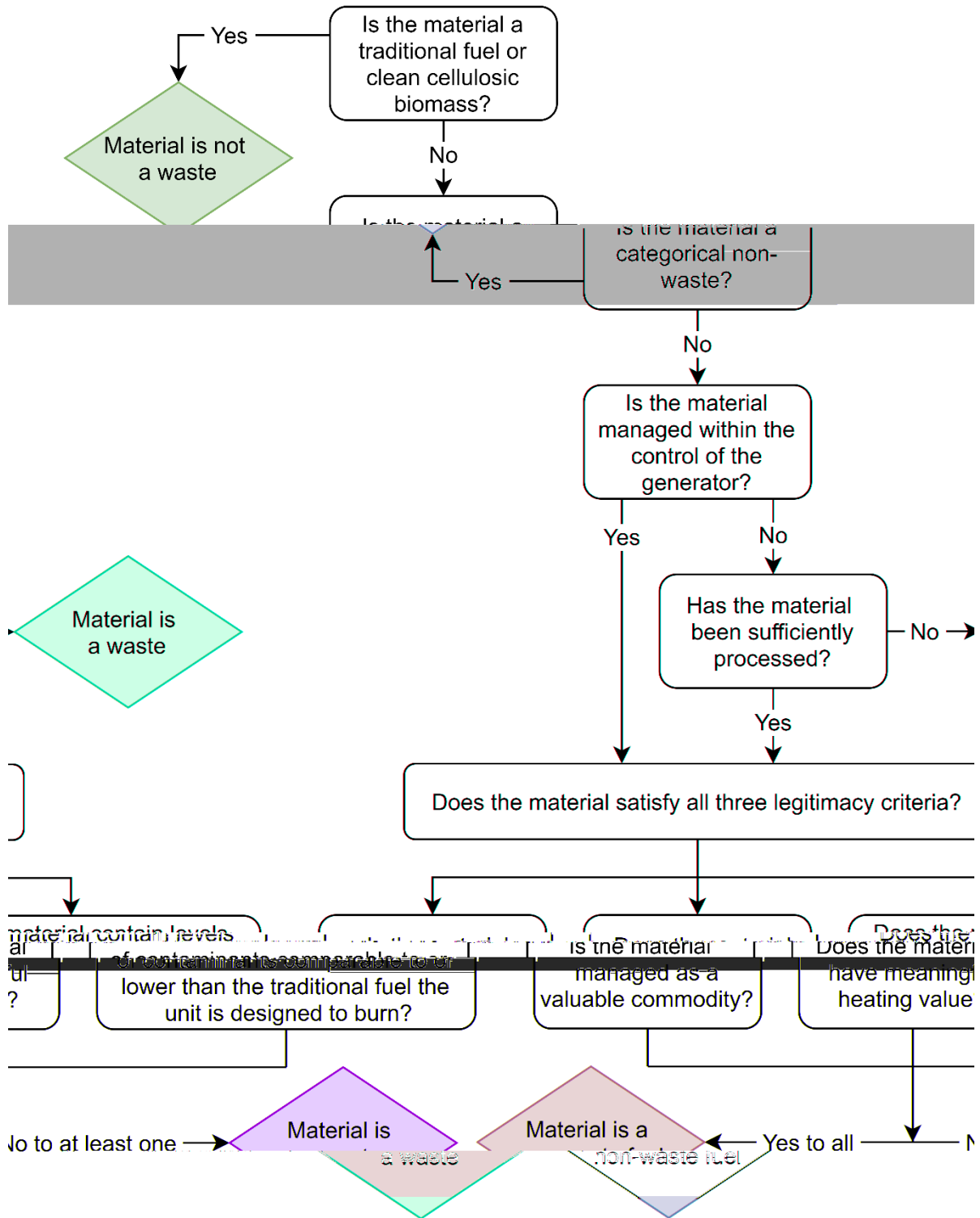
NHSMs other than traditional fuel, clean cellulosic biomass, or categorical non-waste require a determination that the NHSM is not a solid waste when burned as a fuel and meets the legitimacy criteria in the regulations. The recommended method for making a non-waste determination is the site-specific “self-determination” done by the facility that generates or combusts the NHSM, since the NHSM regulations are self-implementing. Determinations can also be made through the petition process discussed below.

For a self-determination, the generator or combustor of the NHSM at that site is responsible for making the non-waste determination, and also for meeting the documentation requirements in the regulations. Please see [page 9](#) of this guide for the documentation requirement citations.

The site-specific “self-determination” requirements under 40 CFR 241.3(b) are:

- The facility generating or combusting an NHSM determines if they will make a waste or non-waste determination for an NHSM (1) used as fuel managed [within the control the generator](#), (2) used as an ingredient, or (3) used as a fuel or an ingredient produced from processed discarded NHSM.
- The NHSM must meet the legitimacy criteria of 40 CFR 241.3(d).
- See the flow chart and additional information below.

Flow chart for making NHSM fuel self-determinations under 40 CFR 241.3(b)



How do I make a waste/non-waste self-determination for fuel?

NHSMs that are combusted for their fuel value are solid wastes unless they are specifically determined to be non-wastes.

The steps involved in making a self-determination for a given NHSM are summarized below. Each step is a means of determining whether the material has been discarded and is thus a waste.

► Is the material a **traditional fuel or clean cellulosic biomass** as defined in **40 CFR 241.2**?

If the material was produced as a fuel and is an unused product that hasn't been discarded, or is a residual that is akin to traditional cellulosic biomass, it is not a secondary material or a solid waste when burned as fuel.

► Is the material a **categorical non-waste fuel**?

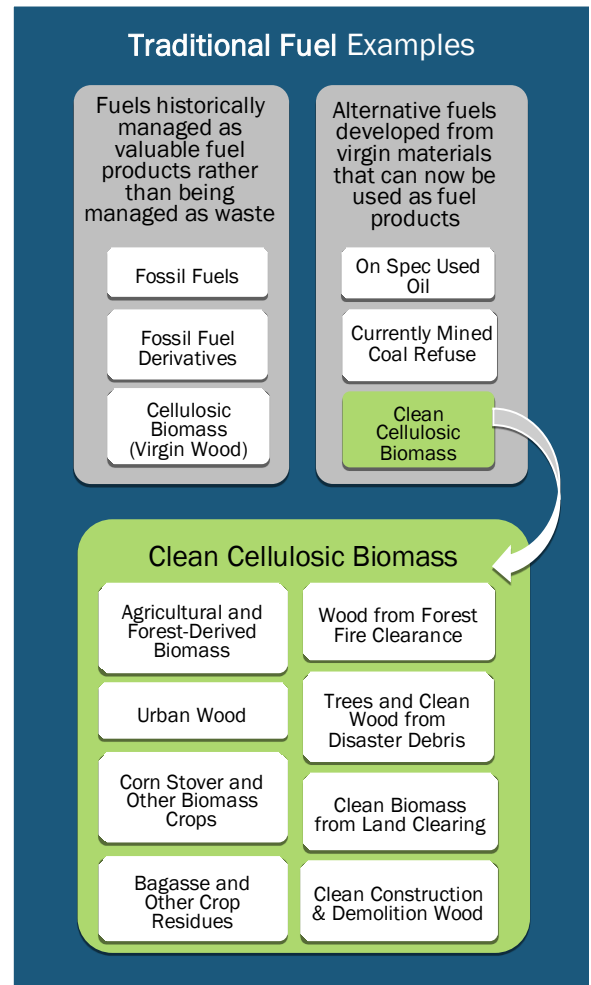
If the material is a categorically listed NHSM in [40 CFR 241.4\(a\)](#), it is a non-waste fuel.

► Is the material managed within the control of the generator?

Under 40 CFR 241.3(b)(1), NHSM used as a fuel in a combustion unit that remains within the control of the generator and that meets the legitimacy criteria is not a solid waste and does not need to be processed prior to being burned as a product fuel.

“Within the control of the generator” means either the NHSM is combusted at the generating facility, or the NHSM is generated and combusted at different facilities that are under the control of the same entity.

For more information, please see the preamble of the 2011 NHSM rule ([76 FR 15459](#)).



► If the material is managed outside the control of the generator, has the material been sufficiently processed?

Under 40 CFR 241.3(b)(4), NHSM burned as fuel that is not managed under the control of the generator must first be processed before considering whether the processed NHSM is a legitimate non-waste fuel. Until the material is processed to produce a non-waste fuel, it is considered a solid waste and would be subject to all appropriate federal, state, and local requirements.

Processing is defined in 40 CFR 241.2 and the determination of whether operations constitute sufficient processing is a fact-specific matter. For this determination:

- Apply the regulatory definition of processing (shown in the box to the right) to the specific discarded material(s) being processed.
- Consider the nature and content of the discarded material, as well as the types and extent of the operations performed on it.

The same operations may or may not constitute sufficient processing under the regulation in a particular circumstance, depending on the material being processed and the specific details of the processing.

The facility making a self-determination should document step-by-step details of the processing undergone by the NHSM to produce the material to be combusted.

The processed NHSM must meet the same legitimacy criteria in 40 CFR 241.3(d)(1) as NHSM managed under the control of the generator before being considered a non-waste fuel.

► Does the material meet the legitimacy criteria in 40 CFR 241.3(d)(1)?

All three of the following **legitimacy criteria** must be met for an NHSM to be considered a non-waste fuel.

1. The NHSM must be managed as a **valuable commodity**.

NHSMs should be managed consistently with how a company manages traditional fuels. Materials not handled similarly to traditional fuels could indicate that the material is being discarded.

Management practices should be consistent with how analogous fuels are handled, such as:

- being stored for a reasonable time frame.
- being adequately contained to prevent releases to the environment.

Processing is defined as any operations that transform discarded NHSM into a non-waste fuel or non-waste ingredient product. Processing includes, but is not limited to, operations necessary to:

- Remove or destroy contaminants;
- Significantly improve the fuel characteristics of the material, e.g., sizing or drying the material in combination with other operations;
- Chemically improve the as-fired energy content; or
- Improve the ingredient characteristics.

Minimal operations that result only in modifying the size of the material by shredding do not constitute processing.

An **analogous fuel** is a traditional fuel for which the NHSM substitutes. It serves the same function and has similar physical and chemical properties as the NHSM.

Reasonable time frames vary according to the NHSM and industry involved and are not specifically defined. Sources making a determination will need to document in their records what the “reasonable time frame” for the NHSM is, as well as the rationale for the time frame.

2. The NHSM must have **meaningful heating value** and be combusted as fuel to recover energy.

To meet this criterion, the NHSM should have an as-fired heating value of at least **5,000 Btu/lb.**

If the heating value is less than 5,000 Btu/lb., this criterion is met if the facility can demonstrate that the energy recovery unit can cost-effectively recover energy from the NHSM used as fuel.

The purpose of this criterion is to ensure NHSMs with low Btu value that are burned for destruction rather than energy recovery are regulated as solid waste and, as such, subject to the combustion requirements of CAA section 129.

Cost-effectiveness considerations for energy recovery may include:

- Cost savings from requiring significantly lower quantities of traditional fuels.
- Costs, if any, to purchase NHSM.
- Whether NHSM can self-sustain combustion.
- Possible profit from energy sales.

3. The NHSM must contain **comparable or lower contaminant levels** than what is found in the traditional fuel(s) the combustion unit is designed to burn.

This comparison is used to identify excess contaminants that could implicate burning as a means of waste destruction rather than legitimate fuel use.

Traditional fuel data may come from data collected by the EPA, or facilities may use their own data for traditional fuel contaminant values. Such data may include industry-recognized values provided by a national trade organization or laboratory test results from a specific generator or combustor.

NHSM fuel data should provide the total concentrations of each contaminant (see box on right) in the NHSM after processing, but prior to combustion on a dry basis. Generally, NHSM fuel data is developed by the generator sending samples of the processed NHSM to either an in-house or external qualified laboratory.

When either self-documenting or providing contaminant comparison data to EPA, it is helpful to include:

- Measurement units. Data must include moisture content if not reported on a dry basis.
- Number of samples and sampling methods used.
- Analytical methods used. Methods must measure the total contaminant concentration, not a fraction thereof (e.g., not only leachable or organic fractions).
- Quality assurance/quality control procedures used, such as calibration data, duplicate analyses (duplicate samples and laboratory control samples), and blank correction data, as appropriate.

Contaminants include most pollutants listed in CAA sections 112(b) and 129(a)(4). Cl, F, N, and S should also be included when NHSMs are burned as a fuel and combustion could form HCl, HF, NO_x, or SO₂.

A unit is considered **designed to burn** a given fuel if the unit burns or is capable of burning that fuel, regardless of what the unit is permitted to burn. Considerations include feed mechanisms and adjustments to physical parameters to ensure spatial mixing and flame stability per unit specifications.

Groups of contaminants in NHSMs may be compared to similar groups in traditional fuels when the contaminants share certain physical and chemical properties (e.g., volatility, the presence of specific elements, and compound structure).

Comparable to or lower than means the contaminant concentration in an NHSM is within a small acceptable range of, or lower than, the same contaminant in the traditional fuel. When compared to the full range of contaminants in traditional fuels, measures of NHSM contaminants may include:

- Upper end of statistical range (e.g., 90% UPL).
- Calculation involving mean and standard deviation.

Comparison of an average NHSM contaminant value to the high end of a traditional fuel range is not appropriate.

In addition to site-specific “self-determinations,” who else may be responsible for making a non-waste determination for a particular NHSM?

For petitions under 40 CFR 241.3(c) for a non-waste determination:

- EPA Regional Administrators and the Assistant Administrator for the Office of Land and Emergency Management (OLEM) answer petitions requesting a non-waste determination for a material used as a fuel that is not managed within control of the generator and has not been discarded in the first instance.

For rulemaking petitions for a categorical non-waste determination under 40 CFR 241.4:

- The EPA Administrator answers petitions for a categorical non-waste determination based on the criteria in 40 CFR 241.4(b) for materials that are not currently listed as categorical non-wastes.

When might I consider petitioning the EPA Regional Administrator or Assistant Administrator for a determination that an NHSM is not a solid waste under 40 CFR 241.3(c), and what information would I need to provide?

You may petition the appropriate EPA Regional Administrator or the OLEM Assistant Administrator for a determination that an NHSM has not been discarded (despite having been transferred to a third party) and is indistinguishable in all relevant aspects from a fuel product.

The determination will be based on whether the non-hazardous secondary material that has not been discarded is a legitimate fuel as specified in the legitimacy criteria in 40 CFR 241.3(d)(1):

- The NHSM is managed as a valuable commodity;
- The NHSM has a meaningful heating value and is used as a fuel in a combustion unit that recovers energy; and
- The NHSM must contain contaminants at levels comparable to or lower than the traditional fuel(s) that the combustion unit is designed to burn.

In addition, the determination will consider the following criteria from 40 CFR 241.3(c)(1):

- Whether market participants treat the NHSM as a product rather than as a solid waste;
- Whether the chemical and physical identity of the NHSM is comparable to commercial fuels;
- Whether the NHSM will be used in a reasonable time frame given the state of the market;
- Whether, between the point of generation and the point just prior to combustion of the secondary material, the constituents in the NHSM are released to the air, water or land at levels comparable to what would otherwise be released from traditional fuels; and
- Other relevant factors.

Petitioners should include information addressing the legitimacy criteria in 40 CFR 241.3(d)(1) and relevant criteria in 40 CFR 241.3 (c)(1)(i)-(v) as discussed above.

When might I consider submitting a rulemaking petition to the EPA Administrator requesting that an NHSM be listed as a categorical non-waste under 40 CFR 241.4(a), and what information would I need to provide?

A person may submit a rulemaking petition to the Administrator for a categorical non-waste determination under 40 CFR 241.4(b) for materials that are not currently listed under 40 CFR 241.4(a). Petitioners should also copy the OLEM Assistant Administrator when submitting a petition under 40 CFR 241.4(b). Materials that are listed in 40 CFR 241.4(a) have been determined to be non-waste materials by the EPA

Administrator, so site-specific determinations for these materials are not required, nor is testing or recordkeeping. This approach is helpful if the petitioner wants a nationally applicable determination.

Each petition must be submitted to the Administrator by certified mail and must include:

- The petitioner's name and address.
- A statement of the petitioner's interest in the proposed action.
- A description of the proposed action, including (where appropriate) suggested regulatory language.
- A statement of the need and justification for the proposed action, including any supporting tests, studies, or other information showing how the NHSM meets all of the legitimacy criteria. Where the NHSM does not meet the legitimacy criteria, and the applicant still believes that their material is a non-waste fuel, the applicant must explain why such NHSM should be considered a non-waste fuel, balancing the legitimacy criteria with other relevant factors.

EPA often gets questions regarding the type of contaminant comparison data that a categorical non-waste determination petition should include. As discussed earlier in this guide, NHSM fuel data should provide the total concentrations of each contaminant in the NHSM after processing but prior to combustion, on a dry basis. Further, because 40 CFR 241.4(a) determinations are nationwide, petitions should consider geographic variability in the NHSM contaminant levels by ensuring enough samples are tested to produce representative contaminant data.

What is the difference between the two petition processes (40 CFR 241.3(c) and 40 CFR 241.4(b))?

A petition to the Regional Administrator under 241.3(c), if granted, results in a non-waste determination for a specific NHSM that is not managed within the control of the generator and has not been discarded in the first instance. This NHSM can then be combusted in the facility or facilities that submitted the petition as a non-waste fuel. This non-waste determination is done through a notice-and-comment process, but does not involve a change to the 40 CFR part 241 NHSM regulations.

A successful petition to the EPA Administrator under 40 CFR 241.4(b) results in a categorical non-waste determination for an NHSM nationally. Unlike the petitions in 40 CFR 241.3(c), categorical non-waste petitions can and usually do involve NHSMs that are discarded in the first instance and processed into a non-waste fuel. This categorical non-waste determination is done through notice-and-comment rulemaking. If all or part of the petition is approved, the changes to the NHSM regulations will be reflected in 40 CFR 241.4(a).

What are the roles and authorities of states in NHSM implementation?

The NHSM Rule is definitional in nature; it does not contain recordkeeping, monitoring, or other implementation requirements. Those requirements are contained within the applicable CAA rules: Commercial and Industrial Solid Waste Incineration Units (CISWI), and National Emission Standards for Hazardous Air Pollutants (NESHAP) for major and area source boilers.

As a result, state and local air programs can play an integral role in ensuring that sources combusting NHSMs have identified whether those materials are wastes or non-wastes consistent with the 40 CFR part 241 standards through facility inspection, air permitting, and review of the required applicability and combustion records. If states have taken delegation of these CAA rules, they have authority to take enforcement actions against facilities that improperly designate or improperly keep records on whether their fuel is solid waste or not.

While states can verify NHSM waste/non-waste self-determinations, states do not have the authority to provide NHSM waste/non-waste determinations because the air regulations rely on the federal definition of solid waste (RO 14896). We recommend that state air programs coordinate with EPA regional solid waste contacts for NHSM waste/non-waste determinations.

What are the documentation and recordkeeping requirements under the CAA for NHSM fuels?

Units burning NHSMs and subject to the NESHAP for area and major sources ([40 CFR part 63, subparts JJJJJ](#) and [DDDDD](#)) or CISWI ([40 CFR part 60, subparts DDDD](#) and [CCCC](#)) have differing recordkeeping requirements (located in [40 CFR 63.11225](#), [63.7555](#), [60.2740](#) and [60.2175](#) respectively) depending on how the non-waste determination was made. For detailed recordkeeping requirements, please refer to 40 CFR part 63, subparts JJJJJ and DDDDD, or 40 CFR part 60, subparts DDDD and CCCC.

A summary of the documentation and requirements are described as follows.

If you combust NHSMs that have been determined not to be solid waste pursuant to 40 CFR 241.3(b)(1), you must:

- Keep a record that documents how the secondary material meets each of the legitimacy criteria under section 241.3(d)(1).

If you combust a fuel that has been processed from a discarded NHSM pursuant to 40 CFR 241.3(b)(4), you must:

- Keep records as to how the operations that produced the fuel satisfy the definition of processing in 40 CFR 241.2; and
- Keep a record that documents how the secondary material, after processing, meets each of the legitimacy criteria under 40 CFR 241.3(d)(1).

If the fuel received a non-waste determination pursuant to the petition process submitted under 40 CFR 241.3(c), you must:

- Keep a record that documents how the fuel satisfies the requirements of the petition process.

For operating units that combust NHSMs as fuel per 40 CFR 241.4:

- You must keep records documenting that the material is listed as a categorical non-waste under 40 CFR 241.4(a).

Where can I find additional information on the NHSM rules?

Please visit the NHSM website or contact EPA's regional offices for additional information.

► NHSM website

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

The site includes specific information relating to the following:

- NHSM rulemakings.
- NHSM petitions to the Regional Administrator under 40 CFR 241.3(c).
- Implementation of the NHSM regulations.

- ▶ Regional contacts for NHSM waste determinations

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

This site lists regional EPA contacts for NHSM waste determinations.

Where can I find additional information on the CAA Standards?

- ▶ CAA guidelines and standards for waste management website

<https://www.epa.gov/stationary-sources-air-pollution/clean-air-act-guidelines-and-standards-waste-management>

The site includes specific information about waste management industry stationary source regulations, including:

- CAA section 129.
- National Emission Standards for Hazardous Air Pollutants (NESHAP).
- New Source Performance Standards (NSPS).

- ▶ CAA section 112 website

<https://www.epa.gov/laws-regulations/summary-clean-air-act>

This site provides an overview of the CAA and contains information on section 112, including major sources and area sources.