

Summary of December 2012 Final Rule for Non-Hazardous Secondary Materials That Are Solid Waste When Used As Fuels or Ingredients in Combustion Units

EPA originally promulgated the Non-Hazardous Secondary Materials (NHSM) rule at 40 CFR 241 on March 21, 2011. In the original rule, EPA did not list specific non-hazardous secondary materials as either wastes or non-wastes, but rather specified the criteria to be used to determine if these secondary materials are or are not solid wastes. On December 23, 2011, EPA proposed amendments to the March 21, 2011 rule intended to provide clarification and assist in implementation of the rule, as originally intended. The revised NHSM rule was signed by the Administrator on December 20, 2012, finalizing certain amendments and clarifications to the NHSM rule.

Statutory Authority

The U.S. Environmental Protection Agency (EPA) has promulgated regulations under the authority of sections 2002(a)(1) and 1004(27) of the Resource Conservation and Recovery Act (RCRA), as amended, 42 USC 6912(a)(1) and 6903(27). Section 129(a)(1)(D) of the CAA directs EPA to establish standards for Commercial and Industrial Solid Waste Incinerators (CISWI), which burn solid waste (section 129(g)(6) of the Clean Air Act (CAA), 42 USC 7429). Section 129(g)(6) provides that the term, solid waste, is to be established by EPA under RCRA. Section 2002(a)(1) of RCRA authorizes the Agency to promulgate regulations as are necessary to carry out its functions under the Act. The statutory definition of "solid waste" is provided in RCRA section 1004(27).

How to Use This Rule for NHSM Burned in a Combustion Unit

The NHSM Rule outlines the process to determine if an NSHM is a fuel or a waste when burned in a combustion unit. (Note that the process is similar for determinations of whether NHSM used as ingredients in combustion units are solid waste.) The results of the determination will define how the combustion unit is regulated (as a boiler or kiln under CAA Section 112 or a solid waste incinerator under CAA Section 129). The evaluation of whether an NHSM is a fuel or a solid waste proceeds as follows:

1. Determine if the material is a traditional fuel as defined in 40 CFR 241.2.
2. If not, determine if the NHSM is a categorical non-waste under 40 CFR 241.4(a).
3. If not, determine if the NHSM is used as a fuel in the combustion unit and meets the legitimacy criteria under 40 CFR 40 CFR 241.3(d).
 - a. The site can conduct a self-determination, if the NHSM remains within the control of the site (generator).
 - b. The site can conduct a self-determination, if the NHSM is produced from the processing of discarded NHSM.
 - c. If an NHSM has not been discarded, but is not managed within the control of the generator, file a petition to EPA to grant a non-waste determination.
4. If the NHSM is used as a fuel in the combustion unit and does not meet the legitimacy criteria, then the facility can submit a rule-making petition to EPA for a determination that the NHSM is a fuel under 40 CFR 241.4(b).
5. If the NHSM cannot meet the requirements of steps 1-4, the NHSM is a waste when burned in a combustion unit.

Important Definitions

EPA finalized revisions to the definitions for “clean cellulosic biomass,” “contaminants,” “established tire collection programs,” and “resinated wood” in the December 20, 2012, rule. The definition of “contained gaseous material” was reinstated in the CISWI rule. These and other important definitions are as follows:

Clean cellulosic biomass means those residuals that are akin to traditional cellulosic biomass, including, but not limited to: agricultural and forest-derived biomass (e.g., green wood, forest thinnings, clean and unadulterated bark, sawdust, trim, tree harvesting residuals from logging and sawmill materials, hogged fuel, wood pellets, untreated wood pallets¹); urban wood (e.g., tree trimmings, stumps, and related forest-derived biomass from urban settings); corn stover and other biomass crops used specifically for the production of cellulosic biofuels (e.g., energy cane, other fast growing grasses, byproducts of ethanol natural fermentation processes); bagasse and other crop residues (e.g., peanut shells, vines, orchard trees, hulls, seeds, spent grains, cotton byproducts, corn and peanut production residues, rice milling and grain elevator operation residues); wood collected from forest fire clearance activities, trees and clean wood found in disaster debris, clean biomass from land clearing operations, and clean construction and demolition wood². These fuels are not secondary materials or solid wastes unless discarded. Clean biomass is biomass that does not contain contaminants at concentrations not normally associated with virgin biomass materials.

Contained gaseous material means gases that are in a container when that container is combusted.

Contaminants means all pollutants listed in Clean Air Act sections 112(b) or 129(a)(4), with the following three modifications:

- (1) The definition includes the elements chlorine, fluorine, nitrogen, and sulfur in cases where non-hazardous secondary materials are burned as a fuel and combustion will result in the formation of hydrogen chloride (HCl), hydrogen fluoride (HF), nitrogen oxides (NO_x), or sulfur dioxide (SO₂). Chlorine, fluorine, nitrogen, and sulfur are not included in the definition in cases where non-hazardous secondary materials are used as an ingredient and not as a fuel.
- (2) The definition does not include the following pollutants that are either unlikely to be found in non-hazardous secondary materials and products made from such materials or are adequately measured by other parts of this definition: hydrogen chloride (HCl), chlorine gas (Cl₂), hydrogen fluoride (HF), nitrogen oxides (NO_x), sulfur dioxide (SO₂), fine mineral fibers, particulate matter, coke oven emissions, opacity, diazomethane, white phosphorus, and titanium tetrachloride.
- (3) The definition does not include m-cresol, o-cresol, p-cresol, m-xylene, o-xylene, and p-xylene as individual contaminants distinct from the grouped pollutants total cresols and total xylenes.

¹ Untreated wood pallets are pallets that have been processed to remove non-wood material that would inhibit combustion, such as screws or plastic fasteners.

² “Clean construction and demolition wood” that is clean cellulosic biomass is limited to wood that does not need to be processed to meet the contaminant comparison to virgin wood.

Established tire collection program means a comprehensive collection system or contractual arrangement that ensures scrap tires are not discarded and are handled as valuable commodities through arrival at the combustion facility. This can include tires that were not abandoned and were received from the general public at collection program events.

Ingredient means a non-hazardous secondary material that is a component in a compound, process or product.

Non-hazardous secondary material means a secondary material that, when discarded, would not be identified as a hazardous waste under Part 261 of this chapter.

Processing means any operations that transform discarded non-hazardous secondary material 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 for purposes of this definition.

Resinated wood means wood products (containing binders and adhesives) produced by primary and secondary wood products manufacturing. Resinated wood includes residues from the manufacture and use of resonated wood, including materials such as board trim, sander dust, panel trim, and off-specification resinated wood products that do not meet a manufacturing quality or standard.

Traditional fuels means materials that are produced as fuels and are unused products that have not been discarded and therefore, are not solid wastes, including: (1) Fuels that have been historically managed as valuable fuel products rather than being managed as waste materials, including fossil fuels (e.g., coal, oil and natural gas), their derivatives (e.g., petroleum coke, bituminous coke, coal tar oil, refinery gas, synthetic fuel, heavy recycle, asphalts, blast furnace gas, recovered gaseous butane, and coke oven gas) and cellulosic biomass (virgin wood); and (2) alternative fuels developed from virgin materials that can now be 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. These fuels are not secondary materials or solid wastes unless discarded.

Step 1: Traditional Fuels

If the NHSM is a traditional fuel as defined above and in 40 CFR 241.2, then the NHSM is a fuel, not a solid waste.

Step 2: Categorical Non-Waste

Non-waste determinations for specific non-hazardous secondary materials when used as fuel in a combustion unit for energy recovery are listed in §241.4(a). If the NHSM is a categorical non-waste as defined by the rule, then the NHSM is a fuel. The advantage to these listings is

that a facility does not need to demonstrate that the NHSM meets the legitimacy criteria on a site-by-site basis. The four NHSM that qualify as categorical non-waste fuels are:

- (1) Scrap tires that are not discarded and are managed under the oversight of established tire collection programs, including tires removed from vehicles and off-specification tires.
- (2) Resinated wood.
- (3) Coal refuse that has been recovered from legacy piles and processed in the same manner as currently generated coal refuse.
- (4) Dewatered pulp and paper sludges that are not discarded and are generated and burned on-site by pulp and paper mills that burn a significant portion of such materials where such dewatered residuals are managed in a manner that preserves the meaningful heating value of the materials.³

During the rulemaking process, commenters requested that other NSHM be included as categorical non-wastes. Although EPA did not add any other NHSM to the rule, the agency noted that several materials would be good candidates and EPA expects to propose adding these to the rule in the future. Example of materials include:

- Paper recycling residuals that are burned on-site or under the control of the generator.
- Construction and demolition (C&D) wood processed pursuant to best practices and produced and managed under the oversight of a comprehensive collection systems or contractual arrangement.
- Creosote-treated railroad ties (EPA has requested more information on this material).

EPA also responded to commenters on specific wastes that were requested to be considered as fuels that were not included in the listing under 40 CFR 241.4(a).

- Off-specification used oil: EPA has determined that this NHSM is a waste.
- On-specification used oil: This NHSM can be a non-waste if it meets the legitimacy criteria.
- Manure: EPA refused to list animal manure as a non-waste fuel, but notes that manure that is processed through anaerobic digestion or gasification could be a non-waste fuel if it meets the legitimacy criteria.

Step 3: Legitimacy Criteria

The legitimacy criteria are as follows:

- The non-hazardous secondary material must be managed as a valuable commodity based on the following factors:
 - The storage of the non-hazardous secondary material prior to use must not exceed reasonable time frames;

³ The listing of dewatered pulp and paper sludges is based on EPA's determination that use of the sludge fuel is integral to a mill's operation where a "significant portion" of the sludge is dewatered and burned. EPA suggests that 20% is too small and 70% is a significant portion. A mill may request a letter from EPA confirming that it combusts a "significant portion" of its sludge. Mills that do not burn a significant portion can still make a self determination that the sludge is not a waste based on the legitimacy criteria, but must keep records supporting the determination.

- Where there is an analogous fuel, the non-hazardous secondary material must be managed in a manner consistent with the analogous fuel or otherwise be adequately contained to prevent releases to the environment;
- If there is no analogous fuel, the non-hazardous secondary material must be adequately contained so as to prevent releases to the environment;
- The non-hazardous secondary material must have a meaningful heating value and be used as a fuel in a combustion unit that recovers energy.
- The non-hazardous secondary material must contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuel(s) which the combustion unit is designed to burn. In determining which traditional fuel(s) a unit is designed to burn, persons may choose a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel. In comparing contaminants between traditional fuel(s) and a non-hazardous secondary material, persons can use data for traditional fuel contaminant levels compiled from national surveys, as well as contaminant level data from the specific traditional fuel being replaced. To account for natural variability in contaminant levels, persons can use the full range of traditional fuel contaminant levels, provided such comparisons also consider variability in non-hazardous secondary material contaminant levels. Such comparisons are to be based on a direct comparison of the contaminant levels in both the non-hazardous secondary material and traditional fuel(s) prior to combustion.

Components of the Rule that Impact Application of the Legitimacy Criteria

There are several key components of the rule that impact the application of the legitimacy criteria. These include the following:

- Contaminants: As noted above, EPA listed precursors (chlorine, fluorine, nitrogen and sulfur) are contaminants only when a NHSM is combusted as a fuel, not when it is used as an ingredient.
- Groups of Contaminants: In the preamble EPA repeated its discussion of examples of groupings and its assertion that “technically reasonable” groupings may be used where “grouped contaminants shared physical and chemical properties that influence their behavior in the combustion unit prior to the point where emissions occur.” EPA does not intend to allow groupings of individual elements, asbestos, carbon monoxide, or phosphine. Also, EPA does not believe total metals may be grouped “in the absence of other suggested grouping criteria or information.” However, EPA suggests grouping volatile metals, semi-volatile metals, and low-volatile metals.⁴

⁴ While the language in the rule for legitimacy criteria and the statements above confirm that grouping is reasonable, EPA has inserted a preamble discussion that appears to undermine the utility of grouping if a combustor is relying on data from a national survey of traditional fuels. In response to a comment, EPA says that the levels of toluene and xylene in a traditional fuel may not be grouped as VOCs unless the VOCs come from the same fuel source. This discussion undermines the ability to make contaminant comparisons using EPA’s traditional fuel tables and undermines legitimacy determinations using both groupings and EPA’s tables that EPA has already approved in comfort letters.

- Range of Constituents: Contaminant comparisons can include the “full range of traditional fuel levels provided such comparisons also consider the variability in nonhazardous secondary material contaminant levels.” Therefore, a facility can rely on maximum contaminant values in traditional fuel as long as a relevant comparison is being made. For example, you cannot compare a mean to a maximum value. Thus, you cannot compare a UCL of the mean of a contaminant level in a NHSM to the maximum level in a traditional fuel. However, “EPA agrees with the approach of comparing the UPL at the 90 percent confidence level for each contaminant or group of contaminants in NHSMs to the maximum value for each contaminant or group of contaminants in the appropriate traditional fuel.” You also can compare the UCL of a mean level in a NHSM to the UCL of a mean level in a traditional fuel.
- Testing is not required: A combustor may use process knowledge and trade association data for determining contaminant levels in NHSM and fuel data from national surveys and other sources beyond a facility’s current fuel supplier for determining contaminant levels in traditional fuels.
- Combustion Unit Fuels: The legitimacy criteria require the facility to compare the contaminants (or groups of contaminants) to traditional fuel(s) the unit is designated to burn. This definition includes fuels the unit *can burn* but is *not permitted* to burn. Note that the unit must have the appropriate feed mechanism for that fuel and “should also be able to ensure that the material is well mixed and maintain temperatures within unit specifications.”

If a unit is designated to only burn a NHSM, a comparison can still be made to a traditional fuel as long as the NHSM is compared to a traditional fuel in the same phase (i.e., solid NHSM to solid traditional fuels, such as coal or biomass).

Self Determination

If the material remains within the control of the generator or is produced from the processing of discarded NHSM, the site can make a self-determination.

Petition to EPA

If the facility wishes to use a NHSM that is not managed within the control of the generator, they can choose to file a petition with EPA to grant a non-waste determination. In order for a facility to take advantage of this option, they must submit an application that shows the NHSM meets the legitimacy criteria outlined in 40 CFR 241.3(d).

Once an application is made to EPA using the legitimacy criteria, the agency will issue a draft notice tentatively granting or denying the application. The EPA will then accept public comments on their tentative decision for 30 days and may also hold a public meeting. A final decision will then be issued by the agency. If the EPA determines the NHSM is a non-waste fuel, it will be retroactive and apply on the date the application.

Step 4: Rule-Making Petition Process

If Steps 1-3 do not provide justification that the NHSM can be combusted as a non-waste, the facility can submit a rule-making petition to the Administrator to list additional secondary

materials in 40 CFR 241.4(a) as non-waste when used as a fuel. The Administrator will grant or deny the petition based on the weight of evidence showing:

- The non-hazardous secondary material has not been discarded in the first instance and is legitimately used as a fuel in a combustion unit, or if discarded, has been sufficiently processed into a material that is legitimately used as a fuel.
- Where any one of the legitimacy criteria in section 241.3(d)(1) is not met, that the use of the NHSM material is integrally tied to the industrial production process, that the nonhazardous secondary material is functionally the same as the comparable traditional fuel, or other relevant factors as appropriate.

The process requires the rule-making petition to contain specific information including, a “statement of the need and justification for the proposed action, including any supporting tests, studies, or other information. Where the NHSM does not meet the legitimacy criteria, the applicant must explain why such non-hazardous secondary material should be considered a non-waste fuel, balancing the legitimacy criteria with other relevant factors.” The Administrator will make a tentative decision on the petition and publish a notice in the Federal Register for written public comment and may hold a public hearing. Based on all information, the EPA will make a final decision in the Federal Register an amendment to the rule or denial of the petition.

Step 5: NHSM is a Waste

If the NHSM cannot be classified as a fuel based on one of the four steps listed above, it is a waste and the combustion unit would be considered an incinerator and regulated under Section 129 (e.g., as a CISWI) or the material would not be used as a fuel to for the combustor to continue to be regulated as a boiler.

Recordkeeping

For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to §241.3(b)(1), you must keep a record which documents how the secondary material meets each of the legitimacy criteria under §241.3(d)(1). If you combust a fuel that has been processed from a discarded non-hazardous secondary material pursuant to §241.3(b)(4), you must keep records as to how the operations that produced the fuel satisfies the definition of processing in §241.2 and each of the legitimacy criteria of §241.3(d)(1). If the fuel received a non-waste determination pursuant to the petition process submitted under §241.3(c), you must keep a record that documents how the fuel satisfies the requirements of the petition process. For units that combust non-hazardous secondary materials as fuel per §241.4, you must keep records documenting that the material is a listed non-waste under §241.4(a). Failure to keep such records could cause the combustion unit to be considered a CISWI unit.